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IT Ecosystem in a Globalized World[1]

Olga Bernikova[1], Daria Frolova[2]

[1]Research Laboratory for Analysis and Modeling of Social Processes,
Faculty of Asian and African Studies
[2] Faculty of Psychology
St Petersburg State University, Russia

[1]bernikova@mail.ru, [2]frolova.daria@mail.ru

Abstract

IT Ecosystem plays a critical role in shaping industry growth and innovation. As technology continues to rapidly advance, the demand for skilled IT professionals is also growing. Companies are constantly looking for talent with experience in emerging technologies such as Artificial Intelligence, Cloud Computing, Cybersecurity and Data Science to remain competitive in the market. The article examines the essence of the concept of an IT ecosystem in the context of a globalized world. Examples of the need to intensify transdisciplinary communication to solve complex problems are given. The importance of language as a tool for ensuring the effectiveness of transdisciplinary communication is also emphasized. One of the advantages of a transdisciplinary approach in the IT environment is a deeper understanding of user needs. The integration of social and human sciences makes it possible not only to create technologies, but also to adapt them to the real needs of people, taking into account their values, preferences, and behavioral characteristics.

Keywords: *IT Ecosystem, transdisciplinarity, labor market, education, language, dialog.*

1. Introduction

Modern trends in the labor market demonstrate a significant change in the paradigm of intersectoral and transdisciplinary interaction in a changing reality. All the prospects for the development of the HR field are associated with transdisciplinary interaction and the development of transdisciplinary skills and competencies. The essence of the work of the future and partly of

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the present is the removal of rigid boundaries between spheres of professional activity.

This study continues and develops the theme of the research *From Disunity to Synergy: Transdisciplinarity in HR Trends* (Bernikova, 2024), presented during *Meeting of the International Association FOR Transdisciplinary Communication*.

It is no coincidence that the topic of this article was discussed during a session aimed at fostering transdisciplinary communication. Scientific biography of the authors and areas of their research correspond to the stated issues. Olga Bernikova's main specialization concerns Arabic language and Linguistics, Islamic Studies. Her PHD thesis were about a very narrow topic - the study of the phonetics of Arabian dialects. Then the intensive spread of IT has led to the need to implement computer technologies in research and education. As a result, the narrow topic of studying the distribution of a particular phoneme on the Arabian Peninsula led to the development of linguistic software products for the Arabic language processing. The latter involved joint work with IT specialists, and therefore the difficulty of transdisciplinary communication and the need to develop a language for transdisciplinary communication became obvious a long time ago.

PHD student in Psychology Daria Frolova in her turn has a bachelor's degree in Law and a Master's degree in Psychology. Currently, she is actively involved in the HR field and she is well aware of the main trends in the labor market and the requirements for modern specialists. Thus, the present paper intersects such fields as Linguistics, Jurisprudence, Linguistics, Arabic Studies, Psychology, Artificial Intelligence.

The IT Ecosystem, mentioned in the title of the presentation, is universal concept, because it passes through all the disciplines of the of the globalized world. The questions are *How prepared are these separate disciplines for this challenge? Is the universalization of language aimed at mutual*

understanding always good? Will this not entail the loss of what we call Local?

2. Modern Realities of the Labor Market

In a globalized world, the IT Ecosystem plays a critical role in connecting people, businesses and countries. This IT Ecosystem is a complex network consisting of various components such as technologies, organizations, individuals and resources that interact and influence each other in the information technology sector. Companies rely on IT infrastructure for communication, collaboration, automation and data analytics to enable efficiency and competitiveness.

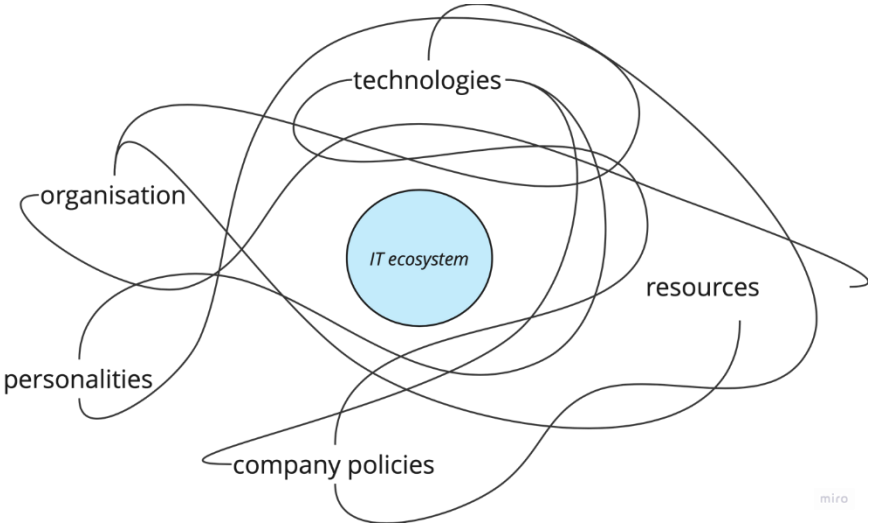

Figure 1: Components of IT Ecosystem

Thus, the monography *Cloud Computing: Concepts and Technologies* (Manvi & Shyam, 2021) describes the fundamentals of cloud computing and its application in business environments. As well as research on the

successful development, integration and creation of a cloud environment, which requires an understanding of its overall internal mechanics, architectural layers and models, as well as an understanding of the business and economic factors that result from the adoption and actual use of cloud services. Cloud computing and mobile technologies have further expanded the reach and capabilities of the IT Ecosystem, enabling remote work, e-commerce and seamless connectivity across borders. Cybersecurity is a growing concern in this interconnected environment, highlighting the need for robust measures to protect data and systems (see for example *A Comprehensive Review of Cyber Security Vulnerabilities, Threats, Attacks, and Solutions* (Aslan, 2023)*)*.

Transdisciplinary communication in IT plays a key role in the modern world, where complex problems require an integrated approach and the interaction of interdisciplinary teams. This type of communication involves collaboration between specialists in various fields of knowledge, such as programming, design, engineering, management and others, in order to solve complex problems and create innovative products.

One of the main reasons for the importance of transdisciplinary communication in the IT field is the need to combine the knowledge and experience of specialists in various fields to create comprehensive solutions. For example, when developing new software, it is necessary to take into account not only technical aspects, but also user needs, interface design, data security and other factors. Only through transdisciplinary communication can specialists effectively interact and take into account all aspects of the project (Sergis, 2023).

Besides that, transdisciplinary communication promotes innovation and development in the IT field. The exchange of knowledge and experience between specialists in various fields allows us to create unique products and services that meet current market needs. For example, a combination of the knowledge of programmers, designers and marketers can lead to the creation of a convenient and attractive product that will successfully compete in the market.

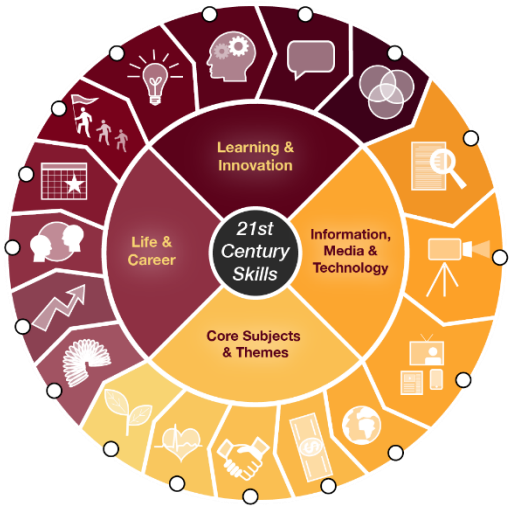

Figure 2: Transdisciplinary Skills (Transdisciplinary Skills, 2024)

Thus, transdisciplinary communication plays an important role in the IT field, ensuring effective interaction between specialists in various fields of knowledge, stimulating innovation and facilitating the creation of comprehensive solutions to complex problems. This approach is an integral part of modern software development and information technology in general.

In the book *Design Thinking: A Practical Guide* (Schindlholzer, 2020) the authors outline the basic methods of "design thinking" based on a transdisciplinary approach to problem solving. In their guide, they used

certain tools and methods to improve the interaction between representatives of different disciplines. Dealing with complex problems and challenges, both technical and social, a transdisciplinary approach is an essential tool for achieving new heights in the development of information technology.

Increasingly, researchers work in teams with scientists from other disciplines, along with stakeholders and partners from different sectors. This is especially true for large-scale and complex projects where the focus is on developing real solutions. In the research *Collaboration as an Interdisciplinary Team* the authors proposed several algorithms for high-quality interactions between all team members (Sixsmith, 2021).

Fundamental idea of transdisciplinarity is the integration of methods from various disciplines to solve complex problems. In the IT context, this means the necessity to provide effective dialogue which will combine technical knowledge with social sciences, humanities, design and other fields. This approach allows you to look at the problem from different angles, take into account many factors and find innovative solutions.

2. Language as a Medium for Transdisciplinary Communications

The effectiveness of transdisciplinary dialogue largely depends on the language of communication. In other words, it is the language that plays an important role in the import of information and communication. The issues that need to be discussed here lie in the field of language policy, psycholinguistics, ethnolinguistics, and reasoning about the global and local through the prism of language.

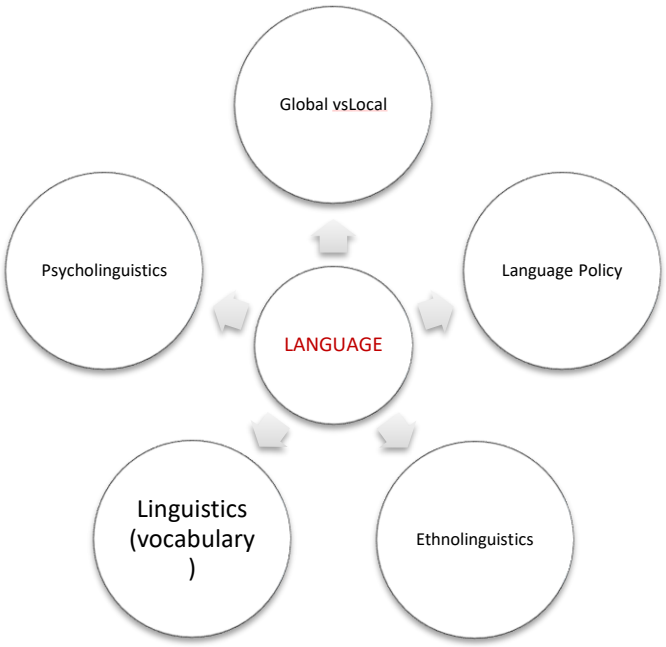

Figure 3: Language and Transdisciplinary Communications

Everything new is well forgotten old. The problem of finding a unified terminology to ensure successful communication has its roots in the distant past. An example is the formation of the Arabic grammatical tradition, dating back to the 7th century. The terminology and descriptions that the first grammarians used for various linguistic phenomena were based on the roots and words from the so-called general vocabulary of the language. In other words, grammarians used an empirical approach to creating terms, or rather, they took a known word and created a new special term on its basis. And this known word in a new terminological meaning was easily perceived by the audience, since it was not something new. In fact, this kind of situation later led to the fact that in world practice there are still fundamentally different approaches to describing the Arabic language. One of them is based on the methods laid down in the 7th century, others are more in line with the concepts of General Linguistics. Moreover, the methodology of these approaches is so different that in most cases it is not possible to find direct analogues of the term described by Arabic grammarians and modern linguists in relation to the same phenomenon.

The modern system of term formation in Arabic (including IT terminology) is largely based on the method of sensory perception of the described phenomenon. This is obvious in the example of computer vocabulary, which is based on English. Along with the method of tracing terms and concepts from English, in all cases the vocabulary of the basic composition of the Arabic language is used, which in one way or another describes this concept. You don't have to look far for examples. Let's take the word *computer*, in Arabic it can be transmitted by tracing - that is, *computer*, but at the same time there is also the word *hassub*, formed from the root *hasab* 'to count'.

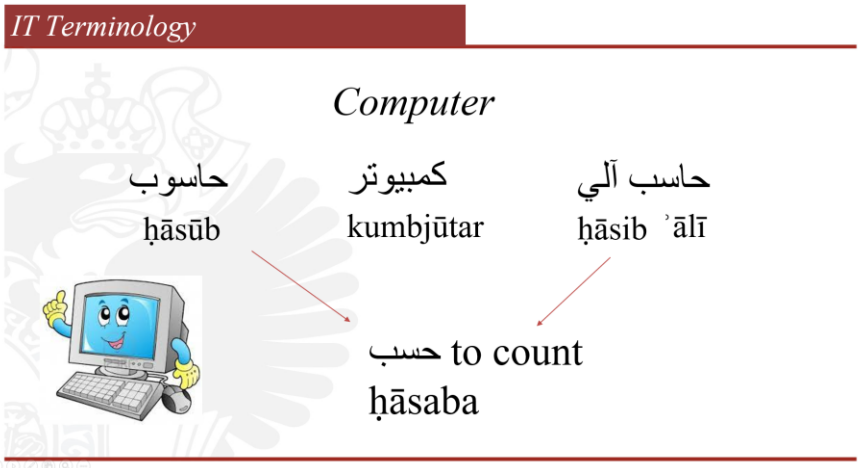

Figure 4: Vocabulary and transdisciplinary communications

This kind of phenomenon is, to a greater or lesser extent, characteristic not only of the Arabic language. Therefore, some aspects of simplifying transdisciplinary dialogue have already been shaped by history, but it is obvious that they require development. Despite the relevance of the issues discussed today, it is worth noting that you can find many examples of successful transdisciplinary communication.

In preparing this research as a case study, we analyzed a whole series of articles devoted to the processing of text in Arabic and to the Computational Linguistics. For a dozen works, we built word clouds with their frequency

labels. To be honest, before conducting this experiment, we assumed that we would draw a conclusion that the authors used a large number of highly specialized words and phrases. But the results obtained indicate the opposite - the language of these studies is quite clear and is focused specifically on transdisciplinary communication. On the slides you see word clouds from various articles, which demonstrate that the frequency vocabulary used is not of a narrow disciplinary nature.

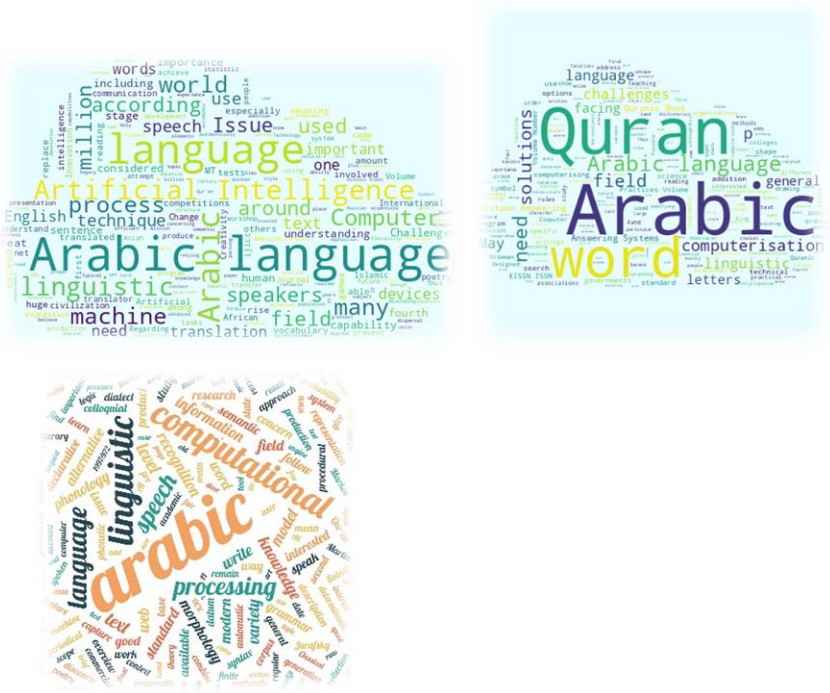

Figure 3: Word clouds: Arabic and Computational Linguistics

The topic mentioned in the previous section intersects with issues that we discussed several years ago when writing a material for collaborative work *Rigor and Inter-Disciplinary Communication: Intellectual Perspectives from Different Disciplinary and Inter-Disciplinary Fields* (Callaos N. , Rigor and Inter-Disciplinary Communication: Intellectual Perspectives from Different Disciplinary and Inter-Disciplinary Fields, 2020), noting the need to develop new methodology when conducting such kind of research. It is gratifying to note that this kind of methodology is being created before our eyes. Thus,

works devoted to computational linguistics in relation to the Arabic language reflect the principles of each of the disciplines, and even the frequency of terms related to linguistics, correlates with the number of so-called technical terms. In other words, the trends in the development of interdisciplinary and transdisciplinary communication are obvious.

Another example of fairly successful trends in the development of interdisciplinary dialogue concerns research activity. If three or four years ago most conferences on the Arabic language covered mainly traditional issues of research and teaching of the Arabic language, now issues related to the Arabic language and IT are an integral topic of many reports. An example is the annual major Arabic language conference held by the British Association of Teachers of Arabic (British Association of Teachers of Arabic, 2024) (British Association of Teachers of Arabic, 2024). Below you see the names of sections that are, to one degree or another, related to transdisciplinary communication.

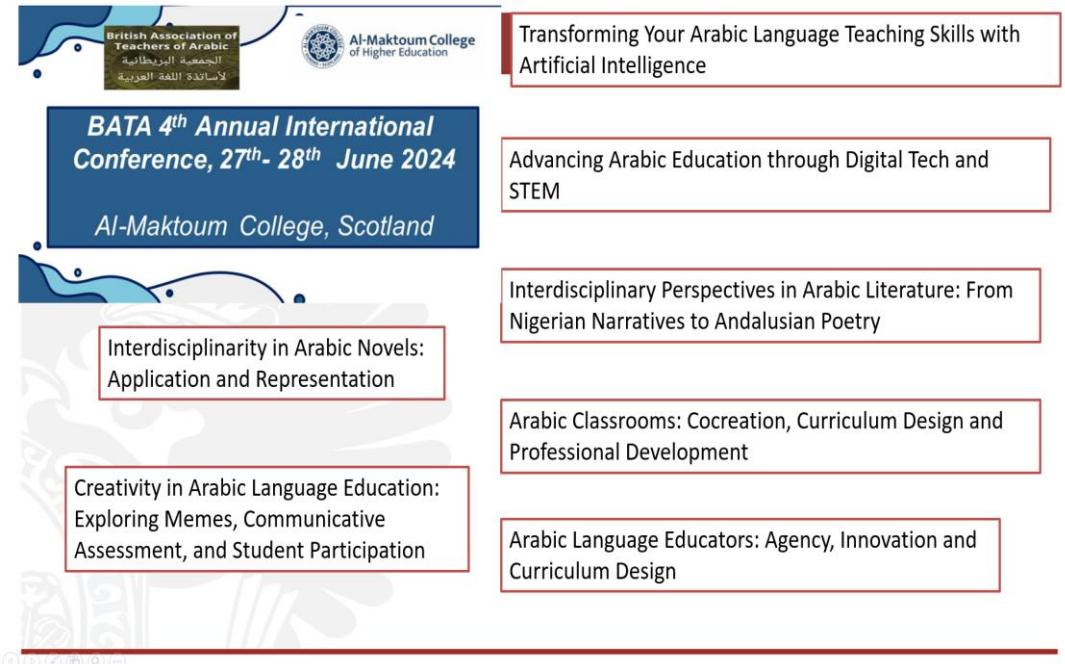

Figure 4: Arabic Teaching and Research: key topics

3. Conclusions

The trends discussed above do not fully reflect the real picture of the world and measures are needed aimed at developing transdisciplinary communication, which is primarily due to the intensive integration of the IT Ecosystem into all spheres of our lives. But in order to implement these measures, it is necessary to clearly answer the following questions:

Will universal dialogue reduce the relevance and quality of research within a particular discipline? Should transdisciplinary communication involve some kind of language policy? Will the optimal correlation between the Local and the Global be maintained with the intensification of transdisciplinary communication?

This issue is especially relevant in the IT Ecosystem, which in the modern global world communicates in English. *Should communication be carried out exclusively in English or cover various languages?* Another problem arises here - the description of the same object will be empirically different for representatives of different cultures. If you move too far from a single term and describe phenomena empirically, you may lose the understanding that we are talking about the same subject.

The best answer to all the questions is the need to maintain balance. It is important to preserve fundamental scientific research, but at the same time, an important skill for any scientist and specialist is the ability to conduct transdisciplinary communication. In this regard, the most important role is played by education and, first of all, universities, whose goal is to create a universal environment for communications.

The opportunity to provide for the combination of mathematicians and linguists within the framework of practical assignments or student startups, for example, to create a linguistic software solution, allows you to develop

transdisciplinary communication skills during the learning process. Projects of this kind exist, but are not yet widespread enough.

In the context of the IT Ecosystem for humanists, it is necessary to discuss newly emerging solutions. Thus, when preparing a translator, it is important to analyze, together with students, the operating features of existing machine translation programs and generative models.

The IT Ecosystem's emphasis on transdisciplinary communication creates new challenges for education. By embracing transdisciplinary approaches, encouraging collaboration, and a culture of lifelong learning, educational institutions can prepare people for success in a job market that values transferable skills and adaptability. Adapting to these new demands is essential to ensuring graduates are prepared to thrive in the ever-changing landscape of technology industries.

In the digital age, the IT Ecosystem has permeated every aspect of the global world, introducing many specialized terms. However, as these terms become mainstream, many people lack a full understanding of their meanings. This knowledge gap highlights the importance of transdisciplinary communication, where different fields collaborate to bridge the gap between complex IT concepts and public understanding. Transdisciplinary communication improves digital literacy and enable people to navigate the evolving IT Ecosystem with confidence and awareness.

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