GARDEN JOURNALS
Journal of Qualitative Research in Business Law, Eco-Fin, Accounting, and Statistics
ISSN : 1533-1520
Issue 19 . No.2 2019

Attribution of Intellectual Contributions in Medical Journals of Cuba

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ABSTRACT

Identifying the authorship of arguments in medical writing affects imperatives of science such as precision and transparency, reproducibility, and legal accountability. The objective here was to describe their behavior in Cuban medical journals certified as scientific by CITMA, since the different forms of their expression affect imperatives of science such as precision, transparency, reproducibility and legal responsibility for what is said and done. made. To achieve this, a qualitative analysis of a sample of 50 sections was carried out. *Discussion* of original research articles that were published between 2007 and 2011. The data were collected using coding sheets and then analyzed in the theoretical framework of pragmalinguistics and rhetoric of science. There were 5% of statements with unequivocal intellectual attribution to the author of the text, manifested through the referential use of the grammatical person; 25% of statements attributed to specific third parties through REFERENCES, and 70% of statements with ambiguous attribution (47% of them attributable to unspecified third parties and 23% of statements whose possible conceptualizer is the scientific community). In

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Journal of Qualitative Research in Business Law, Eco-Fin, Accounting, and Statistics
ISSN : 1533-1520

conclusion, the self-ascription of the arguments to the speaker, preferably through the first grammatical person, allows us to differentiate in science between personal judgment and intersubjective agreement, since the authorship of an article does not presuppose the authorship of all the arguments included in it. The high proportion of statements issued by their authors without explicit intellectual attribution or with ambiguous means, despite the high degree of textual specialization, deserves further investigation and editorial attention.

Keywords: Linguistic attenuation; propositional conceptualization; rhetoric of science; methodology of science

INTRODUCTION

Intellectual attribution is one of the most important rhetorical components of scientific texts, a type of discourse that "constructs its argumentative line on the basis of previous ideas and reasoning, which serve as a starting point." [1] In scientific texts, where the research is based on the knowledge achieved by others and the positioning and own perspective are built on the basis of contributions from others, " *one needs to know whose work is being talked about at any point in the discourse* "; [2] that is, distinguishing assertions according to whether they are attributed to the author himself (his own), to other researchers (others') or to the field in general (common knowledge or known information).

Intellectual attribution has been called in various ways: *scientific attribution* , [2)] *academic attribution,* [3] or *attribution of knowledge,* [4, 5] although some researchers limit their studies to references to other people's knowledge and do not consider intellectual attribution to the speaker himself. On the other hand, intellectual attribution is not equivalent to intellectual property, a term that

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designates the "field of law that deals with the study of the norms referring to intellectual rights, that is, those rights that fall on intangible goods that are, essentially, products of the invention or creative activity." [6] On the other hand, more than with economic rights (copyright or industrial property), [7, 8] intellectual attribution is linked to ethical and legal obligations.

Its importance lies not only in the fact that in this way the authors reveal the evidence on which they rely to say what they say, but in doing so they offer their readers means of verification or validation of the information presented. [9] In effect, different types of truth are possible depending on the type of agent to which one has access to verify content: the opinion of another person or people or general knowledge, and there are assertions that only offer the guarantee of a truth for the speaker (e.g., *I'm tired* ; *I think...*). [9]

Here I argue that, to properly judge scientific information, it is necessary to know who, where and when is speaking, since science does not work with dogmatic statements, but with debatable, concrete and historical statements. Therefore, the unequivocal location of knowledge in specific people and also specific spatial and temporal dimensions affects the evaluation of the quality of scientific information −truths are relative, not universal−, and is related to responsible and ethical conduct both in the production of information as well as in the use of managed information.

In one of the most influential works in the sociology and anthropology of science, *Latour* and *Woolgar* showed that scientific claims go through a process of gradual approval until they are finally accepted as "facts" by the scientific community. [10] That is, as a scientific argument progresses over time and becomes

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Journal of Qualitative Research in Business Law, Eco-Fin, Accounting, and Statistics
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accepted, it passes through different "types of statements" that reflect the metamorphosis of a refutable topic (conjectures or speculations), probable (if x , then *y*), not personally verified (citations), to an accepted topic in a discipline (*x* is defined as...; *x* is...) or finally implicit knowledge (what everyone knows).

In the opinion of some authors, [10, 11] the latter are infrequent in a prototypically scientific text, while those typical of science would be those that contain some type of relativization (e.g., *according to X, probably, in the opinion of X,* or a bounded reference), since the speaker asserts that the content of his statement is true only as far as he or another person knows. [12] This means that the speaker indicates that the statement is about a topic not approved by everyone, but about something relatively provisional that can be discussed and rejected.

These signs of intellectual conceptualization, whether one's own or another's, are of such importance that, if they are omitted when citing an original work, the information managed is transmitted without reflecting that it is only an early stage in the evolution of knowledge on a specific topic, for example. which affects the way in which said information is incorporated in the citing work and in subsequent works. [13] Linguistically they can be traced following the agentive structure of the texts, which includes, first of all, the subject of the discourse himself, the author of the texts (what is mine: *I say that* ...), [14 identifiable] by the use of the first person singular in simple authorship or plural in collective authorship (e.g., *I think that; in my opinion*).

But, other variants are possible:

- Intellectual attribution to a specific person who is not the speaker (that of another):

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- bounded references in any bibliographic style,
- second speeches introduced by means of speech verbs or prepositional phrases (*X says that ..., according to X, for X, in the opinion of X*).
- Attribution to a universal or generic conceptualizer (e.g., the scientific community), which is manifested in a canonical manner through the categorical assertion or statement not explicitly valued (what is recognized by everyone).
- Implicit intellectual attribution to the speaker in assertions that he does not explicitly qualify in any way, even though he may be its propositional conceptualizer (the speaker is always the author of the statement taken as a whole, but is not necessarily the author of the arguments he uses in their statements).
- Indirect intellectual attribution to the speaker through linguistic resources that could refer to him but in an attenuated way. In such cases, readers could infer that the speaker is the conceptualizer of the propositional content or the agent of the verbal actions, but they would not be in a position to affirm this with complete certainty.

In the scientific field, some of the most productive resources that mitigate the authorial figure are the following (in greater detail in): [15]

- *Nominal style:* nominalizations of action without agentive complement (e.g. *detection agrees with...*) and personalizations with which the author attributes his actions (verbal, behavioral and even mental) to inanimate objects (e.g. *the study proposes...; the results show…*).

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- *Syntactic impersonalization:* impersonal constructions with infinitives and reflexive impersonal constructions, which leave the person responsible for the verbal action undetermined (e.g. *it should be noted that...; it completely coincides with...*).
- *Deagentivation of passive constructions:* reflexive or periphrastic passive constructions without an agent, as well as constructions with participles of transitive verbs used without an agent complement (e.g. *it was proposed that...; the data analyzed...*).
- *Omission of argumentative complements (required depending on the meaning of the predicate):* direct, indirect and prepositional regime that if present would refer to the speaker (to whom? / for whom?: e.g. *the diagnosis forces us to reflect ..., as a result It is surprising that …, it is interesting to note that* …)
- Non-referential use of personal pronouns (the person referred to does not coincide with the real person):
    - with reference to a non-specific group (the scientific community or society), in which the author includes himself (e.g. *in 1991 we established that...; in our environment*).
    - with reference to an affective group (of communion) with the reader, whom the author guides in the text (e.g. *if we interpret this...; as we could observe...*):
    - through the “we of modesty” or “we of the author”, whose plurality is rhetorical since its reference is only the author of the text.

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- Autonymic modalization with quotation marks (non-obligatory use of quotation marks that implies a comment on the discourse itself), with which the person responsible for the utterance introduces a second discourse without traces of its empirical producer and draws the reader's attention to the fact that it is using words that, in their opinion, are not the most appropriate (e.g. *"normal" results… other "atypicalities" associated with dengue…*).
- Non-pronominal self-reference, through noun phrases (determinant plus noun with self-referential value) used by the writer to refer to himself (e.g. *the authors* , *this team*, *the researcher*).

In Abstract, I consider three possible forms of manifestation of intellectual attribution:

- explicitly to the author of the text or to another specific person who is not the author of the text,
- indirectly or attenuated to the author of the text, although with a certain margin of doubt (it could be inferred that the author is the referent, but it could not be assured, and it could well be another person, who has not been specified),
- implicitly to a generic or universal conceptualizer or to the author of the text himself.

I consider that only the first allows for the indisputable identification of the conceptualizer of the propositions, while a certain margin of error is inherent in indirect or attenuated and implicit attribution, since the conceptualizer is identified only by inference. In indirect or attenuated attribution it is possible that the

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conceptualizer – or even the agent of the verbal actions – is the author himself, but it is possible that it is another person that the author does not specifically mention. In the attribution that is made implicitly, the conceptualizer could be the speaker, but it is possible that the speaker is only a spokesperson for known or shared arguments, as occurs, for example, with proverbs in colloquial conversations or with implicit knowledge (what everyone knows).

Referential opacity increases as the resources used by the authors identify a specific person to a lesser degree. For this reason, in categorical assertions it is more difficult to delimit between the speaker-conceptualizer and a generic or universal conceptualizer, although the different interpretations are favored to a lesser or greater degree by the context.

My objective here was to describe the behavior of intellectual attribution in Cuban biomedical journals, since the different forms of its expression affect imperatives of science such as precision, transparency, reproducibility and legal responsibility for what is said and done. .

METHODS

Intellectual attribution is analyzed here qualitatively in a specialized *corpus* of 50 sections *Discussion* of original research articles, published between 2007 and 2011, which I selected at random among Cuban biomedical journals certified as scientific by CITMA. I divided the corpus into two subcorpuses: one with 25 articles of simple authorship and another with 25 of collective authorship, to observe the intellectual attribution comparatively.

Since the scientific style has changed in history, the selection of the 2007-2011 five-year period is primarily due to the temporal proximity to the moment of

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formation of the corpus, which was created within the framework of a macro-research project on the contemporary cultured norm in Cuba. 2007, the initial year of the time frame, was marked by the purpose of the National Information Center for Medical Sciences (CNICM) to place 100% of Cuban scientific publications on health sciences on the Internet and to achieve the solid positioning of some of them in high visibility areas. [16]

The selection of the sample among these publications guarantees the homogeneity and representativeness of the articles, since all the chosen journals follow the Vancouver standard recommendations, which includes the rhetorical organization of the articles in the superstructure *Introduction, Materials and methods, Results* and *Discussion* (IMRyD) and determines the ways of introducing other people's speech. Unlike other, more expository sections of the article, the *Discussion* is the most argumentative and speculative section: it is the space from which new knowledge and hypotheses emerge to be verified in future studies, [17] and the place where specialized readers look for those contents.

This is a non-probabilistic sample formed through reasoned criteria, that is, it contains only the number of cases sufficient to saturate the categories and analyze them in the theoretical framework that I have chosen, pragmalinguistics. Furthermore, in the case of specialized discourse, it was recommended that the size of the corpus be relatively small, as well as that the *corpus* be specifically designed to understand the particularities of the professional discourse that I wanted to study. [18, 19] The latter

It acquires special relevance in pragmalinguistic analyses, since the deep contextual dependence requires manual processing.

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RESULTS AND DISCUSSION

In the sample I was able to delimit 1,430 statements. 25% of them contained explicit procedures of intellectual attribution to others (specific people other than the author), evident by limited REFERENCES and by introductory phrases of second speeches. In the remaining 75% of the statements, the intellectual attribution behaved as follows: 5% of statements with explicit intellectual attribution to the author of the text, unequivocally identifiable by the referential use of the grammatical first person, 47% of statements with procedures attenuator of authorial presence (indirect) that could refer to the author of the article and 23% of statements where attribution is implicit. Figure 1 illustrates this distribution.

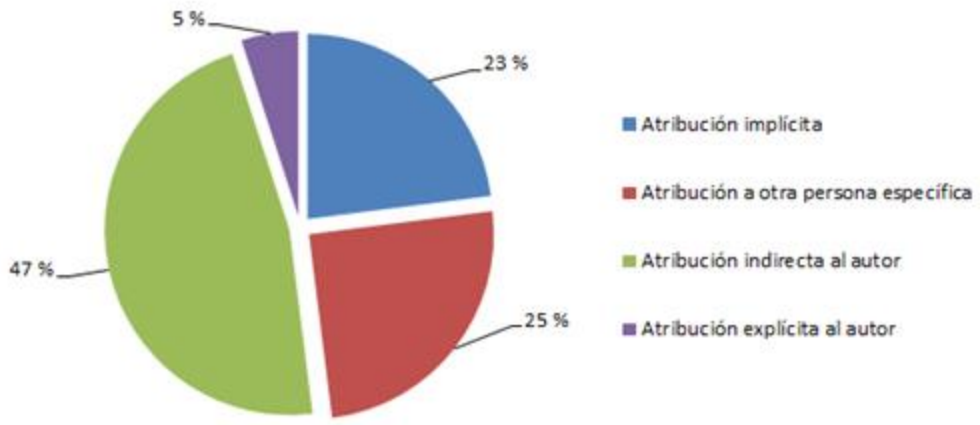

Fig. 1 General distribution of forms of intellectual attribution.

As seen in the image, only 30% of the statements contain assertions that are unquestionably attributable to specific people: 5% to the authors of the articles and 25% to other specific authors. This means that in 70% of the statements the intellectual attribution is ambiguous: in some statements it is attributable both to the author and to another specific person (attenuated marks) and in others both to the author and to universal conceptualizers such as the scientific community

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(absence of brands). The same happens with the assignment of agents in the case of verbal actions: in some statements it is evident that the agent of the verbal actions is the author or another specific person, while in others it is necessary to infer between several possibilities. In either case, agentivity or intellectual conceptualization, readers will have to make inferences and will not be able to limit themselves to literally decoding the statements.

In the following examples - created by me for this publication - , see the ambiguity introduced by indirect or attenuated marks and note that variant *a* is not always equivalent to variant *b* :

a. *In 2013, the first umbilical cord blood transplant was performed* (indirect brand: passive reflex construction).
b. *In 2013, I performed the first umbilical cord blood transplant* (explicit marking to the speaker: first person singular).
c. *In 2013, Dr. John Wagner performed the first umbilical cord blood transplant* (explicit marking to a specific person other than the speaker)

Figure 2 shows in a general way the distribution of linguistic procedures that attenuate authorial presence (indirect marks). Note that agentless passive constructions were the most frequent explicit -although indirect- procedure in the sample, followed at some distance by non-referential plurals, nominal style and syntactic impersonalization.

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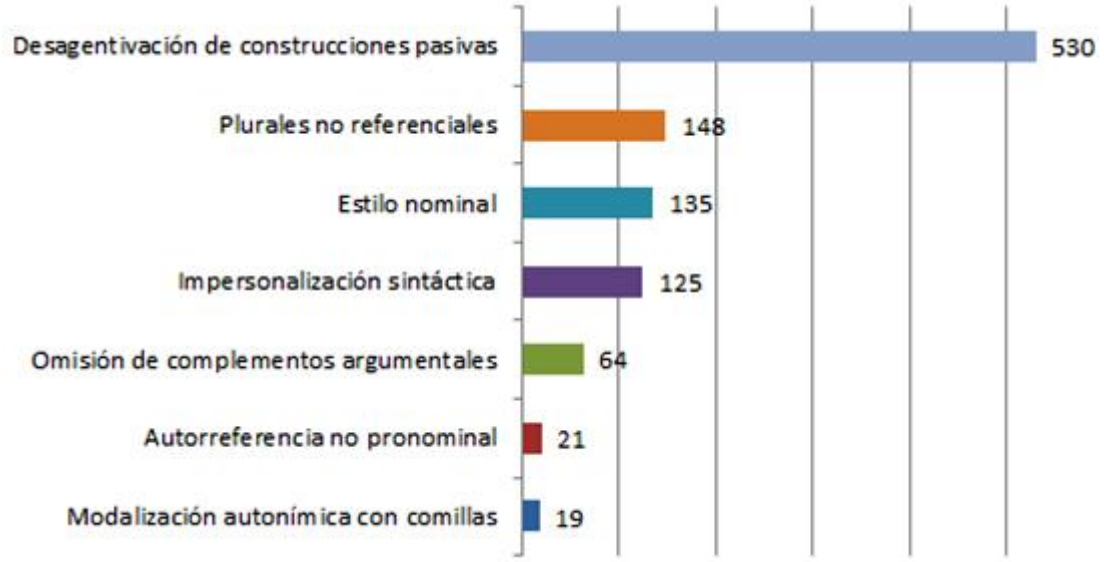

Fig. 2 Distribution of linguistic procedures that attenuate authorial presence.

The high frequency of unagentivated passive constructions is widely recognized as a syntactic characteristic of the scientific discourse of most of the 20th century, [20, 21] unlike what occurred in the 27th to 19th centuries, when the use of the active voice was favored. . [22, 23] Such a change in scientific rhetoric was due, among other reasons, to the neopositivist ideals of objectivity and neutrality, which found reflection in scientific discourse by hiding the human agent (transforming subjective experience into "facts"). . But, not only did the alleged neopositivist neutrality fall with the recognition that science is always a social product [24] - which means, among other things, that it is done by specific men, in specific historical and cultural moments -, but to At the end of the 20th century, passive constructions were highly criticized for reasons of clarity, precision, and conciseness. [22, 25, 26, 27 28]

Despite these criticisms and the recommendations to use the active voice, the results that I have obtained with this sample allow me to affirm that in the Cuban

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scientific rhetoric of the 21st century, at least in biomedicine, there have been no changes in this sense. In my opinion, this aspect requires attention from the directors and editors of scientific publications.

Note that passive constructions may not refer to the author of the text nor to another specific person, but rather to a generic or universal person. [29] This is also the case with most of the procedures shown in Figure 2, although to a different degree. For example, a statement like:

In reality, it is not known if the effect of the associated disease adds to the consequences of classic Chronic Inflammatory Demyelinating Polyneuropathy (CIDP) or if it is an entity with a different pathophysiology... [30]

It admits several interpretations:

- In reality, I do not *know* if the effect of the associated disease adds to the consequences of classic CIDP or if it is an entity with a different pathophysiology.
- In reality, *one (several) person(s) other than the author of the text does not know* if the effect of the associated disease adds to the consequences of classic CIDP or if it is an entity with a different pathophysiology.
- In reality, *the scientific community does not know* if the effect of the associated disease adds to the consequences of classic CIDP or if it is an entity with a different pathophysiology.

The possibility of inferring that the conceptualizer is universal increases in statements that are presented categorically as an "objectified subjective statement." [31] The enunciation is subjective in any case, but the speaker passes it

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off as objective by erasing all mention of the source of the discourse, which seems to emanate from a universal subject.

The categorical assertion implies that the speaker believes in what he says, since "it is not possible to say 'the cat is on the mat' and add 'but I don't believe it'. [32] However, it does not assume that the speaker is the conceptualizer of the assertion. one can say

A risk factor is a condition that increases the possibility of contracting a condition or certain illness [33]

without having been the person who formulated the definition; that is, the intellectual conceptualizer of it.

I argue that these statements that are presented categorically receive ambiguous interpretation: the propositional content is not necessarily associated with the speaker, but can be associated with a universal subject, the scientific community in the case of science. In my opinion, the possibility of a double reading is given not only by the formal features, but by the argumentative nature of some discursive genres (or sections of them), which implies the coexistence of personal beliefs and socially shared beliefs in areas of social practice that, in turn, impose certain communicative conventions and generate expectations in readers. In prototypically scientific texts, one of the conventions is the relativization of scientific assertions to mark the provisional nature of what is said, and one of the expectations is to find new positions, built on the basis of the knowledge achieved by others.

In the face of a categorical assertion, the reader might need a great deal of inferential effort to assign the propositions to a given source (the speaker or the scientific community), or might interpret the propositional conceptualizer as

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continuing to be the same one as was explicitly stated in the statement. closest statement, since intellectual attribution also works sequentially. [2)] It is also possible that you fail to differentiate between an individual belief and a socially shared belief [b] . In the end, the assertion merely implies that the speaker presents the propositional content as true, although he may not have complete knowledge of it [a] and it does not allow us to differentiate between what is his own, what belongs to others, and what is known (theoretical antecedents).

In another order of things, when comparing the two subcorpus −and despite the greater difficulty in distinguishing non-referential uses in collective authorship−, I noticed a different behavior of this item depending on the type of authorship, while the remaining forms that imply certain ambiguity they behaved in a similar way. The plurals coinciding with authorship were 1% in simple authorship and 12.3% in collective authorship, a difference that, in addition to other historical and theoretical reasons, allows me to assert that the avoidance of the first person singular does not It is related to scientific methodology or a way of expression that is essential to it, but rather to ideologies and sociocultural preconceptions according to which it is inappropriate to speak in the first person unless the speaker is a spokesperson for a group.

Note, furthermore, that the first person plural in articles of collective authorship certainly does not coincide with a real collective, but is used by the writer to construct a "moral person." [34] On the one hand, speech is radically individual; [35] on the other hand, *we* does not imply multiple *selves* , but rather "attaches to the *self* an indistinct globality of other people": [36] the dominant *self* that exists in all *of us* is the spokesperson of a group. That is, although *we* may appear as the

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inclusion of another or other authors ('me and the other author', 'me and my research colleagues'), because several people participated in the research or even in the writing of the report, physics and historically only one could prepare the final version, "close the document."

In general, all resources that could indicate intellectual attribution in an indirect (attenuated) way have at some point been associated with a lack of responsibility and a style that encourages plagiarism, incorrect citation, illegibility and contradictions. [37] Scientists themselves are beginning to demand a more open position, [38, 39] arguing that the depersonalized construction of an image of an "objective scientist" reduces the transparency of the texts, which are almost impossible to understand for non-specialists or novice scientists.

Even *Day* and *Gastell* , [27] in their obligatory work, exhort young scientists to renounce the false modesty of previous generations of scientists, and to avoid the passive voice, which they accuse of being imprecise. In his opinion - which I subscribe to - non-referential plurals should also be avoided, which are pretentious, verbose and imprecise: the authors... what authors?

Some organizations have called for a more committed style and regulate, among other things, that authors clearly delimit their contributions and differentiate them from those of other researchers, as well as that they avoid the use of third-person verbs and the passive voice when referring to own actions, which is even more important in experimental studies. [40, 41] However, despite criticism and recommendations, the avoidance of the grammatical first person persists and there are no shortage of complaints about articles where it seems that the animals used in

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the experiments are self-investigating or that patients are self-examining or examining each other. Yeah. [42]

As if that were not enough, since the end of the last century, Latour showed that the different way of presenting statements induces different questions in readers. [43] Statements presented without explicit marks from their producer divert attention from the conditions of production of the statement, which are appreciated by readers as sufficiently solid - and they trust what is asserted -, while statements that contain explicit references to its conditions of production production encourage readers to assess how solid or weak these are and to consider, therefore, the certainty of what is asserted. That is, in the former truth values prevail; In seconds the verification values are activated. It is up to scientists and society as a whole to establish the values of science in the 21st century: truth values or verification values?

CONCLUSIONS AND RECOMMENDATIONS

As has been noted, the self-ascription of the arguments to the speaker, preferably through the first grammatical person, provides clues of contextualization that may be necessary to differentiate between speculation (provisional judgment) and knowledge (intersubjective agreement) within the range of one's own expectations. from the scientific field. However, misgivings persist regarding the referential use of the grammatical first person, especially the singular, which I do not judge to be related to scientific methodology, but rather to discursive traditions, ideologies and sociocultural preconceptions according to which it is inappropriate to speak in the first person unless that whoever speaks is a spokesperson for a group.

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I recommend reviewing the editing rules that limit the use of the first person grammatical, since the authorship of an article does not presuppose the authorship of the arguments included in it. I do not suggest filling the text with *I's* , but rather authorizing its use and even preferring it when imperatives of science such as precision and transparency, reproducibility or legal responsibility for one's own are affected. The high proportion of statements issued by their authors without explicit intellectual attribution or with ambiguous means that I have detected in this sample of highly specialized publications deserves further investigation and editorial attention.

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a Although the verb of this agent does not always appear explicit in the statements, it underlies every statement. " *The earth is round"* presupposes " *(I say that) the earth is round* . " But, " *Peter answers me that he does not believe it"* presupposes " *(I say that) but Pedro answers me that he does not believe it* . " The examples correspond to AJ Greimas. [14]

b "Knowledge is what *we* consider true; Furthermore, we have certain reasons (criteria) to believe that it is true. Obviously, other people may believe that what *we* think we "know" are just beliefs, opinions, prejudices, fantasies, or even ideologies. Therefore, the concept of *knowledge* is relative and depends on the beliefs of the group, society or culture" [16] . Scientific knowledge, a form of factual belief, is that belief that we consider true because it has passed the scientific verification criteria, which does not imply that it is acultural and ahistorical.

c Grande Alija uses as an example the following phrase from Cortázar (*Rayuela*) [9] : "As soon as he smoothed her noema, her clemisus overwhelmed her and they fell into hydromurias, into wild amboria, into exasperating sustalos."

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Contemplating Linked Open Data in Cuba: A Reflective Perspective

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ABSTRACT

Cuba is carrying out an intensive introduction of information and communication technologies in society, with the development and deployment of information systems to increase the efficiency of various economic and social sectors. In this context, several government institutions are publishing data; However, these data are published using various formats and standards, without explicit relationships between them, with high dispersion and low data integration capacity. In this article we present some reflections on the need for the use of linked open data in Cuba and some challenges that affect the massive adoption of them in the country. We point out that the opening of linked open data in Cuba requires the use of adequate mechanisms related to an updated technological infrastructure, an adequate legal framework and an adequate synergy between producers and consumers of linked open data in the country.

Keywords: Linked data; semantic web; information management; information systems.

INTRODUCTION

Cuba is carrying out an intensive introduction of information and communication technologies (ICT) into society, through the development and deployment of

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information systems to increase the efficiency of various economic and social sectors. Aligned with the computerization process, important efforts are made to create and maintain the technological infrastructure that supports the massive flow of data in the national network and its interconnection with the international network.

This scenario fosters greater possibilities of interconnection, as well as an increase in the number of connected users and the generation and exchange of data in all spheres of society. Data constitute the fundamental raw material for decision-making at all levels, both local, regional and national; Hence, its proper management and processing constitute a priority and cannot be postponed task for the country.

In the last decade, an international movement called "Open Data" has emerged. The fundamental objectives of this movement are similar to other movements such as *Open Source* , *Open Science* and *Open Access* . According to *Marijn Janssen* and other authors,1 open data is defined as data without privacy restrictions, non-confidential data, which was produced with public funds and is available without restrictions on its use or distribution. Open data contributes to the construction of value-added products and services, taking into account the source of the data and its quality. Some of the most common types of open data are meteorological, geographic, statistical data, and even data from the health sector.

In Cuba there are currently various sources of data that have extraordinary value both for citizens and for government bodies and agencies, such as the National Office of Statistics and Information (http://www.one.cu), of the Ministry of Health. Public, among which is the National Medication Formulary

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(http://www.infomed.cu). There is also climatological data provided by the Institute of Meteorology and others, from entities such as the Spatial Data Infrastructure site (http://www.iderc.cu) or the Cuban Telecommunications Company through the Yellow Pages. (http://www.paginamarilla.cu). These data frequently fail to meet requirements that must characterize the openness of data so that they can be used, since they are published using different formats and standards, without explicit relationships between them, with high dispersion and low integration capacity at the data level. All of these problems affect their usability, both by humans and by computer systems. This article presents some reflections on the use of linked open data in Cuba and some challenges that limit the massive adoption of these in the country.

LINKED OPEN DATA

In 2006 , Linked Open Data emerged , an international initiative that effectively solves some of the open data problems mentioned above. The first Linked Open Data project on a planetary scale emerged in 2007 and was called DBPedia. [2] This project is conceived with the objective of transforming existing data on Wikipedia into a unique format that can be processed automatically by computers. Linked Open Data constitutes the basis on which the next generation of the Web is based, known as the semantic web. The goal of the semantic web is to extend the current web and turn it into a huge semantically interconnected database.

Unlike the web of documents, where hypertext are created between web pages, in the web of data or linked data, are established between pieces of data. The fundamental difference between these two approaches lies in the possibility of

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associating a semantic relationship between pieces of interconnected data. The semantics or meaning of the relationship is defined through the use of existing classes and properties in domain ontologies. Domain ontologies, as a form of knowledge representation, constitute an important element to provide the web with meaning, and improve the automatic processing of data both by humans and by computer algorithms.

The *World Wide Web Consortium* has defined a group of standards and technologies with the aim of promoting the growth of linked data on the web. The fundamental standards are: *Resource Description Framework* (RDF), *Ontology Web Language* (OWL) and *SPARQL Query Language* (SPARQL). RDF is a web resource description framework based on directed graphs. It is based on triplets that semantically describe the resources published on the web. Triplets are made up of three components: subject, predicate and object. The subject defines the URIs that identify the resources on the web. The predicate defines the classes and properties existing in domain ontologies and the object defines the value of the classes or properties defined in the predicate (Fig.). On the other hand, OWL is the ontological language generally used for the construction of domain ontologies. Finally, SPARQL is a query language similar to SQL, designed to query both RDF graphs and ontologies in OWL.

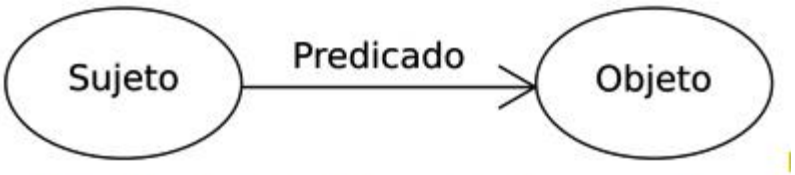

Fig. Estructura de las tripletas *Resource Description Framework* (RDF).

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In Cuba, important actions are being developed for the publication and use of linked open data. From the academic point of view, three international workshops have been held in Cuba with the aim of promoting scientific exchange between academics working in this area of research. The III International Semantic Web Workshop, held in the context of the XV International Information Congress INFO 2018, contributed to the socialization of various research works from Belgium, Cuba, Ecuador, Mexico and the United States.

LINKED OPEN DATA IN CUBA

SOME R&D PROJECTS THAT CURRENTLY USE THE PRINCIPLES OF LINKED OPEN DATA IN CUBA

Several Cuban projects have begun to adopt the principles of linked data based on the benefits they bring. The National Library of Cuba, together with the Central Library of the University of Havana and the Institute of History of Cuba, are engaged in a peculiar project that tries to convert old printed card catalogs into linked data. [3] This project was presented at the International Congress of the International Federation of Library Associations and Libraries (IFLA) held in the United States in August 2016, with a very good reception from the participants.

On the other hand, the VLIR RED Cuba project is being developed in Cuba. [4] This network seeks to create the Cuban virtual university. To this end, it strengthens the role of ICT in Cuban universities for the development of society. It is a VLIR project that has the objective of developing a national online virtual educational program that will share course material among all Cuban universities. This network is made up, at the same time, of a virtual educational network, a library information management system, a network of digital repositories and a Current

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Research Information Service (CRIS). Semantic interoperability mechanisms should contribute to the development of linked data and knowledge graphs. The state of the art of this network is still at the level of independent models for each platform, an aspect that must become a large system based on the paradigm of linked open data. The most complex problems are in the construction of an interoperability model, the assumption of Cuban regulations for these matters and the need for a regulatory framework for these activities in the country.

Another of the Cuban projects related to linked open data is the one referring to the conception and development of a Cuban Semantic Digital Library. [5] This project is the first of its kind in the country. It aims to develop a conceptual model and its corresponding implementation in a computer system that supports the extraction, publication and consumption of bibliographic data following the principles of linked open data. The proposed system is based on the integration of various heterogeneous and distributed data sources to then build value-added services for users. Among the implemented services is the detection service of scientific communities [6] and the disambiguation of the names of authors [7] Both services have been implemented using techniques and algorithms existing in the state of the art.

Although some important results have been obtained in terms of defining projects linked to the publication and use of linked open data in Cuba, the actions developed for the massive publication of linked open data in various sectors of society are still insufficient. The introduction and expansion of these technologies in Cuba are necessary, taking into account the opportunities and benefits they provide. Below are some of the existing challenges in the linked open data

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community in Cuba that, in the opinion of the authors, must be resolved in the short term to achieve significant takeoff in this topic in the country.

SOME CHALLENGES OF THE LINKED OPEN DATA COMMUNITY IN CUBA

Lack of a duly established regulatory framework for the opening of Linked Open Data and its proper use by third parties in Cuba

The Council of State of the Republic of Cuba approved Decree Law No. 281 in 2011, by virtue of which the principles of organization and operation of the government information system for the management and use of data were established.

With the approval of Decree Law 335, which aims to create, organize and operate the Public Registry System of the Republic of Cuba, efforts are directed to facilitate the integration of services for citizens and provide greater speed and efficiency to the data flow for the management purposes of the Public Administration itself. Although both legal provisions contribute to visualizing a superior governance environment in Electronic Government issues, in themselves they do not refer to open and linked data.

On February 28, 2017, the Council of Ministers approved the comprehensive policy for the computerization of Cuban society, which is the result of compliance with the Economic and Social Policy Guidelines that support the conceptualization of the Economic Model in full implementation and development. in the country. From the Policy and in correspondence with the study objectives we relate the following points to highlight:

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- Promote the computer applications industry, in accordance with the country's computerization priorities and aimed at strengthening the growth of our economy.

- Establish a national platform that encourages the generation of content and guarantees the possibility of socializing it, directing it to strengthen the identity and preserve the values of Cuban society, as well as to develop and modernize the technological infrastructure, paying special attention to the deployment of the band already the production of computer devices in Cuba.
- Preserve the improvement of the associated human capital and enhance citizens' access to the use of new technologies.
- Promote communication between different government institutions and procedures for the population.

Correspondingly, it is stated that there are three main objectives:

- Computerization to guarantee sustainable socioeconomic development, whether applying it both to computing itself as an industry, and to the other industries and productive sectors of society.
- Computerization for public administration that includes agile and effective processing for citizens, with growing virtualization and interoperability.
- The massive use of ICT in the development of social processes (science, education, health, leisure, among others) on a national and international scale.

It is then stated that it is a document that constitutes a programmatic basis to project a consistent and coherent social informatization based on the effective use of information and communications technologies, in addition to being the pivot to promote a public data policy. open and linked, given that it can be assured that

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there is an inextricable relationship between Electronic Government and the improvement of the processes of registration, collection, processing and delivery of public data with the support of ICT, since it provides speed and transparency to management. administrative and allows optimizing public services. At the same time, it is closely linked to anti-corruption strategies and empowerment for the exercise of auditing and social control. It is also part of the information ecosystem that nourishes the digital economy. [8]

This reality requires encouraging an open approach to data whose principles and requirements are legally established, so that it is possible to complain to the administration if it fails to comply with the duty to inform and, in addition, generate an environment of transparency in its management. , as well as promoting the creation of information sources that allow innovation and co-creation between public entities and citizens of new value-added services that generate well-being for all.

So, together with the adequate technological infrastructure and the improvement of the legal order, among the crucial problems to be resolved, there is the need to establish the mandatory nature of the publication of open data and the principles that govern it, with the aim of contributing to generating an open, regulated and systematic data ecosystem that allows, in turn, to link them with other open data and generate the value chain of enriched data for innovation and improved decision making.

To achieve this, a change of mentality is also required regarding public data and its availability for reuse to provide convergent public services, access to public information goods and increasing the operational efficiency of the government. All

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this also implies a comprehensive review of the management legislation, access and protection of information; adequately manage cultural resistance with an adequate support plan and the correct conduct of the project management and organizational change involved, as well as establish the instruments for impact evaluation. [9]

INSUFFICIENT SYNERGY BETWEEN THE SCIENTIFIC COMMUNITIES OF COMPUTER SCIENCES AND INFORMATION SCIENCES IN CUBA

The synergy between the scientific communities of Information Sciences and Computer Sciences is not declared in practice. The new developments of the VLIR project in Cuba, mentioned above, have attempted to add both communities of practice to the development of open data. For information sciences the problems are stronger than for computer sciences. The topics of the semantic web have quickly entered academic curricula with the *iSchool* trend , and few Cuban universities teach that the semantic web is more than metadata inserted in an RDF graph, where descriptive logic and mathematics play an essential role.

On the other hand, the computer science community is focused on the code without looking at the contributions that information science experts can make with the knowledge they have of documentary linguistics. The state of things shows major problems with standardization of metadata and the semantic web. We have remained with the flat description of resources and ossified in the 19th century; Our data today does not have the consistency or quality to use emerging standards. This increases interoperability problems; hence the need for the well-known synergies to achieve qualitative and quantitative development in the country.

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LACK OF A TECHNOLOGICAL INFRASTRUCTURE THAT FACILITATES THE PUBLICATION, EXCHANGE AND USE OF LINKED OPEN DATA IN CUBA

To achieve effective publication, exchange and use of open data in Cuba, it is necessary to have an adequate technological infrastructure that supports them. Linked open data infrastructures are not new. In various countries around the world there are already powerful infrastructures of this type. Two of the most important projects in this area are undoubtedly the open data infrastructure of the United Kingdom [10] and the open data infrastructure of the United States. [11] Both projects aim to provide an infrastructure for the publication and access of open data in various domains. The most common are data from healthcare, education, energy, and research and development data.

In the Latin American and Caribbean region there are various initiatives that publish open government data. The most important initiatives are: Open Data Brazil (http://dados.gov.br/) , Open Data Argentina (http://datos.gob.ar/), Open Data Chile (http://datos.gob. cl/), Open Data Peru (https://odpe.org), Mexican Open Data (https://datos.gob.mx/) and Ecuador Open Data (http://data.utpl.edu.ec/). With the exception of the Ecuadorian initiative, the rest of the open data platforms do not use the principles of linked open data.

In the Cuban context, there is still no similar initiative, where government and business institutions can publish and share in an integrated manner linked open data that contribute to the generation of value-added products and services for the Cuban population. However, Cuba has a spatial data infrastructure [12] whose function is to facilitate the creation and publication of data, metadata and

geographic services on the Web, to encourage the cartography industry in the country. Note that this geographic data infrastructure does not support the publication of open data from other domains. It also does not provide geographical data published following the principles of linked open data.

FINAL CONSIDERATIONS

Although slight progress has been made, the actions developed in Cuba for the publication and use of linked open data are still insufficient. The opening of linked open data requires the use of adequate mechanisms that include the existence of an updated technological infrastructure, an adequate regulatory framework and the synergy between the actors that produce and use the data in the country.

In Cuba, it is necessary to legally establish the process of opening data and the principles of advertising to generate an open, regulated and systematic data ecosystem that allows, in turn, to link them with other open data and generate the value chain of enriched data for innovation and better decision-making, promoting innovation and co-creation between public entities and citizens of new value-added services that generate well-being for all.

Cultural resistance must be adequately managed with an adequate support plan and the correct conduct of project management and organizational change involved in correspondence with the implementation of a Public Policy on Open and Linked Data. Additionally, establish the instruments for impact evaluation.

Conflict of interests

The authors declare that they have no conflicts of interest in carrying out the study.

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Mafimed Database: Exploring the Views of José Martí and Fidel Castro on Medical and Health Matters

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ABSTRACT

Databases are derived from the need to have synthesized information and thus minimize access times to data of thematic interest. In the field of medicine, searching and retrieving documentary material in medical information databases is a complex exercise that takes time, due to the saturation in the dissemination of scientific production. In Cuba, there are few initiatives in the form of resources that allow health professionals to obtain information about historical figures who, in their intellectual capacity, expressed criteria and reflections on medicine and health, such as José Martí Pérez *and* Fidel *Castro Ruz* . The objective of this article is to present the creation phases in the National Medical Library of the MaFiMed database, which compiles the thoughts of Martí and Fidel regarding medical and health issues.

Keywords: health thinking; bibliographic databases; medical libraries; information sciences.

INTRODUCTION

As computers grew in speed and capacity, several general-purpose database systems emerged; So by the mid-1960s, several of these systems had already

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entered commercial use. Interest in a standard began to grow, and *Charles Bachman* , author of one such product, Integrated Data Store (IDS), founded the Database Task Group within CODASYL (Conference on Data Systems Languages). Hence the term Databases (DB) was heard for the first time in 1963, at a symposium held in California, United States. It was defined as a set of related information that is grouped or structured. Therefore, it can be similar to a "warehouse" that allows us to store large amounts of information in an organized way, so that we can easily find and use it later. [1]

The expressions databases and data banks are frequently used synonymously. There are various definitions, depending on whether their technical characteristics or content are emphasized. For *Martínez de Sousa*, [a] documentary database is a "set of REFERENCES stored in electronic format and structured in such a way that they can be retrieved automatically." At the same time, the Internet has become an indispensable tool for carrying out research, since it facilitates the search for the most recent articles in all areas of knowledge. Information and communication technologies (ICT) bring together the entire set of techniques for data processing. This concept encompasses all those services based on the exchange of information. [3]

There are several types of DB according to formats. Bibliographic reference databases are derived from the need to have all the information synthesized, and thus minimize access times to information that, although frequently used, is not conveniently structured. This is due to the fact that the origin of the information is very varied (reports, various notes, newspapers, magazines, books, various web pages, among others). [4] There are also full-text databases that, in addition to

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REFERENCES, offer full access to documents such as: articles, books, legislation, standards, among others. In terms of content, DBs can be distinguished between thematic (whose objective is to collect publications on a specific scientific area such as Medicine, Chemistry, Physics) and multidisciplinary (which group together several scientific disciplines). [5]

BDs offer certain advantages such as: [6]

- *Compaction* (no need for bulky paper files).

- *Speed* (the machine can retrieve and update data faster than a human).

- *Less laborious work* (much of the work of carrying files by hand can be eliminated).

- *Current events* (whenever we need it, we will have accurate and updated information at our disposal).

In the field of medicine, the search and recovery of documentary material in medical information databases is a complex exercise that takes time, due to the saturation in the dissemination of scientific production that increases disproportionately every day in the Web. [7]

Searching for scientific medical information, through databases, is the fastest way to obtain REFERENCES on a specific topic in an optimal and efficient way. BDs specialized in health sciences provide useful documents to organize, develop and support research work, teaching and/or updating knowledge. As a result, platforms

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have been developed in charge of collecting information in databases, search engines and metasearch engines. [7] In this sense, there are already search engines and directories specialized in medical topics such as: BVS-Cuba (Virtual Health Library of Cuba) SciELO - Scientific Electronic Library Online (Scientific Electronic Library Online), PubMed-Medline , Dialnet , WorldWideScience .org , Google Scholar , Scholarpedia , Springer Link , RefSeek ; ScienceResearch.com , iSEEK Education , among others.

It should be noted that to build a database it is essential to have conceptual and functional knowledge that allows it to be managed as a tool at our service, and not as a barrier, [8] taking into account that it may be difficult for the user to know how to handle a search once The question was asked to the DB, but knowing what each element shown in the results refers to can be a determining factor when deciding which are the most relevant records. [9]

In Cuba, there are few initiatives to develop this type of online resource, which allows health professionals to obtain specialized information on the topics of medicine and health, addressed by intellectuals such as *José Martí Pérez* (1853-1895), a Cuban figure who In multiple aspects of knowledge, they place him as one of the most exceptional personalities worldwide. His intellectuality made him, despite not having knowledge of Medical Sciences, make comments on the process of health, illness and hygiene, [10] and of *Fidel Castro Ruz* (1926-2016), Cuban political leader, whose thought has been a strategic guide. for the development of Cuban medical education. Its permanent study constitutes an inexcusable premise for the achievement of quality and relevant training of Human Resources in Health, as he said in a speech given in 1966, on the occasion of the closing of the XII

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Medical and VII National Stomatological Congress: "The "Medicine is a science that is incessantly revolutionized, one that perhaps requires the most to be aware of everything that happens, one that most requires man's capacity for analysis and observation, one that can least tolerate routine." Both historical figures in their intellectual capacity expressed criteria and reflections on medicine and health. [eleven]

The National Medical Library (BMN) is a department of the National Information Center for Medical Sciences (INFOMED) and its mission is to offer scientific-technical information services to health professionals in Cuba. The technological level achieved in said institution has allowed the incorporation of online services such as: catalogues, thematic databases, access to digital documentary sources, as well as the design of public services, electronic products and technical processes in an automated manner. The objective of this article is to expose the phases of creation of a bibliographic database in the BMN, on the thoughts of Martí and Fidel regarding medical and health issues.

CREATION OF THE MAFIMED BIBLIOGRAPHICAL DATABASE

The MaFiMed BD emerged on November 25, 2017, as an initiative of the Public Services Area of the BMN, on the first anniversary of the physical disappearance of the Cuban leader Fidel Castro Ruz, and based on the information need expressed by users of the aforementioned institution, both students and specialists from the health network, for consulting documents that reflect the health perspective of these two figures of Cuban history: Martí and Fidel.

This new database is a resource where you can find REFERENCES with to the full text of documents that address the thoughts of Martí and Fidel on health and

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medicine issues. Its fundamental usefulness lies in grouping and recovering the research and reflections on health and medicine issues addressed by these two Cuban figures. The DB can be viewed from the website of the National Medical Library (BMN). The link appears in the catalog space: MaFiMed .

The processing of MaFiMed's bibliographic records uses the LILACS Methodology (Latin American and Caribbean Literature in Health Sciences), a component of the Virtual Health Library - consisting of standards, manuals, guides and applications, intended for the selection, description, document indexing and database generation—and the LILDBI-Web application, which is a tool or program developed in CISIS with a view to facilitating the work of bibliographic description and indexing, including the DeCS indexing module.

The DB is attended by an Information Sciences specialist from the Public Services Area of the BMN, who carries out a thorough search strategy in different national and international sources on the target topic of the DB and guarantees records with a high level. both retrospective and current. Figure 1 shows the search result under the keyword Martí, and figure 2 follows the same strategy, using the keyword Fidel.

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ISSN : 1533-1520

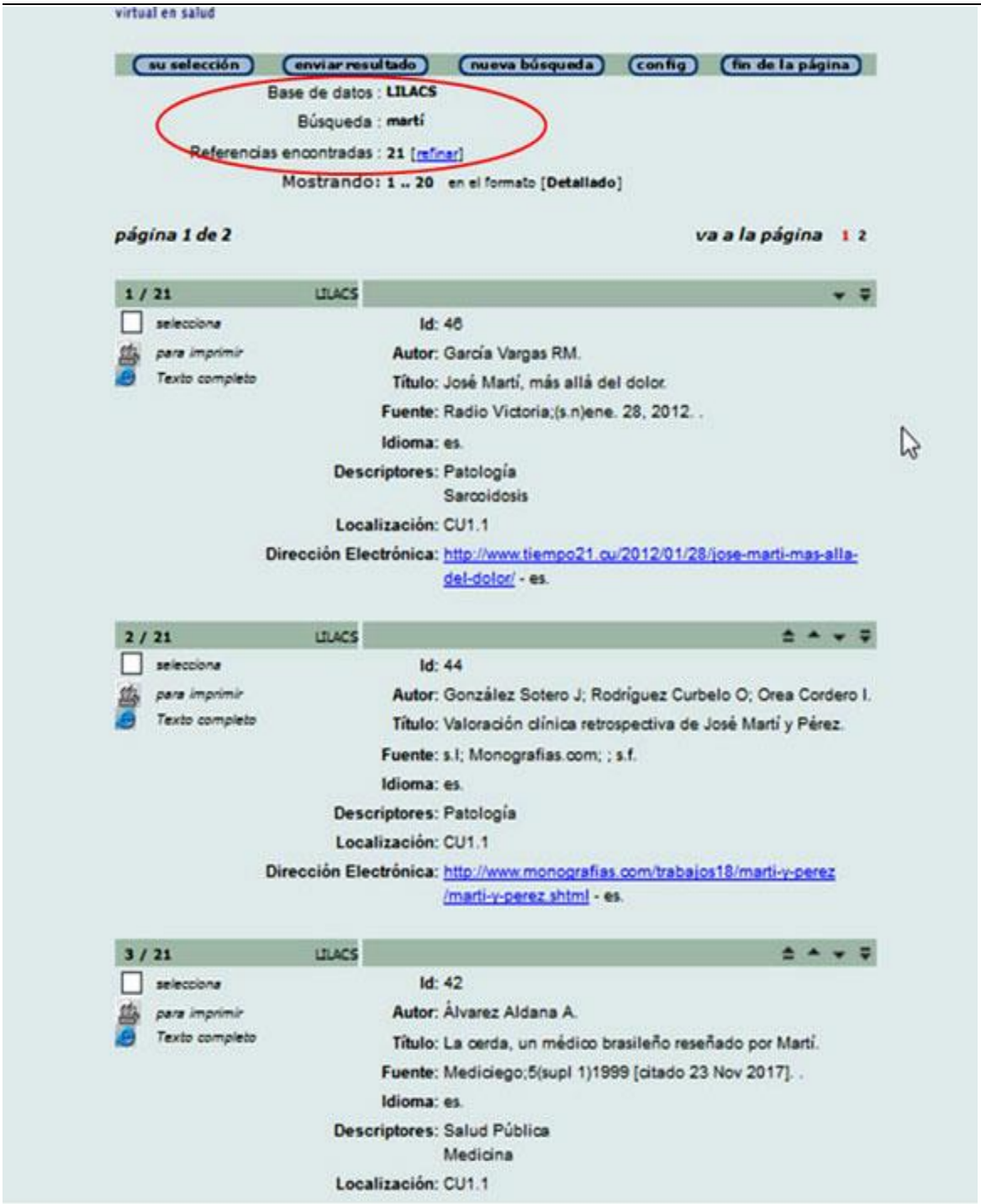

Fig. 1. Interfaz de los resultados de búsqueda bajo la palabra clave: Martí.

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ISSN : 1533-1520

Fig. 2. Interfaz de los resultados de búsqueda bajo la palabra clave: Fidel.

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ISSN : 1533-1520

The location of documents is carried out through a free form (option that allows searching by title words, abstract words and subject descriptors) and an advanced form (which allows searching by other fields or to specify the search field). .

STEPS TO INCLUDE CONTENT IN THE MAFIMED DATABASE

Below are the steps to follow to include content in the MaFiMed database, which is shown as a diagram in Figure 3 .

1. Search and collect medical and health information, without limit of year of publication, from the national and international scope, published in reliable sources, such as:

a) Sources of information about José Martí:

- Digital magazine in French Lettres de Cuba: http://www.lettresdecuba.cult.cu/
- "José Martí" Cultural Society: http://www.martiano.cult.cu/
- Portal of philosophy and Cuban thoughts of the 21st century: http://www.filosofia.cu
- Portal of Cuban literature: http://www.cubaliteraria.com
- Informative, political and cultural portal about Cuba: http://www.cuba.cu
- Site of the Ministry of Foreign Affairs of Cuba: http://www.cubaminrex.cu
- Site of the cultural heritage of Cuba/birthplace of José Martí: http://www.cnpc.cult.cu/cnpc/museos/martí
- Page of the "José Martí" Cultural Society at the University of Havana: http://www.uh.cu/centros/marti/
- Site of the Communist Party of Cuba: http://www.pcc.cu
- Cuban news agency site: http://www.ain.cu

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- Site of the National Union of Writers and Artists of Cuba: http://www.uneac.com/Marti/

- Site of the Union of Journalists of Cuba: http://www.cubaperiodistas.cu

- Granma Newspaper, official organ of the Central Committee of the Communist Party of Cuba : http://www.granma.cubaweb.cu/

- Cuban education portal: http://www.rimed.cu/

- Page of the José Martí Cultural Society at the University of Havana: http://www.uh.cu/centros/marti/directions_web.htm

- Bohemia Magazine : http://www.bohemia.cubaweb.cu/marti/

- Site of the Martiana Chair of Tourism in Holguín : http://www.unidaddealma.nh.co.cu

- First virtual newspaper of rural Ecuador : http://www.joyasdequito.com

- Universal encyclopedia: http: //www.wikipedia.or

- Anthology of great Hispanic poets: http://www.los-poetas.com

- Miguel de Cervantes virtual library : http://www.cervantesvirtual.com

- A site with a Latin American flavor : http://www.patriagrande.net/cuba

- Site of the José Martí International Institute of Journalism : http://www.ipjm.cu

- Site in English of solidarity with Cuba : http://www.amigosdecuba.com

- Marti Network: http://martianos.ning.com

- Portal of Guantanamo culture: http://www.gtmo.cult.cu/

- Masonic Lodge follower of Martí's ideals: http://www.logiajosemarti.com.ar

b) Sources of information about Fidel Castro:

- Portal Fidel soldier of ideas - http://www.fidelcastro.cu/es

- Higher Medical Education Magazine - http://www.ems.sld.cu

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- Habanera Magazine of Medical Sciences - http://www. revhabanera.sld.cu
- Cubadebate Portal - http://www.cubadebate.cu/
- Scielo Cuba Electronic Virtual Library - http://scielo.sld.cu/
- CUMED Database (Cuban Medical Bibliography) - http://iah.bmn.sld.cu/cgi-bin/wxis.exe/iah/?IsisScript=iah/iah.xis&lang=E&base=cumed
- Scientific Information Magazine - http://www.revinfcientifica.sld.cu
- CubaSi Portal - http://cubasi.cu/
- Radio Rebelde - http://www.radiorebelde.cu
- Bohemia Magazine - http://bohemia.cu/ciencia
- Site of the Communist Party of Cuba - http://www.pcc.cu

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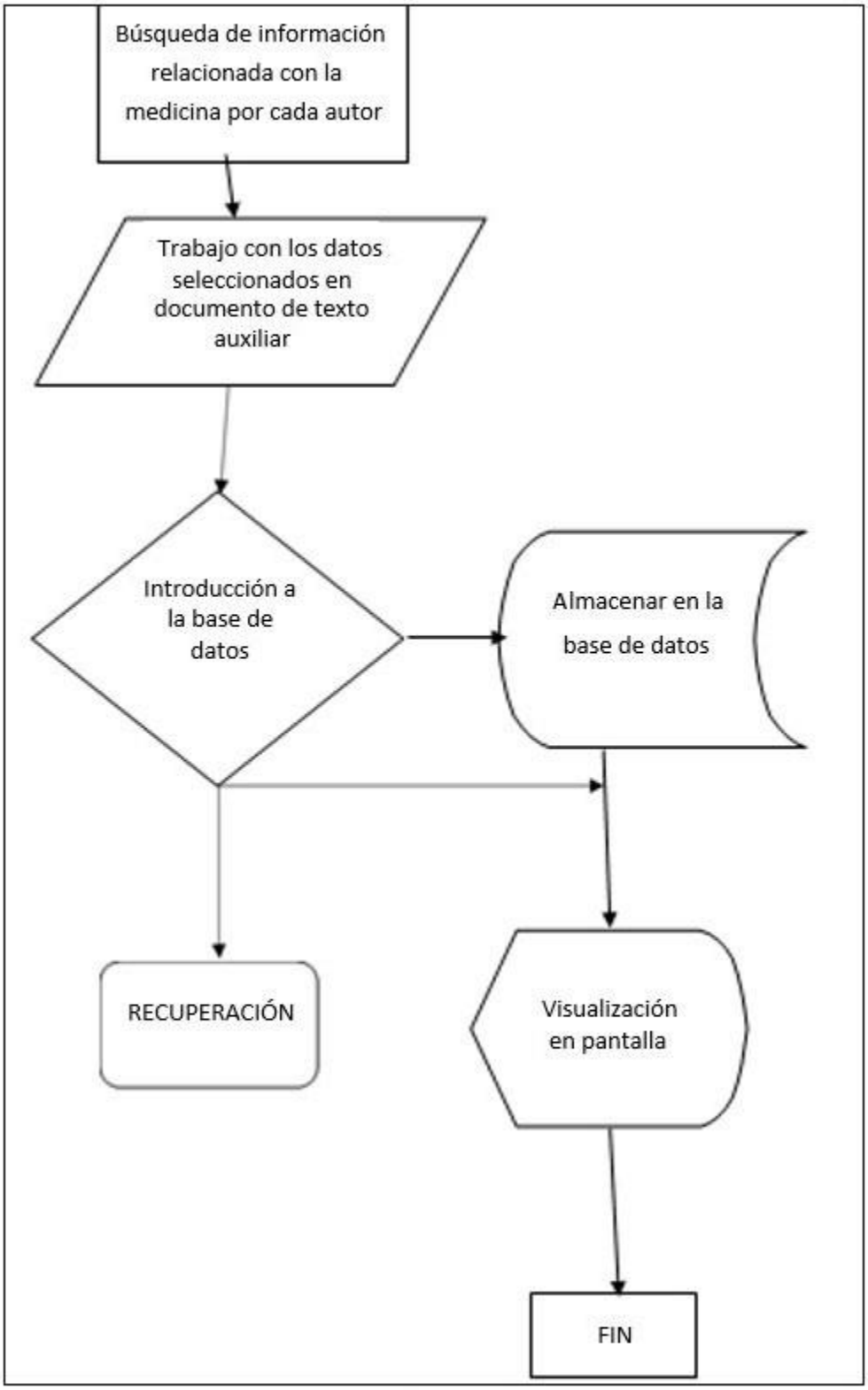

Fig. 3. Pasos para incluir contenidos en la Base de Datos MaFiMed.

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2. Search for medical news that has an author. They can be institutional authors.

3. Copy the email address where the information is found online.

3, Copy the date of publication and source (title of magazine, book or newspaper).

4 . Copy the ISSN or ISBN.

5. Complete the filling of the fields following the Lilacs methodology from the documentary session.

6. Carry out quality control by a specialist from the Public Services area of the BMN.

7. Validate records for updating the Database (Quality control of bibliographic description and indexing of database records)

8. Check database access.

MAFIMED BIBLIOGRAPHICAL DATABASE AVAILABLE TO USERS OF THE NATIONAL MEDICAL LIBRARY

The large amount of scientific information existing on the Internet means that the search for information is carried out using various tools available on the same network. Within these, databases can be differentiated. Among the most used by health users are REFERENCES, which allow a wide range of updated and global information. In the set of databases, MaFiMed is the first in the National Medical Library, belonging to the Health Institutions space, of the Infomed Portal.

To date, the MaFiMed database already has 53 records, with positive acceptance by users who state that they have resolved their need for information in a quick and orderly manner, following the search parameters by author, title, topic, subject and date. This shows that specialized libraries must maintain a culture of developing

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resources, such as bibliographic databases, that can satisfy the needs of users, always following the route of their demands and the analysis of the study of non-satisfaction, for which You must take into account that databases constitute, more than a tool or a technology, an organizational discipline and a work method.

Conflict of interests

The authors declare that there is no conflict of interest.

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