SELECTIA ŞI VALORIFICAREA RESURSELOR BIBLIOGRAFICE

SELECTION AND CAPITALIZATION (USE) OF BIBLIOGRAPHICAL RESOURCES

IN DOCTORAL RESEARCH. Professional ethics and deontology

Seminar under the advanced doctoral training program u.p.t. April 2022. Support for discussion.,

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Instead of preface

1. The material is synthesized in the form of ***ideas*** and will be discussed live
2. The material is based on several points of view:

- A General experience in developing scientific works (over 350 papers), experience in drafting works published later at conferences and congresses and in quotation magazines (over 150 published scientific papers: conference papers, revues, boock-chapters),

- Experience in developing materials specific to the training of young doctoral students, synthesized mainly in the chapter *"Research reports and scientific reports. Conception, drafting, presentation",* from book Structures and algorithms for the automatic management of processes, vol. 2, chap.16, Orizonturi Universitare Publishing House Timisoara, 2009 [3] (original in romanian ***"Rapoarte de cercetare şi referate ştiinţifice. Concepere, redactare, prezentare"***, din ***Structuri şi algoritmi pentru conducerea automată a proceselor***, vol. 2, cap.16, Ed. Orizonturi Universitare Timisoara, 2009 [3] (the content of this chapter can be obtained by e-mail upon request, in romanian)

- Own experience in the management of doctoral theses and – indirectly – resulting from participation in numerous "Doctoral Commissions" (over 50 in last 20. years),

- The didactic experience gained as holder of the Methodology course of ***Teaching the disciplines of Automatic Control and Computers*** (1997 – 2009), at Politehnica University Timisoara, in romanian (also 2 books in domain)

- Consultation of bibliographic sources specific to the field; the field is a very vast one, and – often – with heterogeneous presentation and interpretations, focused (1) on general theoretical approaches/ concepts, and (2) on studies, papers and websites (internet), accessible by keywords. Many materials are oriented towards the idea of research in the field of doctoral training (PhD),

Bibliographic references. Consulted Papers and recommended

a. Main references

[s-1]   St. Preitl, R.-E. Precup, Zs. Preitl: ***Structuri şi algoritmi pentru conducerea automată a proceselor***, vol. 2, cap.16: "Rapoarte de cercetare şi referate ştiinţifice. Concepere, redactare, prezentare", Ed. "Orizonturi Universitare" Timisoara, 2009

[s-2]   Al. Nichici (†): ***Selectarea şi valorificarea surselor informatice / bibliografice in cercetarea doctorală,*** Program de pregătire avansată a doctoranzilor U.P.T., Anul universitar 2014 – 2015

[s-3]   *DEX Online*, pentru terminologie corecta.

[s-4]   Preitl, St. ***Writing a Scientific Paper*** *,* Prelegere în cadrul Programelor Socrates, 2005 - 2012 la Obuda University, Budapest, Ungaria

[s-5]   Preitl, St. ***Writing a Technical Report****,* Prelegere în cadrul Programelor Socrates, 2005-2012 la Obuda University, Budapest, Ungaria

[s-6]   Preitl, St., Precup, R.-E. ***Elemente de metodica predării disciplinelor de automatică şi calculatoare****,* Editura Orizonturi Universitare, Timişoara, 1999

[s-7]   Al. Nichici (†): ***Lucrări ştiinţifice. Concepere, redactare, comunicare****,* Editura "Politehnica" Timişoara, 2008

[s-8]   N. Walliman, Reasearch Methods: The Basics, Taylor & Francis Group, 2011.

[s-9]   J. Feyen, How to Write a Winning Research Proposal, KU Leuven, 2013

[s-10]   R.J.Sternberg (Ed.), Handbook of Creativity, 1999, Cambridge University Press

[s-11]   Ghid practic privind etica în cercetarea stiintifică", Proiect cofinantat din fondul Social European, prin Programul Opertional "Devoltarea Capacitatii Administrative" in perioada 2007-2013, www.date-cdi.ro/sites/default/files//uploads/1. ghid..

[s-14]   Prof.dr.ing. Raluca STAN "Etica in cercetare. Buna conduita in activitatea de cercetare-dezvoltare" :www.tsocm.pub.ro/BursePostDoctoraleID54785/suportcurs.

[s-15]   * * * Report of EIRMA Workshop IV (2004), Stimulating creativity and innovation

[s-16]   ***" Codul de etica si deontologie profesionala al personalului din cadrul Institutului Astronomic Bucuresti,

b. Interesting sites called on the basis of keywords:

b.1. General sites

https://ro.wikipedia.org/wiki/Creativitate , http://www.detectareplagiat.ro/autoplagiatul.php , https://en.wikipedia.org/wiki/Non-Euclidean_geometry , https://en.wikipedia.org/wiki/Brainstorming , https://en.wikipedia.org/wiki/IMRAD https://en.wikipedia.org/wiki/Scientific_literature#Scientific_article

b. 2. Technical reports:

http://www.kevinboone.com/howto_report.html http://www.cs.umbc.edu/~sherman/Courses/documents/TR_how_to.html http://writing.colostate.edu/guides/documents/ce-trpt/pop2g.cfm http://www.sussex.ac.uk/engineering/1-3-11-2.html

b.3. Scientific reports

http://geog.arizona.edu/~comrie/geog230/report.htm http://www.unc.edu/depts/wcweb/handouts/lab_report_complete.html http://www.mhhe.com/biosci/genbio/maderinquiry/writing.html http://www.une.edu.au/tlc/aso/students/factsheets/science-reports.pdf http://people.msoe.edu/~tritt/bi102/WritingScientificReports.pdf

b.4. Doctoral reports:

http://www.cse.iitk.ac.in/users/braman/students/good-report.html http://www.postgrad_resources.btinternet.co.uk/student-resources04-reports.htm http://www.culture-communication.unimelb.edu.au/creative-writing/phd-progress.html

Shortly about the author:

https://scholar.google.ro/citations?user=Lru9rncAAAAJ&hl=ro https://scholar.google.ro/citations?view_op=view_org&hl=ro&org=17683800150163044019

Citations: Over 4870 independent citations Cumulative Science Citation Index (SCI) impact factor (December 2021). Other citations are also found in non-registred publication lists

Citation Index	All	Since 2016
Citations	4872	2224
h-index	45	24
i10-index	83	51

SELECTION AND CAPITALIZATION OF BIBLIOGRAPHIC RESOURCES IN DOCTORAL RESEARCH. PROFESSIONAL ETHICS AND DEONTOLOGY

The content of the seminar

Part I. Selection and capitalization of bibliographic resources in doctoral research.

1. What are the main problems faced by the candidate in doctoral studies? Issues of principle.
2. The steps to be taken in doctoral research (step by step). The logic of doctoral research ⇔ reflection in the content of the thesis.
3. Bibliographic information, collection, and processing. Starting points and points of view
4. How to capitalize on the accessible / accessed bibliografic resources in the realization and completion of the researches, of the thesis

Part II. Elements of professional ethics and deontology (remember aspect)

5. Professional ethics and deontology, self-plagiarism: where does plagiarism / self-plagiarism begin and end?

Part III. *Appendix*. Completion of the research through publications: general papers, research papers with concrete research results, thesis (informative presentation). How to elaborate a PhD report (scientific research report), a scientific thesis, and finally, the phd thesis

Part I. Selection and capitalization (use) of bibliographic resources in doctoral research

Chapter 1. *What are the main problems faced by a candidate in a doctoral studies? Issues of principle.*

Questions to start with. What does it consist of and what activities does a completed doctoral research involve?

a. ***When to "start our PhD" (to be reflected before enrolling for a PhD):***
- as a continuation of master studies, master research activity
- participation in previous researches in the team to which the doctoral supervisor belongs (work on topics / research grants) etc.,
- research needs/offer of the company they work for (topics to be solved); in this case together with the ***Doctoral Thesis Scientific Coordinator*** (***DThSC***)
- after preliminary discussions with the future of DThSC, when finding a "common research direction":
  - immediately,
  - in the first max. 3 - months,
  - with the necessary deepening in the thematic, following that the details will be adjusted along the way; here is manifested the role of continuous information in the field;
- After a large experience in research and development in the field, as a corollary of previous results,
- Other motivations.

b. ***Defining the research direction and the theme.*** Defining the main (and after then, detailed) targets to be followed; ways are usually made on the basis of a preliminary information (bibliographic study) that may have "origins in":
- Starting point: Successful dissertation (master), supporting the topic by the future / possibility Scientific Leadership Teacher (DThSC)
- Current state of art studies in the field, subdomain, subject; main resources: recent papers at congresses, thematic conferences, current scientific and technical achievements
- Involvement in well-defined activities at interested companies, and documentation / documentation supported by these companies
- "Milestone" type works (papers) in the approached field, these can be with appearances "long before" the beginning of the research

Additionally, previous, or/and permanent actual aspects of information in domain, contacting specialists with experience / tradition in the field (national, international) with target objectives:

(1) Representative works that cannot be found on the internet (support provided by Polytechnic University),

(2) Prospecting the possibilities to carry out specializations at universities abroad, especially those with which there are Collaboration Protocols, International Programs (for example ERASMUS +, ...), research conventions, etc.,

(3) Continuous prospecting of ideas by participating in seminars, symposia, conferences related to the strict field of the thesis (prospecting must seek to find keywords common to the field; to be adjusted along the way, in this case the role of continuous information on the field increases.

c. ***Conceptual issues.*** What are the objectives, resources, and programs of your own doctoral research?

- Defining, "drawing" the detailing and then "adjusting / redefining" them. This appears after a first period of research approach (max. 3 months), after the documentation of state of the art and detail, in strict collaboration with CD CS, after a study / specialization abroad, …:
- If necessary, redesign the objectives; the necessary readjustments can be made along the way
- Clear detailing of objectives and staging of the course (program); again, the necessary readjustments can be made along this "long way"
- Clarification of the offers of experimental equipment (own laboratories, national / international collaborations… Immediately after acceptance, in the first max. 3 - months, with the necessary deepening, following that the details will be adjusted along the way; to the objectives

d. **_Operational issues._** Such problems are those related to the favorable conduct of research

- How do the current results of the doctoral research relate to the requirements imposed on the future doctoral thesis?
- Specialization possibilities at universities abroad; personal relations of CDCS, of the University - Rel. International, personal relationships made by participating in previous European Programs are / may be essential ==> the requirement that the student has expressed a desire to participate in such programs.
- Possibility to collaborate with "local industry" (zonal): local, national, international research and development centers (companies, full-time company).

e. _Sources / resources for information_

- U.P. Timisoara "Library": technical and scientific reviews (magazines), various books in field,
- Internet, with limited value, partially restricted or - often – with paid access to papers (valuable papers, books, reports, publications of congresses, conferences, various seminars
- The collection of papers available at the research team, own works, or support for the research field
- Direct appeal of authors
- The possibilities of making contacts / specializations at universities abroad; the relations of the team, of the University - Rel. International, personal relationships made by participating in previous European Programs are / may be essential ==> the requirement that the student has expressed a desire to participate in such programs.
- Possibility to collaborate with the "local industry": local, national, international, and similar research and development centers.
- Others.

Chapter 2. *The steps to be taken in doctoral research (step by step). The logic of doctoral research ⇔ reflection in the content of the thesis.*

2.1. The "formal" course (steps) of a doctoral research.

a. Firstly, Defining the research direction and the theme of the doctoral thesis

Start <u>reading</u> about how to do it: *"learning-by-searching"*

Start <u>watching</u> how others do it: *"learning-by-interacting"*

Start <u>doing</u> it: *"learning-by-using".*

Finishing it: *The end!*

b. To detail the main (or detailed) ideas, within a research team, "specific approaches" to thesis elaboration are possible: the conversations with DThSC, with the researchers involved in-development requirements of the company and others.

2.2. What to expect when starting doctoral studies to complete a thesis

Before starting the doctoral studies, the question arises: "what to expect" in the 1- 2 - 3 (max. 5) years of training? ***SUCCESSES, FAILURES, ... BUT SURE A LOT OF WORK***
A possible diagram regarding the development of doctoral studies (after [s-2]) is presented in figure 2.1. The diagram is read inside out (diagram after [s-2], with the permission of the author)
Remarks: The diagram is an informative one and, when reading it, one can imagine one's own opinions and experiences. Some details will be presented also in paragraph 2.3.
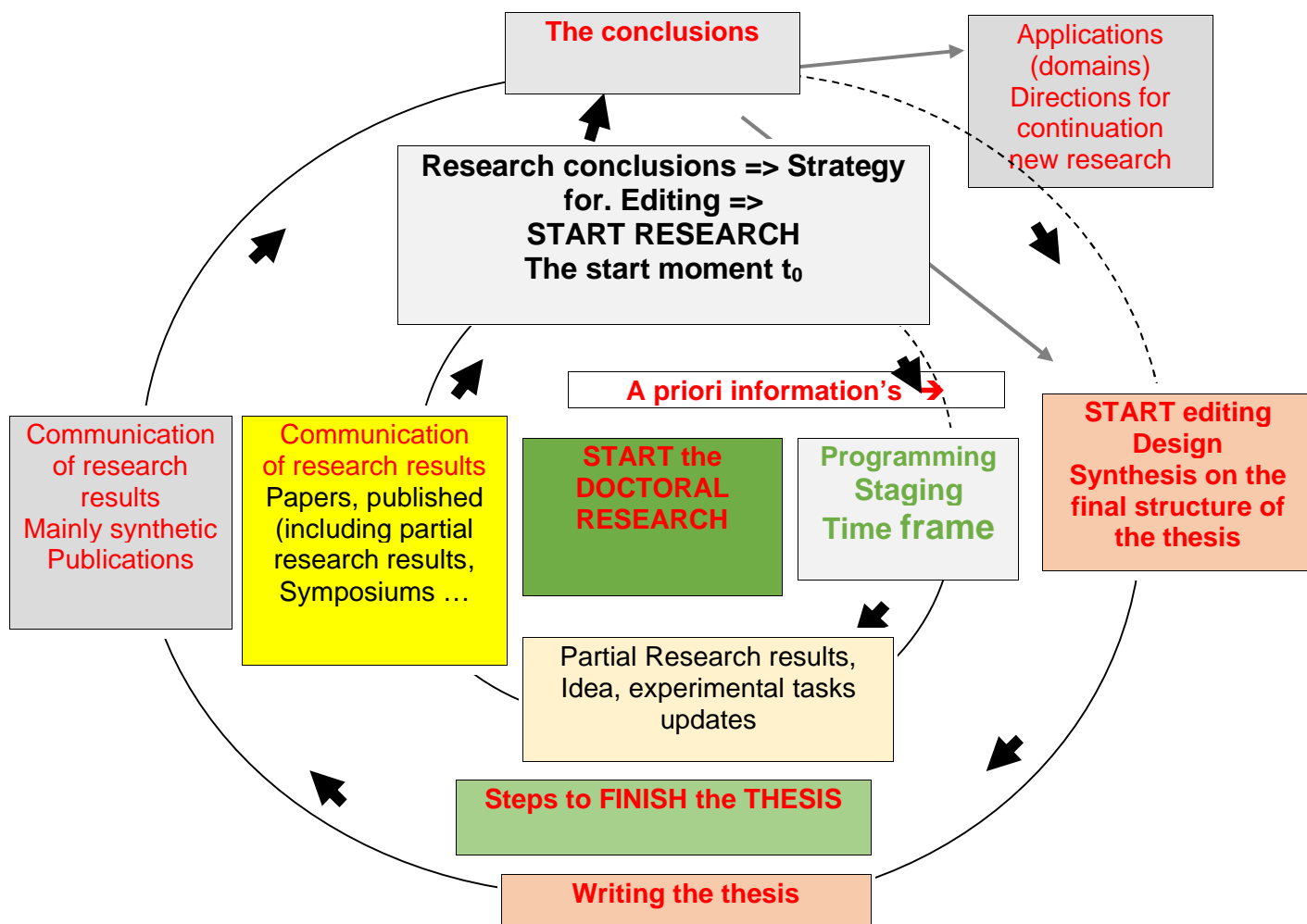

Figure 2.1. A possible diagram regarding the development of doctoral studies [s-2]

2.3. Doctoral research ⬅➡ Completion ⬅➡Content of doctoral thesis.

The evolution of the ideas related to the *RESEARCH, THE ELABORATION and THE FINALIZATION OF THE THESIS* can be subjective and were synthesized in the form of the diagram from fig.2.1. Related to this, are also for interest the information summarized in Table 2.1.

Table 2.1. The acquisition, consultation and study of the bibliography can be specific for each phase of the research / elaboration of the thesis.

Questions that can appear before, during the research and at the elaboration of the thesis	Reflecting the answers in the content of the thesis Highlights based on the use of bibliographic resources
A. The initial dilemmas: *(1) Why do I want to obtain the title of PhD (PhD in sciences, PhD ...) ⬅➡Why do I want to do doctoral research in the chosen field?* *The "correct" answer becomes one of the very strong motivating factors for completing the thesis!* *(2) The support of "research" is possible in the given organization (information, theoretical / experimental support?* *(3) Do I change direction or change my team or DThSC?* *(4) Vanity (somewhat current trend)????*	*In the **affirmative case**, of the motivated "local" realization (oriented towards the completion of the professional training) the dilemmas will find the motivated solution in the Introduction by arguing to support the research.* *⬅Many times, the plagiarism issues are available here.*
B. Further questions: *(1) What is known / assumed about the future content of the thesis, what is known in the field of the expected content?* *(2) What is not known about the content expected in the thesis, what will be new in the field of content?* *(3) What do I hope I can "discover" in the specific field of the thesis content?* *(4) How will I be able to discover (highlight) truths for new "contributions"?* *Answers must be detailed in the thesis chapters*	**Chapter 0**. Brief presentation of the research framework, thesis elaboration, thanks **Chapter. 1** of the theses: Bibliographic synthesis, "state of art" ⇔Solved problems ⇔ unsolved problems. Relevant issues No relevant issues, Own objectives. Connecting one's own objectives to the situation of the field **Chapter. 2**. of the thesis: defining the "object of the thesis", the theoretical support, covering through experiments the confirmation of the results. Simulation, interpretation methods, equipment, materials, and software **Chapter 3**. of the thesis … **Chapter 4**. of the thesis ….
C. Results, interpretations. *What "did I discover" what did I bring new, with what "novelty" did I contribute to the field?* *• What is the significance of the results obtained, how can they be included in the category of "contributions"?* *• What applications can be targeted through the research undertaken or possible recommendations for applications?* *• Representative experiments (sometimes even simulations), validations,* *• Clear evidence of the contribution to the development of knowledge?* *• What else should be done / what could be done?*	**Results:** *organizing them on "priorities" interconnections:* *a. theoretical once, new method, …* *b. experimental* *c. technological, manufacturing, new product (patent?)* *d. critical analysis of the results, self-analysis, discussions with leading CD. Discussions during seminars, symposia on topics, "home seminars".* *e. Connecting the results to your own publications* **Note:** *the research results and contributions must then be found in your own publications, including your doctoral thesis.*
D. Conclusions, Contributions, Research directions for Continuation of research / new research *• Representative experiments (sometimes even simulations), validations,* *• Clear evidence of the contribution to the development of knowledge?* *• What else should be done / what could be done?*	**Chapter x**. The conclusions **Chapter y.** Contributions, anchoring and grouping them in the thesis **Chapter z.** Directions for Continuation / new research **Note:** Usually the number of chapters must not exceed **7**

Chapter 3. *Bibliographic information,* collection, and processing*. Starting points and points of view*

a. *What are we really interested in the "so called bibliographic information" to elaborate and then complete the research, the doctoral research and, what do we follow the completion of the research?*

What interests must be used in different phases of research?

- ***PRIMARY INFORMATION REGARDING:*** Current scientifically available, technological, bibliographic databases (Calling, consultation, critical analysis, discussions, …)
- ***PRIMARY INFORMATION AND CRITICAL ANALYSIS OF THEM; REGARDING:*** Methods and techniques of experimental investigation, laboratory achievements, industrial achievements on which it could be extended (or available partially / totally?
- ***MATHEMATICAL MODELING OF PHENOMENA*** (if it necessary; applicable, see ANNEX with complements of mathematical modeling, on request): Modeling techniques, types of mathematical models specific to the field, simulation environments specific to the field dedicated to experimental and numerical checks, and other?

  Important remark: modeling / modeling technique and technology is often field specific

- ***EXTRACTION OF ESSENTIAL INFORMATION, ANALYSIS OF THIS INFORMATION IN VIEW OF FORMULATION OF SOME CONCEPTS, IDEAS, EXPERIMENTS, … INNOVATIVE FOR THE DEVELOPMENT OF OWN RESEARCH.***

Carrying out the research, finalizing the thesis, imposes the *NEED FOR CONTINUOUS AND UPDATED INFORMATION on the field.*

Attention: *Some time, here may also appear the problem of the need to publish the partial results to be (finally) not discovered.*

b. *Why do we need information, computer / bibliographic resources, → why continuous information?*

Information: the intrinsic information needs for the creation of the main index (base) of bibliographic references

Basic questions (who can appear as "childish questions"?). Why do we find out about the field

Out of curiosity?	In general, *YES*, but *IN THE CASE OF DOCTORAL STUDIES, WRONG*
To cover vulnerable areas of one's own training	*IN THE FIRST PHASE*, and after then *IN PROGRESS*
For defining / delimiting the topic of doctoral research area /sub area?	*IN THE FIRST PHASE*, and after then *IN PROGRESS*
For designing your own research program.	*IN THE FIRST PHASE*
To cover the researched results with already existing information in field:	*IN THE FIRST PHASE* and then *IN PROGRESS*
For the permanent updating of the current information related to the achievements of "other authors/researchers" related to the topic of the thesis	it is a *CONTINUOUS PROCESS* ←→ for justifying one's own results

Attention: own results, even partial, even of reduced extension but with contributions can / will / must be published (later they can be caught also in an extended article)

c. *What are the main applicable selection criteria of the bibliographic resources which we apply.*

Important aspect. There are several "categories" of bibliographic resources, for example

- *(1) "General information" type works, type of websites (must be strictly controlled).* They can be used only in certain phases of information and often "with great reservations"; they can be

complete; they can contain translations and interpretations with errors, minimal / minimized syntheses, based on old data, etc.

Their use is recommended in the primary phases or - for current suggestive figures, diagrams, …. Their calling and use are often with "free access" but their mention is recommended or strictly necessary, mandatory!

(2) Technical / Scientific Books of "high value, of permanent actuality" (mile-stone books or extended articles): - of the last generation or of the "mile-stone" type, besides which "it is not possible to pass". Their citation often proves a better anchorage to the studied field. However, it is good to remember that in the case of such works, with an age of over 20-25 years, the appeal must have a solid justification (mile-stone papers).

(3) Scientific articles. However, their scientific "value" is imposed by several considerations:
- Relevance and topicality on the thesis topic,
- The character of the paper, the content - theoretical, applied, oriented - and the place and year of publication:
    - strictly on the approached topic and the "residual actuality" of the content,
    - synthesis character, "residual actuality" of the content,
    - relevance in the specialized scientific community,
- The scientific level of the referred reference, proved by the place where it was presented, published or by the author / authors of the paper; magazine (the impact factor), the publishing house that published the paper, the language in which the paper was published.
- Authors, the frequency of citing the paper (impact factor) and context in which the paper is cited!

(4) Technical reports / scientific reports, detailed catalogs on some achievements: it is used especially with reference to achievements, experiments,

(5) "Varia", depending on the nature of the thesis, remarkable application….

Useful to remember. It is good (but not strictly necessarily) if the "age" of most appealed works (described, for example by the year of publication), of the cited publications, to be "from the last 5 - 7 (10) years" (not to exceed, as much as possible, 10 years) again, exceptions are possible (e. g. mile-stone items).

### d. How do we choose / select and examine bibliographic sources? How to sort / store selection results.

The selection of the bibliography / references must be made according to (a possible point of view):

- The topicality of the information results both from the prestige but also from the topicality of the magazine, paper **yes**
- The importance of information: it can be general but also oriented towards the topic of the thesis **yes**
- Intrinsic value of information with an impact on the thesis **yes.**
- Direct utility of information for one's own research concerns: **yes.**
- Direct utility for information and improvement concerns, selection
- but not necessarily **yes**,
- Direct utility for information on possible directions for further research: **yes**
- Source of information (including its age) **yes**.

The problem is a continuation of those from the previous paragraph, from another point of view.

The point of views (opinions) will be able to impact and at the level we will publish, as we will communicate, and finally, how we will capitalize on our own research results (for example in an invention brevet, in a patented product, ...).

The reference search strategy of the bibliography can be based on this time on accessing information on the Internet, conference sites, congresses, magazines, PDF works (see for example **UPT Library's**, relations of the doctoral school, ... (see Fig. 3.1).
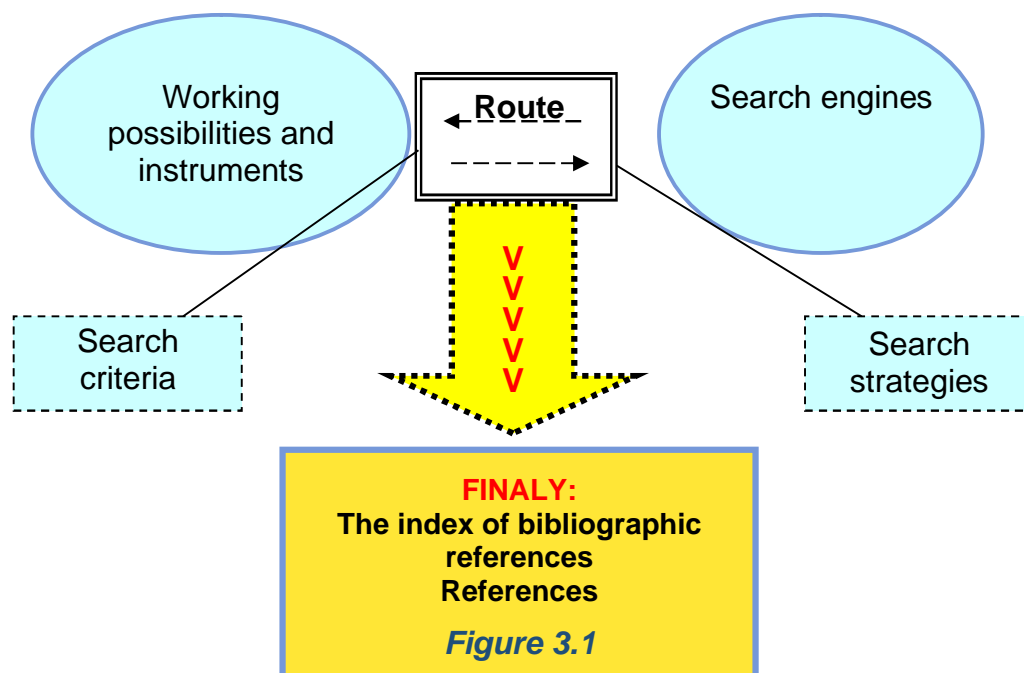
Figure 3.1

Some remarks relative to the diagram in fig. 3.1 (the figure has an informative character):

1. About a "correct" definition of the *search criteria* points of view are offered in the selection of the offer,

2. Choice of working tools and search engines: classics: yahoo, google, Wikipedia, ... others specific.

3. Carrying out the actual search:

   - based on keywords, first stage, then abstract / extended summary / separate reference in a publication

   - based on concrete information related to the topics of conferences, congresses, authors, recognized research teams, papers included in specific databases.

Main remarks:

- The U.P. Timisoara is a subscriber to dozens of valuable journals, defining for different scientific fields and which are widely accessible to doctoral students (collectives)

- Teachers have also other possibilities to obtain some essential papers (published for example at conferences, congresses, international seminars, ...)

e. Point of views in selecting the bibliography (in a first phase). The *bibliographic reference index* can be compiled following:

- based on a selective acquisition, depending on the importance, priority, and costs, of the previously identified documents

- structuring by fields of interest, preservation, and management of the set of purchased documents

- systematic, critical, and creative analysis of all available documents.

Pay attention to the "general" information's on the internet! It may be good only for general information, but its value is often questionable!

Dilemma: Blind confidence or skepticism about the information found? The question is good, but the answer is more complicated! Again, several aspects related to the source and the search result may appear:

- The context of the publication in which the paper appeared (book): language, authors and where and by whom the paper was published,
- The relevance of the "source" in the specific research field, the relevance that may result, in a first phase, and from the way in which the summary was formulated,
- The level of appreciation at which the source of information is located - respectively subsequently - at which / where we plan to publish,

Important aspects. The Selection must be "oriented" on the "topic addressed by the thesis" and consider those mentioned in the previous paragraph.

- Selection of basic works from other fields that support the object of research, for example those that support direct, indirect applications, and other aspects.

  Example, general technique, automatized (but not only) of driving processes, applied informatics; idem, mechatronics either the mechanical part, or the actuator part, or the automatic part, etc.

  Also, as example, the place of the task of the basic and collateral knowledges offered by the basic/collateral disciplines like physics and mathematics, applied informatics, information processing, signal processing, ...;

- Selection of basic works in their own field, based on which research can be approached (example from automation); often this knowledge does not appear in its true extent in the range of knowledge offered by the graduated specialization (neither in the master nor in the bachelors),
- Selection of "strict specialty" works:
  • Basic books, treatises, state of art works (will return with some details),
  • High level scientific papers (content, place of publication),
  • "State-of-the-art technical achievements in the researched field"
  • Others, specific point of views.

f. Archiving and / or processing information and knowledge? The way we keep track of information, what and how we retain (archive) information or more precisely catalogizing the information, is a personalized issue; efficient archiving is usually electronic, which can be:

- based on keywords or
- based on ideas related to the objectives of the thesis.

Cataloging and archiving information only in "his own memory" is valid only when the person in question is a "very orderly" one!

Attention: the "complete source data" and the authors' keywords (when it is applicable) are also retained.

For the doctoral thesis, the archiving must be correlated with the nature of the contained information and then, selected on the next chapters of the thesis in which it can prove its usefulness (see point 3 with the possible time and chapters organization of the thesis).
Attention: the "complete source of data's " and the authors, keywords. Details will be retained for when they are applicated.
Remark. In case of a doctoral thesis, the archiving must be correlated with the nature of the information contained and then selected on the chapters of a possible future thesis in which it can prove its usefulness (see point 3 with a possible structuring in time and on chapters of the thesis).

The efficient archiving of the information base is usually structured on one or more levels:
- may contain titles and abstracts, updatable word formats
- works in pdf format, electronic or traditional,
- books in electronic or traditional format,
- structuring based on personal experience

g. Approaching the resources and results of bibliographic information: cumulative study (1) or creative deepening; (2)?

Usually both aspects should be present.

(1) may represent the creation phase when "we enrich the information base"; but it may be shallower

(2) will address those strictly related to the problems to be solved.

The boundary between these two aspects is difficult to draw.

However, the way of structuring the archiving is / will be specific to the individual and must be as efficient as possible.

Somewhat natural question, how many works should be cited in the thesis? DEPENDS!

This aspect can be a subject for talk between PhD student and DThSC, depending of the thematic, contributions, level of the communicated solutions and other possible aspects.

Chapter 4. How can we capitalize the bibliographic accessible / accessed resources in the realization and completion of the research, of the doctoral thesis?

4.1. The selected, archived scientific basis must be used efficiently.

- The customized base of acquired bibliographic resources will create, a first – but permanently extensible - base for the "final" list of references; this must be in a strictly correlation with the "topics addressed"
- The personalized database of available data, information and knowledge will clearly outline the problem of the thesis (including possible feasible, stimulate experiments on models with different complexity, including mathematic simulation).
- The current state of knowledge in the field of the thesis must be able to clearly outline the topic of doctoral research and guide research, finalizations, contributions including publications,
- The conception of the thesis structure must be supported by the available information base; the structuring will then allow the efficient completion of the doctoral research program and will support the completion of the research and the doctoral thesis.

4.2. The bibliographical reference index must be followed by the following (note you must give the "complete exact source data"):

- Selective acquisition performed as mentioned above: depending on importance, priority and costs, previously identified documents
- Structure by areas (areas) of interest, storage, and management of the multitude of documents purchased
- Systematic, critical, and creative analysis of all available documents

4.3. Study of bibliography, of scientific works, and of the research reports

It is strongly influenced (dependent) by the basic level of knowledge on the field, the degree of information, the experience in documentation, evaluation, and interpretation. The same person will take over and process the information in the various phases of knowledge of the research field and of the "personal evolution"

Traps may appear in the information process; they may appear also in the process of elaborating scientific papers related to the doctoral thesis:

- An incorrect perception / understanding and interpretation of the scientific, theoretical information, and experiments, respectively of the measurement results, and of the conditions for the validation of the results
- A superficial, partial, incomplete interpretation of the working conditions, of the results and of the conclusions,
- Ignoring the results and the opinions of other researchers, unjustified simplification in the models used (without understanding the phenomenon itself)
- As result, the evaluation and then the improper drafting of the content of own results, and the elaboration of some false theories and of some false experiments!

4.4. Sorting the bibliography, the scientific works

There are situations (in PhD theses) which – can be well motivated – when the given bibliography is divided between the "general bibliography" and on "bibliography specific to the content of the different chapters" (see dissertations that require a resolution of the results between of 2 -3 distinct themes).

In this sense, you can "browse" the part III, which referring to Completion of research through publications: papers, papers, thesis (informative presentation).

Part II. Elements of professional ethics and deontology.

Chapter 5. *Professional ethics and deontology, plagiarism and self-plagiarism*

Note: *The chapter is based on a synthesis on ideas in the papers [s-11] – [s-16] and other works, whose consultation can be benefic for a young researcher. Some of discussed elements can be found in the course notes and will be the subject of discussion.*

5.1. General issues

a. Ethical aspects. The **Code of Ethics in Scientific Research** regulates the ethical principles specific to the field of research and development. These codes represent a set of principles and rules of mandatory moral and professional conduct, which must govern the activity of the staff working in the field of scientific research, technological development and innovation, in particular of the elaboration of the doctoral thesis.

The **Code of Ethics in Scientific Research** has the role of specifying (underline) the responsibilities and procedures necessary for the research and development activity to be carried out in accordance with the requirements and ethical norms accepted by the international scientific community.

b. Deontology. *Deonthology is the science of professional duties ("the theory of duties")" or the doctrine on the basis of which the "norms of conduct and ethical obligation of a profession" (including social behavior) are established/ established.*

"Legal deontology" establishes: "the set of debts inherent in the exercise of a professional activity», (the regulations of the profession). Note: The term "deontology" derives from the words of Greek origin: *deon* (duty) and l*ogos* (science).

Plagiarism and (partially) self-plagiarism must be discussed and framed in this context.

c. "Incorrect conduct in research". Is one of the causes that generates "the fabrication", falsification or plagiarism of the research results, the proposal, the quality of experimens and the conducting the experiments and / or analysis (biased, false) of the results of own research.

- *"Production of results"* - represents the "fraudulent manufacturing" of data and results, their recording and reporting.
- *"Falsification of results"* - represents the manipulation of research materials, equipment, or processes, changing or omitting data or results, etc. so that the research results are not presented correctly.
- *"Plagiarism"* - represents in essence, the "appropriation" (acquisition) of ideas, processes, results or expressions related to the ideas of another person without making the appropriate attribution.

Important aspect. The accusation of fraud in research does not include "honestly generated errors", which may be produced in research (at a given time) or the expression of differences of opinion ". These errors may be due to ignorance (entirely) of the subsequent temporal evolution of the field (see "history of nuclear physics" throughout the nineteenth and twentieth centuries).

d. The performance of "scientific research" (research and everything that derives from it, including the results) must be based on basic principles ("standards") of professional ethics and deontology, with "universal" validity:

(1) Honesty towards oneself and others: the requirement is the basis of all the rules whose details differ depending on the discipline, the professional behavior in science, namely the good scientific practice.

(2) Good practices are a set of ethical and professional rules that must be applied in order to carry out an action (particularly research). These rules are meant to:

- to ensure modes of action accepted/approved by the scientific community, i.e. integrity, meticulousness and accuracy in the conduct in research and presentation of results as well as in judging research and its results;

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- use confirmed data, research and evaluation methods in accordance with scientific criteria,
- to practice a correct personal openness in relation to scientific knowledge and the publication of research results.
- take into account the achievements of other researchers, giving due weight to these results in carrying out their own research and in publishing the results,

(3) Moral integrity in scientific research and in the publication of results.

Drawing the boundaries between misconduct and scientific fraud is a very difficult problem.

It is the role of the scientific community to establish appropriate codes of conduct as well as rules of procedure to prevent professional misconduct; the practice of fraud in research (including publication) corrupts science and deepens the public's distrust of society's values. In a summary "good conduct (professional ethics) in scientific research" refers to:

- compliance with the law;
- guaranteeing freedom in science, scientific research and education;
- compliance with the principles of good scientific practice,
- the assumption of responsibilities,

and to follow the observance of these "requirements", which have also become international (scientific) standards.

The fairness and honesty of the researcher must ensure the observance of the contributions of predecessors, competitors and partners and leads to the reduction of the number of errors and exaggerations.

d. The general standards of scientific research exclude (among others):

- concealing or removing unwanted results;
- contra-making results, replacing the results with fictitious data;
- deliberately distorted interpretation of the results and deformation of the conclusions;
- plagiarism of the results of others or publications;
- deliberately distorted presentation of the results of other researchers; failure to correctly assign paternity to a work;
- publication or repeated financing of the same results as elements of scientific novelty, without mentioning the initial source and/or with insignificant additions (self-plagiarism); disseminating one's own results in an irresponsible manner, with exaggerations and repetitions;
- failure to recognise the methodologies and results of other researchers as a source of information;
- non-recognition of own errors;
- preventing some researchers' research in their activity and favoring others.

Compliance with scientific standards is a guarantee of good conduct in scientific research.

5.2. Where does plagiarism begin and end? Plagiarism versus self-plagiarism.

The answer to this question follows directly from the content of the idea of "plagiarism".

- o **PLAGIARISM** is one of the "current" problems, always "possibly present" in the elaboration of scientific papers, textbooks, books and doctoral theses. In concrete terms, a plagiarism means:

  (http://www.detectareplagiat.ro/en/, http://www.detectareplagiat.ro/autoplagiatul.php, etc.,)

  - to copy in full a scientific work and to present it with the name of the author not of the true author but with the name of the one who copied it;

- to copy parts of a scientific work into another work, without specifying where that copied part comes from and to publish or present it with the name of the author of another person;

- to take a model, a formula, to change its notations, the names of variables, maintaining its meaning and to present it as the original work of the one who actually made only a transformation so that the initial model is not recognized;

- to take everything that can be taken from a book, without making changes: the structure of the book, formulas, examples, pictures, diagrams, definitions, entire pages of text, at most making a translation into another language, finally resulting in a book that the one who performed the cosmetic operations, assigns to himself as the author, without indicating in the bibliography the book from which the publication comes;

- to copy from a library a computer program and make some changes to make it unrecognizable; the names of variables, the names of labels and procedures are changed; sequences are replaced with equivalent ones, a translation is made in another programming language;

- to use an intellectual product without showing the source of origin, the real author; there are situations in which the use, even with the indication of the author is allowed only if the author accepts this, fact that the user must prove with documents or witnesses.

o **THE SELF-PLAGIARISM *(in Romanian AUTOPLAGIATUL)*.** SELF-PLAGIATING is a "relatively recent" phenomenon that has emerged recently as a "new threat to behavior in communicating results, in writing scientific papers.

The threat of "self-plagiarism" is a relatively new one and (often) with some ambiguity in the content (interpretation). Knowing the "phenomenon of self-plagiarism" through as many of its "valences" is necessary both for those who "practice" it and for those who are unjustly "attacked" by its practice, creating difficulties in being able to defend themselves.

Understanding and correctly interpreting the concept of "self-plagiarism" is very important in the first place:
- for those who publish frequently and work in academia,
- for the editors of specialized magazines.
- for those who evaluate the personal activity of a third person (evaluation commissions),

The phenomenon of *"Self-plagiarized"* is present in the academic environment, which is par excellence one in which - for the purpose of various justifications, in the form of increasing the visibility (personal) and the consistency of the scientific message (the positive desire, in itself) - the author resumes ideas and texts from his own works, in more extensive or restricted forms, often very little modified ....

The phenomenon of "self-plagiarism" is present in academia, which is par excellence one in which - for the purpose of various justifications, such as increasing the visibility (personal) and consistency of the scientific message (positive desire, in itself). The author resumes ideas and texts from his own works, in more extensive or restricted forms, often very little modified ...

The action is specific and because of the desire to achieve "an additional score" in the CV (as many works as possible), the target being to (pseudo) increase the appreciations relative to one's own performances.

In relation to doctoral theses, well-established examples of self-plagiarism or non-self-plagiarism may appear, such as references to previous publications, books, papers, papers, previous research reports that contain previously published results. So:

− there are authors who, after presenting their doctoral thesis (published in the "Politehnica" Publishing House) upon request, publish it in the form of a second book - with different extension and structure - and / or of one or more articles; in the case of valuable contributions, the problem may even be desirable. IT'S NOT ABOUT SELF-PLAGIATING

- there are authors who, after presenting a paper at a Congress, at a Conference, … send the paper for publication 1: 1 in a journal or book; in certain situations, the phenomenon can be interpreted as "auto plagiarism" and often such republications can be / are "rejected" based precisely on the idea of "multiple publication",

- frequently, however, there are similar, representative situations THAT CAN BE REMOVED from the accusation of auto plagiarism; they are of the form:
    - situations when the initial paper presented is requested to be published by a journal - with the consent of the conference organizers - with minimal extensions / modifications that occurred from the discussion of the paper at the congress / conference; usually when published this must / is highlighted but distinctly.
    - situations when the initial paper presented is requested to be published by a journal / collection of papers oriented towards an application… - with the consent of the conference organizers - without or with the requirement of modifications of at least 30 - 50%, usually extensions and specifications course of discussion of the paper at the respective congress / conference from the requirements of the extension of the presented results
    - derived achievements created starting from one or more previous scientific works and their transformations into an extended scientific work that represents an intellectual work of creation; the specification in the bibliography and the exact and detailed reference of the own works is strictly necessary (transparency on the previous achievements); other situations

Generally, one can speak responsibly of auto plagiarism - as academic fraud - only in the situation where there is no clear and indubitable transparency on the fact that the material presented has been previously exposed by the same author, in the same context, in the same form without that this republishing be the result of a dedicated invitation.

> **At this time, plagiarism - including auto plagiarism - can be easily detected by dedicated programs.**

> **If the plagiarism is proven, the deed entails the declassification of the perpetrator and even some steps to "punish" the plagiarist.**

5.3. The object of the "copyright" of the paternity over the "communicated results"

Intellectual creations in the scientific field (whatever the mode, or form of expression and independent of their value and destination) considered "original" refer mainly to:

- scientific products, written or oral communications, studies, university courses, projects, and scientific documentation.
- papers published in scientific and technical journals or presented at congresses, conferences, symposia as well as lectures at invited seminars
- computer programs.
- "Research products" expressed by procedures analogous to "photography" (multiplication).

Their use in works, doctoral these and similar (other works) as "original contributions" is normal for the author but - it will be noted - that they are subject to the principles of "copyright".

However, it should be mentioned that in the exercise of "copyright" may appear some permissiveness of "reproduction", without the consent of the author / owner, but this permissiveness must be analyzed in strict accordance with the rules of good professional conduct.

Appendix I. Completion of doctoral research through publications: doctoral reports, scientific paper, thesis (the content of the annex has an informative character)

How to elaborate a PhD report (scientific research report), a scientific paper, and finally, the doctoral thesis

Remark. 1. The theme was presented in previous years, with success. 2. The topic of this paragraph goes beyond the objectives of the seminar, but represents a natural continuation of the ideas related to the completion of a doctoral thesis; references can be completed on the basis of consulting the specialized works, for example in [s-1]: St. Preitl, R.-E. Precup, Zs. Preitl, *Structuri şi algoritmi pentru conducerea automată a proceselor*, vol. 2, cap.16, "*Rapoarte de cercetare şi referate ştiinţifice. Concepere, redactare, prezentare*", Edit. "Orizonturi Universitare", Timisoara, 2009.

A-I 1. Research reports. Reporting, presenting and capitalizing on research results.

Research reports can serve to communicate in a more extensive form the results (partial, grouped by ideas, themes, ...) of a research activity, studies and synthesis results related to a given topic. They may also be the subject of Grants / Research Contracts, Collaboration Contracts and similar. In a broader acceptance, in the category of research reports can be classified:

- Periodical research reports, referring to own researches in order to validate them by other specialists in the field (commissions),
- Reports to national, international seminars and conferences, as topics of discussion,
- Research reports linked to research grants,
- Scientific reports - but also technical reports - to offer support for further research (scientific and financial support),
- Scientific reports and doctoral reports can provide very useful information on the maturity in preparation as well as on the stage of preparation for researchers involved in a certain field of research

Notes. The Phd thesis – can be seen, in the end – and as a research report but with essential peculiarities (for example, through the original contributions made).

Synthesis scientific papers (synthesis papers) offer also contributions in a certain field or research topic (State-of-Art Reports / papers) etc.

Inviting to present works of this kind implies and proves a scientific recognition of the author.

Remark. From the point of view of the area of spread and addressability, the research reports (also seen as support for the researchers within a doctoral thesis) can have:

- extended area of movement (spread),
- restricted circulation area (circuit),
- internal research area (which can often be secreted).

The issue was also presented in a more extensive formulation and in [s-4], [s-5] (unpublished).

Content of research reports. The content of the research reports is not homogeneous. The research report is usually oriented towards a topic and has a specific structure, which will depend on several factors::

- the stated objectives of the report,
- the nature and requirements of the beneficiary of the report, of the assessor,
- the scientific field and the direct involvement of the technical aspect,
- the scientific maturity of the person who drafts the report, etc.

Since the research report constitutes a "synthesis material" that must present - in a "synthetic" or "in an extended" form - concrete research results, often the extension must be specified from the outset. In this context, several requirements must stand before the author of the report:

- The research and the research results and – on this basis – the content of the research report must be oriented on a well-defined topic. The extension of the theme may differ depending on the nature of the report; the objectives pursued must be well defined and then clarified by the report.
- The research, the research results and - on this basis - the content of the research report must be based on a prior bibliographic research as extensive as possible, which supports own results in correlation with previous research results obtained in the field.
- A well-founded research report can be drafted (written) only if the research is completed. Any subsequent additions may be made only for the purpose of completing or detailing aspects already dealt with.
- The extension or modification during the writing of the report (through new chapters, not about finishing or extending some ideas) should be treated as a special situation imposed by very recent results or suggested (expressly requested) by the beneficiary of the report.

- It must also be accepted the situation in which – determined by strict terms – the report (the doctoral report or even a dissertation thesis, in particular) does not cover from the beginning the entire topic concerned. Under these circumstances, through different ways the research results can be supplemented and even expanded later (for example, through Addendums or Appendixes).

- The reporting of these additions depends on several factors, often particular. For example, a PhD report may at some point be considered incomplete or with details and minuses that can later be reconsidered; the ideas stated in the report, included in the doctoral thesis (dissertation), can be completed later or in part omitted *without retention.*

A-I. 2. Scientific papers. Useful ideas for elaborating / preparing / writing a scientific paper.

There are many recommendations but also restrictions regarding the elaboration of a scientific paper (see the bibliography [S-1], [S-4], [S-5], [S-14] ...). In general, the recommendations and restrictions refer details related to:

- The maximum number of pages, which is also dependent on the type of work; for "regular" papers this number is an even number. At conferences, symposia the number of "regular" papers is limited to 8 pages, it is recommended that the last page be occupied at least. 1/2 or ¾

- Establishing the "team of authors",

- Choosing the title, the keywords and formulating the abstract

- ….

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