



INFORMATION SCIENCE, POPULARIZATION OF SCIENCE AND SOCIAL MEMORY: Dialog with Knowledge Organization

Laffayette de Souza Álvares Junior,

*Master in Information Science Librarian of the Documentation Nucleus – NDC / UFF - Brazil
laffayete@gmail.com*

Prof^a. Dr^a. Evelyn Orrico

*Post-Graduation Program in Social Memory – PPGMS / UNIRIO – Brazil
evelynorrico@unirio.br*

ABSTRACT

Popularization of Science (PS) comes to bridge a gap in communication channels between Science and Society. It is listed as an Information Science (IS) subject in the syllabus of some Working Groups (GT *in Portuguese*) of the most important Brazilian event in the area: the Encontros Nacionais da ANCIB (ENANCIB). Placing this theme in the roll of the IS studies is a controversial issue, though, as many still have the idea that the object of IS should be restricted to Scientific Communication *stricto sensu*, whereas PS should come second place. Beyond the PS theme itself, it is crucial to point out that the universe of knowledge – and therefore the informational spaces where such theme will circulate – comprises successive symbolic representations. Such representations are articulated between themselves and they build the Memory of several social groups, due to the interference of the social-historic conditions in which they are stated. This paper intends to investigate how this thematic inter-relation between PS and Social Memory has been brought into the area, analyzing the occurrence of these terms in articles from the last 5 years of the ENANCIB.

KEY WORDS

Social Epistemology; Information Infrastructure; Popularization of Science; Social Memory.



INTRODUCTION

Information Science (IS) is part of the field of Applied Social Sciences in the Table of Knowledge Areas (CNPq, 2008), but since its creation in the 1950s it has always been intertwined with technological issues. This aspect, among others, highlights its interdisciplinary nature, as we see from many of its classic authors. (Cf. Saracevic, 1995; Mikhailov, 1980). Their conclusions point out that – from Social and Human Sciences to Computer Science, through many other areas such as documentation sciences (Librarianship, Archivology and Museology, including Documentation itself), Communication Sciences, Cognitive Sciences, sciences of Language, such as Linguistics and many other possible candidates – several knowledge interfaces are noticeable with their own theoretical and methodological background in the constitution of the field of IS.

In this configuration there seems to be room for the integration of new methodologies and investigation fields for the constitution of this informational object, more and more valued and dear to society, nevertheless not very well understood, mainly by the layman. Popularization of science comes to bridge a gap in communication channels between Science and Society. It figures in the Work Groups (WG) from the most important IS event in Brazil: Encontros Nacionais da ANCIB (ENANCIB). Placing this theme in the roll of the IS studies is a controvertial issue, as many still have the idea that the object of IS should be restricted to Scientific Communication *stricto sensu*, whereas Popularization of Science should come second place.

This struggle is directly reflected in the way the area organizes its investigation themes and therefore in the way it classifies them and embraces them as pertinent issues. This aspect makes us choose this thematic group for interlocution, since, as an analogy, we find ourselves in a “multicultural” context, if we consider the interdisciplinary character of IS. Its thematic lines are crossed by different epistemological conjunctures, allowing for different approaches beyond the only dominant *paradigm*. Kuhn (2005) calls paradigm a set of achievements from scientific areas that share two essential characteristics:

(...) they were sufficiently unprecedented to attract an enduring group of adherents away from competing modes of scientific activity. Simultaneously it was sufficiently open-ended to leave all sorts of problems for the redefined group of practioners to resolve. (p. 30)*

This seems to bring about a struggle for establishing an “apparent consensus” of areas in the “normal science” (Kuhn, 2005. P. 30). This struggle would start from the adjustments on the normal science process of *knowledge accumulation* which would allow a better explanation for the problems and conjunctures, and take the scientific area to a *higher* level as if there was an evolutive scale of sciences. Transcending from a less



accurate vision of the world when facing new knowledge – more and more perfect – the scientist would live in an entirely different world. This would happen, after a fashion, because of *crisis* in normal science – due to the inefficiency of the theories in use for the task of explaining old and new problems illuminated by new conjunctures –, checkmating the dominant paradigm, which would be refuted, and finally fall, destituted from truthfulness, and inaugurating a new paradigm hegemony. It would signal the epistemological maturity of the “normal science” (Kuhn, 2005). The Social Sciences *youth* authorizes the contest between “candidate paradigms” that aim at conquer hegemony over the explanation of things, and therefore they coexist as several visions and ways of establishing models, keeping an open question what parts of social sciences have yet acquired such paradigms at all” (Kuhn, 2005. P. 35)*. In IS things are not so different, as it is indeed one of Social Sciences branches. In a certain way we can identify several “candidate paradigms” – often called just paradigms – which has incentivated a certain historiography of IS that treats them as if they have completed the path proposed in Kuhn’s analysis to be considered paradigms.

Explanation models of multiple information conceptions were established by several authors, including those from areas which are close or interdisciplinary to IS, but there is no consensus at all – as is *normal* in Social Sciences. Those models have coexisted and we often return to them as a source of adjustment in our present works and comparative observation of these conceptions. Postmodern movements have taken advantage of the authorization given by the statement – frequently questioned, and even questionable if taken for granted without a critical view – that compatible aspects of different theories and approaches would be ready to be used together in a fruitful way. Some *accuse* IS of being a postmodern science. Although it is not our discussion focus here, we think it is worth mentioning briefly what it could be in general lines. Postmodernism can be described as a reaction to Modernism. “Generally perceived as positivist, technocentric and racionalist, the universal modernism has been identified with the belief in the linear progress, in absolute truths, in the racional planning of ideal social orders and with the standardization of knowledge and production.” (PRECIS 6 *apud* Harvey, 2006. P.19)* Harvey still associates Terry Eagleton’s description about postmodernism.

Post-modernism signals the death of such "**metanarratives**" whose secretly **terrorist** function was to ground and legitimate the illusion of a "universal" human history. We are now in the process of waking from the nightmare of modernity, with its manipulative reason and fetish of the totality, into the laid-back pluralism of the post-modern, that heterogeneous range of lifestyles and language games which has renounced the nostalgic urge to totalize and legitimate itself... Science and philosophy must jettison their grandiose claims and view themselves as just another set of narratives (Eagleton *apud* Harvey, 2006. p. 19).*



Perhaps we should surrender to Kuhn and accept our *imature nature* as a science or even get used to the postmodern category to explain a certain pragmatism which authorizes the discontinuity of the *paradigms* and their *inopportune* coexistence. Therefore it wouldn't produce consensus or hegemony. This can be considered transgression or inconsistency by the prosperous group which integrates the "Big Science", i.e., the group of sciences better placed politically and economically in the scenarios of *Governance* (González de Gómez, 2003; Caraça, 2007) and sponsorship. Whatever vision we stand up for when facing these identities, it is crucial to pay attention to our trajectory, to our evolution – not that positive and paradigmatical notion which is postulated by evolutionism, but that which describes the path that does not necessarily lead to any gains. We believe that critically reviewing our ways to function – or rather our ways to work – we are able to reach some level of frankness which diminishes the *pasteurization* of totalitarianist attempts to explain the world, without falling into the whole abyss of more fundamentalist relativism. Either by carefully observing our condition in the discussion which questions our desires and goals, or by examining our cultural configuration as we confront or accept the difference between cultures, we have to face this issue with *good will to truth*. (we are using *poetic license* referring to Nietzsche's concept *will to truth*). This way we attempt to perceive and expose the political character of the Sciences, especially Social Sciences, and celebrate the plurality which impels us to review our own visions, so as to amplify our consciousness and not only march positively in extreme confidence, vulnerable to the subtleties that our comprehension of the world cannot even realize.

Such issues are important to mention due to what is at stake when one considers Popularization of Science as an informative vehicle of registered scientific knowledge, addressed both to the non-specialized public and to the layman. What is being dealt with is exactly the forming of a social imaginary which is fed sometimes by Science itself, sometimes by the Governance, other times by Journalism or by Companies interested in promoting products falsely certified by an impression of scientificity that some popularization vehicles achieve even without having established clear criteria of evaluation, selection and validation for their diffusion material. At this point in principle there is great difference between Popularization of Science and Science Communication as, for the latter, the public shares some level of control on terminology and predefined criteria of evaluation, selection and validation of what is accepted and shared as common knowledge by practice communities in science. However, the similarities between Popularization and Communication of Science live in the fact that the latter's *arrogance* and the former's limited ability for critical evaluation of scientific information very often hinder self-criticism, not because of vanity, but much more often because of pure blindness when face-to-face with the *big picture*.

Beyond the Popularization theme itself, it is crucial to point out that the universe of knowledge – and therefore the informational spaces where such theme will circulate – comprises successive symbolic representations. Such representations when articulated between themselves build the Memory of several social groups, due to the interference



of the social-historic conditions in which they are stated. Although both the layman and the specialist are considerably different in their realization and interpretation of the realities, they can present more similarities than differences when they change positions. After all, scientists are specialists in their own areas of expertise, but in relation to others they may be obliged to depend upon the same popularization channels as is the layman. Sanches Mora (2003) presents an ontological and functional definition of Popularization of Science: “popularization is a recreation of scientific knowledge, to make it accessible to the public [the layman]” (p. 13). Considering its function, based on the same author, Orrico and Oliveira recognize that Popularization has two functions: “adaptation for the laymen and information for the scientists interested in objects developed by other areas.” (Mora, 2003 *apud* Orrico & Oliveira, 2007)

Now some issues arise to which there seems to be no possible solution to determine: how much common sense – tacit, traditional and not necessarily systematic knowledge – is there in the formation of our scientific elaborations as specialists in a scientific area? What role does the Popularization of Science play in the education of the informed citizen? What criteria assure the scientificity of a popularization vehicle? Although these answers are not our first objective for this work, they are present in the analysis of their insertion on the thematic universe of IS.

This work aims investigating how the insertion of the thematic inter-relation between Popularization and Social Memory has occurred in IS and in Knowledge Organization, via the observation of Enancib-approved articles from 2003 to 2008. Characterization of Enancib and our conception of Popularization of Science and Social Memory will be provided as well as our findings on that issue from this preliminar analysis.

ENCONTRO NACIONAL DE PESQUISA EM CIÊNCIA DA INFORMAÇÃO – ENANCIB.

Enancib is a technical-scientific reunion which congregates an expressive group of researchers and post-graduation students from IS courses in Brazil. It is held by the Associação Nacional de Pesquisa e Pós-graduação em Ciência da Informação [and Biblioteconomia] (ANCIB) [National Association of Research and Post-graduation in Information Science and Librarianship]. Until 1995, the conference has the title “Encontro Nacional da Ancib” or ENANCIB. As from 1997, “Biblioteconomia” (Librarianship) is omitted from the Association’s name, although a muted B still stands in its acronym. It suffices to say that in many countries the area is widely known as Library and Information Science (LIS). The recent format of the conference derives from the Encontro Nacional dos Cursos de Pós-graduação em Ciência da Informação e Biblioteconomia [National Meeting of Information Science and Librarianship postgraduation courses], which comes to an end in 1992. The charts that follow are a compilation of works presented in Enancibs and their distribution within GTs.



| | 1994 | 1995 | 1997 | 2000 | 2003 | 2005 | 2006 | 2007 | 2008 |
|--------------|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|
| GT1 | 3 | 11 | 30 | 23 | 17 | 16 | 14 | 20 | 21 |
| GT2 | 1 | 12 | 32 | 30 | 17 | 26 | 23 | 30 | 23 |
| GT3 | 4 | 6 | 9 | 48 | 17 | 31 | 21 | 23 | 16 |
| GT4 | 3 | 11 | 34 | 43 | 26 | 13 | 19 | 15 | 23 |
| GT5 | 3 | 10 | 21 | 30 | 13 | 14 | 11 | 16 | 18 |
| GT6 | 4 | 6 | 9 | 18 | 20 | 10 | 7 | 6 | 18 |
| GT7 | 5 | | | 34 | 15 | 15 | 12 | 7 | 14 |
| GT8 | | | | 14 | 15 | | | | 16 |
| Total | 23 | 56 | 135 | 240 | 140 | 125 | 107 | 117 | 149 |

Chart 1 – Articles – GTs/Years 1994 – 2008.

However, Chart 1 does not correspond to the thematic evolution of the GTs, especially because the GTs change from year to year. In the next chart one can see Alvares Jr.'s proposal (2007) in his master dissertation, a thematic equalization in 10 lines which were compiled by examining the works in each GT each year and a general analysis of the GTs syllabi. For this work, an 11th line is added to cater for the 2008 discussion of themes related to Information Technology going on in GT8. This work is based on the analysis of titles, abstracts and key words from articles presented in Enancib every year until 2000 and further updates up to 2008 using the same methodology, therefore it has a limited character. Other studies are recommended to use the whole text of the articles.

| Thematic Lines |
|---|
| 1 Technological informationa, business and administration |
| 2 Representation and organization of knowledge |
| 3 New technologies and education |
| 4 Information and society |
| 5 Scientific production and communication |
| 6 Profitional eduction and work |
| 7 Postgraduation research policies |
| 8 Mediation, circulation and use of Information |
| 9 information to diagnostics, mapping and evaluation |
| 10 Historical and epistemological studies of information |
| 11 Technology and Information |

| | 1994 | 1995 | 1997 | 2000 | 2003 | 2005 | 2006 | 2007 | 2008 |
|------------|------|------|------|------|------|------|------|------|------|
| GT1 | 1 | 1 | 1 | 1 | 1 | 10 | 10 | 10 | 10 |
| GT2 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| GT3 | 2 | 3 | 3 | 3 | 3 | 8 | 8 | 8 | 8 |
| GT4 | 1 | 4 | 4 | 4 | 4 | 1 | 1 | 1 | 1 |
| GT5 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 |
| GT6 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| GT7 | 7 | | | 9 | 9 | 9 | 9 | 9 | 9 |
| GT8 | | | | 10 | 10 | | | | 11 |

Chart 2 – Thematic lines and their path along the GTs per year (Alvares Jr., 2007)

Chart 2 shows how main themes migrate from year to year in relation to GTs. The number of each line marks the paths of the themes through GTs throughout the years. It is easy to see how the theme ‘Technological information, business and administration’, for example, is divided into 2 GTs (GT4 and 1) in 1994 and after that it merges with GT1 until 2003, and then changes to GT4 from 2005 to 2008.

For this work we use the last 5 years as an empirical field to analyse the thematics Popularization of Science and Social Memory, but it is inevitable to point out some interesting issues which were observed in the event as a whole (in the 1092 presented papers) and in the political and administrative organization of the area, by analogy to the decisions of ANCIB.

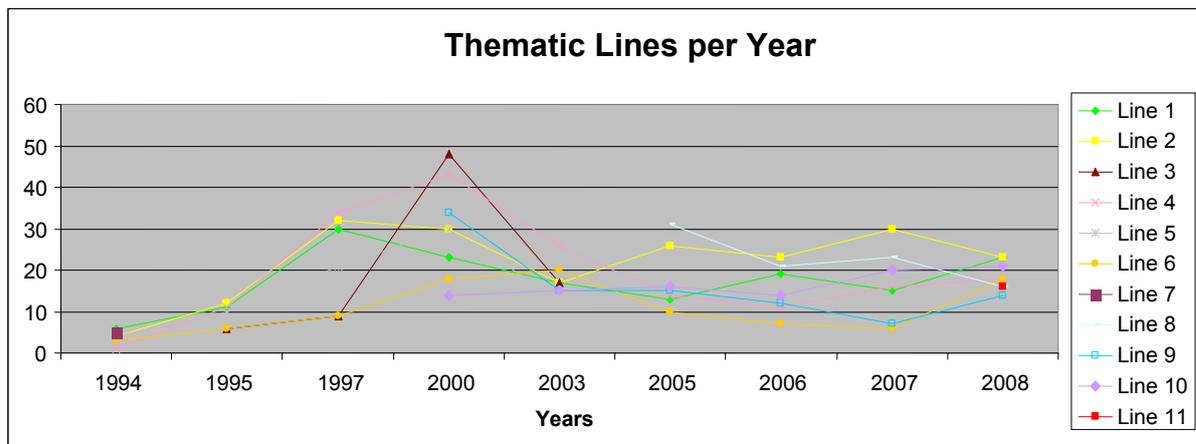
The movement of the thematic lines in the different GTs is represented in Chart 2. Its totals would be shown in Chart 3 as:

| | 1994 | 1995 | 1997 | 2000 | 2003 | 2005 | 2006 | 2007 | 2008 | Total |
|---------|------|------|------|------|------|------|------|------|------|-------|
| Line 1 | 6 | 11 | 30 | 23 | 17 | 13 | 19 | 15 | 23 | 157 |
| Line 2 | 4 | 12 | 32 | 30 | 17 | 26 | 23 | 30 | 23 | 197 |
| Line 3 | | 6 | 9 | 48 | 17 | | | | | 80 |
| Line 4 | 1 | 11 | 34 | 43 | 26 | 14 | 11 | 16 | 18 | 174 |
| Line 5 | 4 | 10 | 21 | 30 | 13 | | | | | 78 |
| Line 6 | 3 | 6 | 9 | 18 | 20 | 10 | 7 | 6 | 18 | 97 |
| Line 7 | 5 | | | | | | | | | 5 |
| Line 8 | | | | | | 31 | 21 | 23 | 16 | 91 |
| Line 9 | | | | 34 | 15 | 15 | 12 | 7 | 14 | 97 |
| Line 10 | | | | 14 | 15 | 16 | 14 | 20 | 21 | 100 |
| Line 11 | | | | | | | | | 16 | 16 |
| Total | 23 | 56 | 135 | 240 | 140 | 125 | 107 | 117 | 149 | 1092 |

Chart 3 – Movement of the themes per GTs in thematic lines. (Updated by Alvares Jr., 2007)

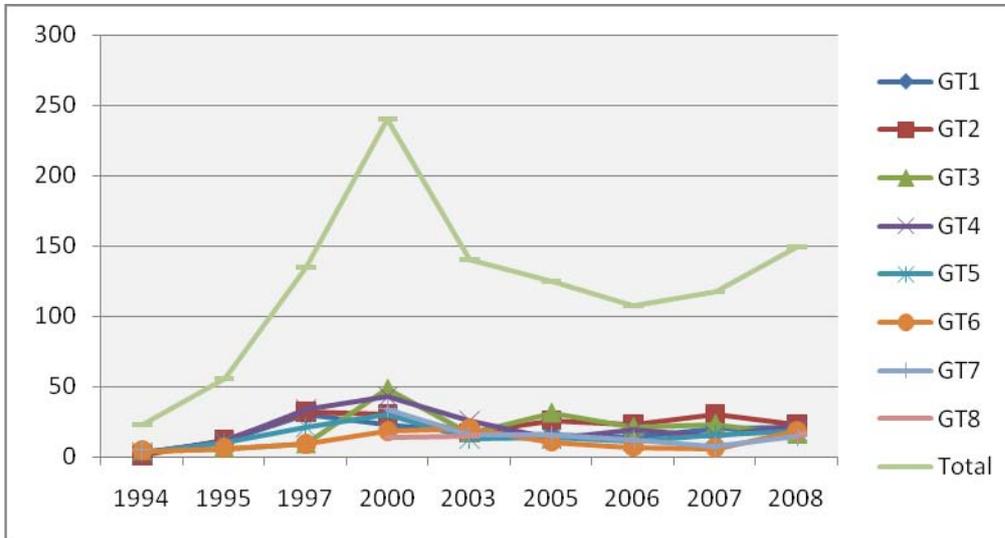
Enancib intends to be, as described in the ANCIB website, “the state of the art in IS research, which is being conducted in several postgraduation programmes and institutions linked to the area, and shows the advancement of knowledge up to that moment” (ANCIB, 2006 *apud* Alvares Jr., 2007). If implemented, this proposal would draw a permanently updated picture of the scope of IS research in Brazil. However desirable this idea may sound it is not compatible with the selection and evaluation criteria for presenting works at the event. The rules which regulate the works that can be presented limit their numbers per GT with the intention of promoting and privileging discussion. 15 works is the recommended limit per GT – this number is hardly ever met and often exceeds, but is always far less than the demand. This limitation is said to occur after the new statute was voted in 2005. It has ruled the GTs since then and was to produce effects in 2006. Alvares Jr. (2007) points out more evidences about these documents in his master’s dissertation. This issue is not our focus, although it is

important to realize that it is not possible to talk about State of the Art based on Enancib since 2006 (or even before that, as the numbers seems to point out). We can only talk about the best 15 works (approximately) from each GT per year and not about the conjunction of the IS production evaluated and certified by the event. The problem is graver if we consider graph 1 which represents the rising progression of articles within each thematic line:



Graph 1 – Thematic lines - 1994 – 2008

In graph 1 one realizes the increasing progression in the number of works within each thematic line from 1994 to 2000 when the variation in the number of articles was from 23 to 240. But it is definitely interesting to observe that at this point the area progresses continuously in number of postgraduation courses, journals, participation in research groups and projects, but the number of articles presented in Enancib presents an equivalent decrease to the period of restricted demand (1997 – 2000). From 2000 to 2003 the number of works decreases to 140 and stabilizes in a relatively regular band until 2008 (107 – 149 articles). In graph 2 this is easier to notice by observing the line corresponding to Total above the others. From 1997 to 2000 the increase is over 70%, and the decrease from 2000 to 2003 is almost equivalent, as mentioned before. It makes us wonder if the restriction was unofficially working tacitly, compromising the analysis which intends to show the the “state of the art” in IS research. Considering the picture of the area based on the selection of articles, Enancib is still the biggest event – if not the only one at its level – in IS in Brazil and its production is remarkably the highlights in terms of excellency of IS research.



Graph 2 – Articles by GT 1994 – 2008

For this investigation, 638 works from the last 5 years of the event were evaluated, aiming at identifying the presence of selected terms which were found pertinent to the general thematics.

POPULARIZATION OF SCIENCE AND SOCIAL MEMORY

What moves us to focus on Popularization of Science is its informative and educational potential, its role as a *builder* of social consciousness and as a culture and social memory *shaper*; a vehicle of truth dissemination certified by science which is delivered to the layman. This public does not always see itself as capable of understanding the multiple and complex political dimensions of the philosophical and economic reasons of science and – because of the symbolic image associated to it – of the weight of its politically built credibility in the social memory, in the tension between Society and Science. Maybe this lack of sense which creates the need for mediation between Science and Society is the legacy of the 19th century positivism and its original modernity, which is still in search of adjustments, but considered obsolete by some, or never fully realized. (Latour, 1994)

In IS, Popularization of Science has a polemic and erratic role. In this area, the discussion of its object outlines a predominant tendency to focus on scientific information related to the Science, Technology and productive sectors. Its studies emphasize transference of information and technology. The genesis of the area is marked by the focus on communication, intersected with the mathematical model from the Information Theory of Shannon and Weaver. Its preference for scientific and technological information, rather than for cultural and social information, seems to be one of the main factors of this separation.



In our point of view, Popularization of Science in a discursive approach represents the recreation of scientific knowledge to make it accessible to the layman, to which discourse (Pêcheux, 1997) is key (Orrico and Oliveira, 2007). In this perspective, discourse as an *event* unties itself from its enunciators, integrating itself in other discourses, producing not always controllable effects. Discourse is a talk through other talks which, intersected by power, modifies its subjects and its listeners, and constitutes both of them. It is constructed in the tensions and realized in the regularities believed and provisionally consolidated in the social legitimation and validation, which Orlandi (Pêcheux, 2006. P. 8) called effects of certainty produced by the accumulation of knowledge. It is a tension of forces between instances of society more or less formal as politics, sciences, institutions and entities which from their enunciation places (Orlandi, 2005) legitimate, control, validate, observe, watch, block, acquire, annul, disqualify, by materializing, dematerializing or conforming enunciation places and recreating its occupants (Frohmann, 2008; Foucault, 2005; 2006). As the layman, the scientist, in some level, are affected by the subtleties, material and symbolic restrictions of these discourses and their construction and keeping processes. These manifestations interfere in the formation of a memory which is collective and social.

The discussion we raise here is what we intend to observe in the manifestation of terms which we list as significant for this analysis and which will be dealt with below.

THE SELECTED TERMS AND THEIR OCCURRENCE IN ENANCIB FROM 2003 – 2008.

We searched for terms occurring in works presented in the last 5 years of Enancib. We observed the regularities of term occurrence and tried to outline a parameter that could guide the description of some models in which these terms are inserted. In the analysis we worked out the number of occurrences which makes possible to determine which thematic lines they belong to. After that we intend to perform a deeper analysis of the texts in which the terms occur so as to observe how they are used, and define more precisely their belonging to that index. The terms selected and their frequencies as described in the paragraphs below are better shown in the next charts (chart 4A, 4B and 4C).

We observed the relationship between articles in which such words and terms were found and their discussion forum, so as to find a logical categorization of these themes and their appropriations. Because there is considerable amount of argument on the conceptualization of these terms, and not all articles present key words attributed by their own authors, we tried to investigate the complete texts from the proceedings of the Enancib in its last five events, since these digital proceedings allow the automatic research of words in the whole text. 638 articles were analysed and partially indexed by use of the words and terms listed below as well as what our preliminary analysis brought up from their respective uses.



- 1 **Scientific communication (93):** concerns the opposite situation to popularization of science in our view, as it refers to the process of diffusion of information produced in science, aiming at the specialized public. The term occurs consistently, used in the text as well as in key words when it is the case. Some articles are about this topic but do not highlight it in the special fields as key words, abstract and title, although it underpins the chosen central themes. The texts were tagged as ‘Scientific Communication’ and when the term was among the key words the tag was ‘KWScientificCommunication’ (19).
- 2 **Dissemination (335):** we prefer ‘dissemination’ as a term of research because that would bring about the opportunity to find it in a variety of collocations in the text. We found many different uses of the term. However, we did not qualify it because it is not a main issue in our research. The major occurrences concern information diffusion, dissemination of research results to specialized communities, but the social theme is only implicit; frequently it shows up as ‘information dissemination’ although it occurs less frequently as a key word.
- 3 **Popularization (Divulgação) (186):** the choice of ‘popularization’ followed the same reason as ‘dissemination’; it was tagged as “Popularization”. When it was qualified:
 - a. **Popularization of science (Divulgação científica) (40):** it was tagged as such. When it occurred as a key word the tag was ‘KWPopularization of Science’(3). The retrieval was done by ‘popularization’ to avoid eliminating possible variations as ‘Science Popularization’ and others. The term appears in GTs 1, 2 and 4 or Thematic Lines (TL) 1, 2 and 4 (2003); GTs 1 and 7 or TL 10 and 9 (2005); GTs 1, 2 and 7 or TL 10, 2 and 9 (2006 and 2007); and GTs 1, 2, 3, 4, 5, 6 and 7 or TL 10, 2, 8, 1, 4, 6 and 9 (2008) and as key word in the GT7 or TL 9 (2006); GT1 or TL 10 (2007 and 2008).

We searched for other forms like:

- b. **Diffusion (Popularização) (18):** a less used form, with most ambiguity of uses.
- c. **Vulgarization (7):** a less used form in this sense of popularization;

Within the theme, it was worth looking for other terms which helped us establish a direction to the study of Popularization of Science as we understand it (cf. Orrico; Oliveira, 2007), and to highlight the potential of building a social reality (Berger; Luckmann, 1974) through technical and discursive dispositives, conforming an Information Infrastructure (Álvares Jr., 2007). We track:

- 4 **Memory (196):** we found great dispersion of uses of the term, but with some consistency concerning institutional, organizational memories, and – at the opposite end – technological memory (computer memory). All these memories



were tagged generally as Memory or as a key word KWMemory(23). As a key word it is interesting to notice that Memory shows up in GTs 2 and 4 or TL 2 and 4 (2003); GTs 1 and 3 or TL 10 and 8 (2005); GTs 2 and 3 or TL 2 and 8 (2006); GT 1, 2, 3 and 5 or TL 10, 2, 8 and 1 (2007) and GT 1 and 2 or TL 10 and 2 (2008).

- a. **Collective Memory(33)**: occupies second place in number of occurrences. It shows up in GTs 2 and 4 or TL 2 and 4 (2003); GTs 1, 2 and 3 or TL 10, 2 and 8 (2005); GTs 1, 2, 3 and 4 or TL 10, 2, 8 and 1 (2006); GTs 2, 3 and 5 or TL 2, 8 and 4 (2007); GTs 1, 2, 3 and 5 or TL 10, 2, 8 and 4 (2008).
- b. **Social Memory (40)**: most occurrences, which were tagged as Social Memory or as key word KWSocialMemory (7). It shows up in GTs 2, 4, 5, 6 and 8 or TL 2, 4, 5, 6 and 10 (2003); GTs 1, 2, 3, 5, 7 or TL 10, 2, 8, 4 and 9 (2005); GTs 4 and 7 or TL 8 and 9 (2006); GTs 1, 3 and 7 or TL 10, 8 and 9 (2007); GTs 1, 2, 3 and 5 or TL 10, 2, 8 and 4 (2008) and as key word in GT 1 or TL 1 (2003); GTs 1 and 2 or TL 10 and 2 (2005); GT 2 or TL 2 (2006); GT 3 or TL 8 (2007); GT1 or TL 10 (2008).
- c. **Social imaginary (17)**: it was added as an auxiliary term as a quasi-synonym to Social Memory.

OBS: The number in brackets record the quantity of articles where the term shows up. These data are better understood when compared with charts 2, 4A, 4B and 4C.

From this *indexation*, we found interesting configurations which allowed us to anticipate the pertinence of Popularization of Science as an IS theme, but the lack of specific *locus* to accommodate Social Memory and Popularization of Science as boundary objects (Bowker; Star, 2000), interdisciplinary, though pertinent and participative, in a shy but growing way, into the IS thematic universe.

| TERMOS | 2003 | | | | | | | | | 2005 | | | | | | | | |
|-----------------------------|------|-----|-----|-----|-----|-----|-----|-----|----|------|-----|-----|-----|-----|-----|-----|-----|----|
| | GT1 | GT2 | GT3 | GT4 | GT5 | GT6 | GT7 | GT8 | T | GT1 | GT2 | GT3 | GT4 | GT5 | GT6 | GT7 | GT8 | T |
| scientific communication | 1 | 3 | 2 | 0 | 10 | 0 | 0 | 1 | 17 | 6 | 1 | 5 | 2 | 1 | 0 | 10 | 0 | 25 |
| dissemination | 8 | 4 | 8 | 9 | 5 | 11 | 9 | 4 | 58 | 7 | 10 | 14 | 12 | 10 | 6 | 10 | 0 | 69 |
| popularization | 5 | 2 | 7 | 8 | 7 | 8 | 5 | 1 | 43 | 4 | 1 | 7 | 2 | 5 | 4 | 7 | 0 | 30 |
| popularization of science | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 4 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 |
| diffusion | 0 | 0 | 1 | 2 | 1 | 0 | 1 | 0 | 5 | 0 | 1 | 4 | 0 | 0 | 0 | 1 | 0 | 6 |
| vulgarization | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| memory | 3 | 3 | 6 | 10 | 3 | 5 | 1 | 8 | 39 | 9 | 9 | 14 | 2 | 3 | 1 | 5 | 0 | 43 |
| collective memory | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 6 |
| social memory | 0 | 1 | 0 | 3 | 1 | 1 | 0 | 1 | 7 | 4 | 1 | 4 | 0 | 1 | 0 | 1 | 0 | 11 |
| social imagee | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 8 |
| KWScientificCommunicatio | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 1 | 4 | 0 | 1 | 0 | 1 | 0 | 0 | 3 | 0 | 5 |
| KWPopularization of Science | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KWMemory | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 |
| KWSocialMemory | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |

Chart 4A – Selected terms occurency. (part 1 – 2003 a 2005)

| TERMOS | 2006 | | | | | | | | | 2007 | | | | | | | | |
|--------------------------|------|-----|-----|-----|-----|-----|-----|-----|----|------|-----|-----|-----|-----|-----|-----|-----|----|
| | GT1 | GT2 | GT3 | GT4 | GT5 | GT6 | GT7 | GT8 | T | GT1 | GT2 | GT3 | GT4 | GT5 | GT6 | GT7 | GT8 | T |
| scientific communication | 3 | 5 | 5 | 0 | 0 | 0 | 6 | 0 | 19 | 5 | 3 | 1 | 0 | 2 | 1 | 12 | 0 | 24 |

| | | | | | | | | | | | | | | | | | | |
|-----------------------------|---|----|----|----|----|---|---|---|----|----|---|----|----|----|---|----|---|----|
| dissemination | 6 | 10 | 14 | 11 | 10 | 6 | 6 | 0 | 63 | 12 | 8 | 11 | 11 | 10 | 2 | 9 | 0 | 63 |
| popularization | 3 | 9 | 3 | 2 | 3 | 2 | 4 | 0 | 26 | 5 | 6 | 13 | 2 | 4 | 3 | 10 | 0 | 43 |
| popularization of science | 3 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 7 | 3 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 7 |
| diffusion | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 4 |
| vulgarization | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 |
| memory | 4 | 5 | 4 | 8 | 1 | 3 | 7 | 0 | 32 | 11 | 8 | 14 | 2 | 3 | 0 | 6 | 0 | 44 |
| collective memory | 2 | 2 | 3 | 2 | 0 | 0 | 0 | 0 | 9 | 0 | 1 | 4 | 0 | 1 | 0 | 0 | 0 | 6 |
| social memory | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 4 | 3 | 0 | 5 | 0 | 0 | 0 | 1 | 0 | 9 |
| social imagee | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| KWScientificCommunication | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 |
| KWPopularization of Science | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| KWMemory | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 2 | 4 | 0 | 1 | 0 | 0 | 0 | 8 |
| KWSocialMemory | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 |

Chart 4B – Selected terms occurency. (part 2 – 2006 a 2007)

| TERMOS | 2008 | | | | | | | | T | T |
|-----------------------------|------|-----|-----|-----|-----|-----|-----|-----|----|-----|
| | GT1 | GT2 | GT3 | GT4 | GT5 | GT6 | GT7 | GT8 | | |
| scientific communication | 5 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 8 | 93 |
| dissemination | 13 | 11 | 9 | 7 | 16 | 12 | 6 | 8 | 82 | 335 |
| popularization | 4 | 8 | 5 | 2 | 9 | 3 | 8 | 5 | 44 | 186 |
| popularization of science | 8 | 4 | 1 | 1 | 2 | 2 | 1 | 0 | 19 | 40 |
| diffusion | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 18 |
| vulgarization | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 7 |
| memory | 14 | 8 | 4 | 4 | 8 | 0 | 0 | 0 | 38 | 196 |
| collective memory | 2 | 3 | 2 | 0 | 3 | 0 | 0 | 0 | 10 | 33 |
| social memory | 4 | 2 | 2 | 0 | 1 | 0 | 0 | 0 | 9 | 40 |
| social imagee | 3 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 5 | 17 |
| KWScientificCommunicatio | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 19 |
| KWPopularization of Science | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 |
| KWMemory | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 23 |
| KWSocialMemory | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7 |

Chart 4C – Selected terms occurency. (part 3 – 2008; Total for the period 2003-2008)

The methodology used in this article was developed with the help of the Windows XP “home basic” search tool to prospect the complete texts of the articles in search for relevant terms. Later the context where the terms were found was briefly read and then the article was tagged with the selected terms as indexes with the application Tag2Find. This application allows the crossing of the indexes showing intersection occurrences, which facilitates the tabulation work and mapping.

Our analysis points to the need for constant revision of themes which deserve to appear in the roll of our major area, as well as the reflection of its classificatory organization structure.

FINAL CONSIDERATION

First we would like to say that directing our attention to the studies related to Social Memory reveals the interest in understanding symbolic constructions which several communities build through time and understanding them is the first step toward communication which is both transforming and effective.

We also state that the interest in understanding the processes of Popularization of Science in its several modalities is one of the ways to enter the symbolic universe that the layman builds for science. This allows one to enhance the procedures of transmission of information which improves society.



From these occurrences we noticed some aspects which made us reflect upon the field of Knowledge Organization. The first one is the presence of investigation themes which point to new interfaces and specificities, leading to a perspective in which the area renews itself, and therefore has to open up to new possibilities of investigation. It becomes more clear when one finds 250 occurrences of the term “memory” and over 200 of the term “popularization of science” in a universe of 638 articles presented in the last 5 years of the event. This also allows us to state that these themes are part of the thematic universe of IS, especially concerning to “popularization of science” which more clearly manifests itself as an IS object, since it relates directly to the trinomial knowledge-wisdom-society. Another important point to highlight is the forum in which the term “popularization of science” appears constantly. It occurs in TLs 2, 9 and 10 in most of the studied period and spreads out its occurrence to TLs 8, 1 and 6 (almost the totality of the TLs) in 2008. This may indicate that “popularization of science” has more epistemological and thematic appeal and that it manifests itself as a diagnostic and evaluation subject, but it is widespread when discussed from other interfaces, even if at times it is confused with the memory of records and patrimony. Social Memory and its variations have been discussed mainly in TLs 10, 2, 8 and 4, which may indicate a consistently epistemological and thematic appeal, but also their manifestation as an object of the mediations and networks in their social relations. It is also intriguing that many authors who work with Social Memory and Popularization of Science themes avoid tagging their own texts with these terms and end up disguising – perhaps unconsciously or even strategically – their research interest, which allows a subtle penetration of the themes in the area in a somewhat discreet way. As Morin teaches:

Concepts travel and they had better travel and be aware that they are travelling. It is better that they don't travel illegally. It is good also that they travel without being noticed by the custom officers! In fact the illegal traffic of concepts have at least allowed disciplines to breathe, to unclog. (...) Mendelbrot used to say that great discoveries spring from errors in the transfer of concepts from one field to another, carried out, he added, by the talented researcher. Talent is needed for the error to become fruitful. (Morin, 2005. P. 117)

After all, the terminological role in the materialization – as Frohmann uses it (2008) – of social reality is crucial to the establishment of the conjunctures which are kept by the infrastructures – including information infrastructures – and their automata and automatizing dispositives, truly subtle reproducers of realities that are manifested in the solidary and transparent creation and deletion of truths and knowledge.

The next step in our investigation in the near future will be to check out the research networks from the studies related to the researchers and the institutions which are involved with these themes, and so attempt to contribute to the strengthening of an IS updated representation, starting from its themes and research objects, the use of new methodologies and knowledge organization structures and wisdom.



*We tried to find the original texts in English as much as possible. However our study used most of the texts translated to Portuguese from Brazilian editions. So, although the texts cited are in English, quotations are referenced with the Brazilian edition's page numbers. Otherwise, the texts were freely translated from the Brazilian editions.

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