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DIALOGUE PRAXOLOGY: THE ADVANTAGES OF THE COMMUNICATION WITH AN AUTOMATED DIALOGUE SYSTEM

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The paper is focused around the problem of communicative interaction. The subject of the research is a dialogue framework with various participants, ranging from human beings to free on-line chat bots. The main experiment was conducted in 3 stages, each stage accompanied by a careful answer to a questionnaire. Our findings have proven the initial hypothesis that present-day students welcome the idea of interaction with chat bots. On top of that, they try to avoid heart-to-heart talks with human-beings whose scenarios are hard to predict. The interaction with on-line chat bots provides a stable motivation to learn and must be viewed as an effective tool for multiple repetition of linguistic units and a safe environment for communicative games activities, ranging from love talk to threatening. This trend can be accounted for current postmodernity tendency to live and play in artificial imaginary spaces. However, the traditional dialogue is not dead but is rather undergoing a transformational stage to polylogue with an indefinite number of participants.

Keywords: dialogue, dialog, bot, interaction, artificial intelligence, motivation, ecosystem

1. INTRODUCTION

The problem of a dialogue is multifarious and offers quite a number of important outcomes. Dialogues in digital age are of particular interest. In the past we were primarily interested in dialogue as an intimate affair, concentrated around a limited number of participants. Nowadays we deal with a complicated issue of a dialogue within a digital social media system where the numbers of participants are potentially unlimited. Thus, the importance of dialogue interaction is even greater and of a more challenging nature.

The idea of a dialogue is deeply rooted in modern philosophy and science. In his spectacular article A. Riggio rightfully assumes that currently we are going through a dialogue stage between philosophy and modern science, stressing the opinion ''whether philosophy as a discipline should be an assistant, critic, or master over science, and what particular ways philosophy could articulate these roles'' (Riggio, 2016). This battlefield between old traditional forms of knowledge and new technologically-centred digital science-focused environments reflect the central argument of our paper: the dialogue as a framework of traditional interaction between human-beings, in which verbal and non-verbal markers come in the form of an intricate interplay, dating back to the times of Socrates and Plato vs. the dialogue with artificial intelligence bots where the role of interaction is diminished to a mere form of messages' exchange. Traditional philosophical knowledge was

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primarely concerned with the ontology and the principle of a dialogue. New philosophical dimensions describe dialogues from **praxeological** viewpoint: the dialogue and its role in social inheritance, as well as people management and education. Analysing the challenge of philosophy and its possible outcomes, specified by A. Riggio in the lines above, it becomes evident that philosophy is ubiquitous, especially in the sphere of dialogue analysis for it describes centuries-old human-being interactions, as well as the structures and backgrounds of intercourses with artificial intelligence.

From the point of view of computational linguistics, modern dialogue offers quite a number of semantic attributions, obtained with the help of Serelex system (Panchenko *et al.,* 2013), illustrated in Fig.1 and Fig. 2. These graphs highlight the position of modern dialog/dialogue at the intersection of philosophy and IT.

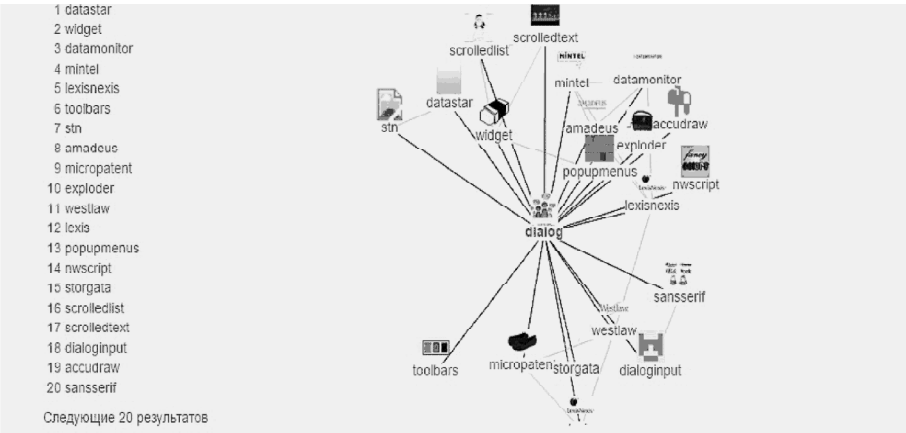

Figure 1: *http://serelex.cental.be/#dialog* (accessed: February, 26 2016)

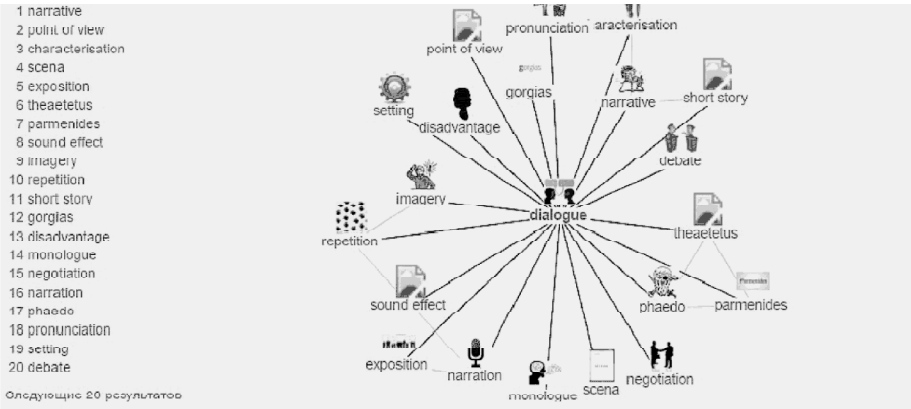

Figure 2: *http://serelex.cental.be/#dialogue* (accessed: February, 26 2016)

Elaborating on the traditions of the past, it is critical to keep in mind the ''subject-subject'' interaction scheme which is based on the classic understanding of the ''other'' as ''another I'' who is autonomous and independent (Descartes, Hegel, Dilthey, Husserl). This approach determines the foundations of the traditional epistemological (subject-subject) scheme, presenting an essential ''complementary'' exchange on the ''principle of the pendulum'': an utterance in one direction and then in another direction. Another typological feature of a traditional dialogue form is that the participants shared one and the same space (simaltaneous mode) or the dialogue was given with a lapse time period (extended in time mode).

Modern type of interactive on-line dialogue presents a multi-modal system where actors have a unique opportunity to interact in both modes described above and this is perceived as an advantage (Wells *et al.*, 2016).). On-line dialogue systems are generally defined as artificial dialogue systems that ''do talk. They are able to participate in conversation in a way their predecessor Eliza could not: they are able to share personal opinions, relay experience of family dramas, be relevant, but also be vague, and mislead just as humans do'' (Shah, H. *et al.,* 2016).

Most studies focus on the importance of making dialogue systems more human-like. For example, the introduction of backchannels and barge-ins make dialogue systems more natural (Dethlefs, N. *et al,* 2016). Some researchers suggest dialogue systems must follow the strategy of satisfaction predictions. ''We define two methods for user satisfaction prediction; prediction using user query and system response pairs, and prediction using user feedback for the system response'' (Mizukami, M., 2016).

The central question of our research is as follows: is a dialogue a mere exchange of information or is there anything else behind the scenes? The primary hypothesis of our research is that the information, presented in a dialogue, is not only a one-facet subject matter of a personal intercourse: people communicating in a dialogue want something more from each other than a mere exchange of information. What is it? A moral support or discouragement? A motivation for a further action or an act of persuasion? An eye contact or a hand-shake? How is it possible to understand the subconscious expectations of your dialogue partner? And our final question is whether an automated dialogue system will ever become an adequate substitute for a human-being in dialogues.

The reasons for answering these questions have both theoretical and practical implications. Theoretically speaking, we dwell upon an eternal problem of human-beings interaction and the enigmatic nature of relationships among people. The practical implication of the problem lies within the domain of present and future market opportunities and man-to-man social systems (Zavyalova, N., 2015).

The reasons for studying the problem of a dialogue are as follows:

1. The unprecedented growth of artificial intelligence dialogue systems.

2. The explosive popularity of commercial services, offering a chat with a machine.

Our secondary hypothesis is that in modern technocratic social system communication is viewed as the "proprietary" nature of the relationship between people. This approach does not take into account the specific characteristics of individuals and the dynamics of their relationships (Foucault, 1980). In these circumstances the joint life of people, the form of organization of social networking get a special significance and a radically different interpretation. The dialogue is seen as a form, imposed from the outside on human-beings' interaction, and the form which is not generated step-by-step and through the interaction of various social actors. On top of that, it is no more viewed as the process and the result of human beings' interactions.

The studies of the beginning of the 21st century have shown the need in the interpretation of the dialogue far beyond conventional schemes, reducing the complexity of the problem to the forms of direct interaction between the participants (Konovalova, 2013). The processes of interaction are much more complicated than it seemed before.

2. DATA AND METHODS

This paper builds on and contributes to a relatively new research field – comparing natural dialogue and a dialogue with a computer system. The subject of our concern is the strategy to instill and enhance the motivation among Russian 1st-year University undergraduates to consciously participate in dialogue interaction. The experiment comprised 3 stages (See Figure 3).

The initial enrollment to our experimental group was limited to 10 students. The age range of students was enormously different, from 17 to 25 years of age. Each stage of the experiment was delivered in both types of format: in-class learning and homework assignment. In class the students were doing the task under the supervision of the University teacher. At home they were doing this task on their own and had to submit shortcuts of their matrix talks (Table 1) with chatterbot. After doing the stage in class and at home the students were asked to answer the questions from the 'Dialogue learning questionnaire with number-coded answers' and range their answers according to the attached scale.

Stage 1. Within 7 weeks time the students were interacting with the on-line chatterbot A.L.I.C.E (Artificial Linguistic Internet Computer Entity), an award-winning natural language artificial intelligence chat robot. Alicebot engine is based on AIML (Artificial Intelligence Markup Language) to form answers to one's inputs. The students had to register the number of times they could use the expressions from the dialogue matrix in their dialogues with **a meaningful answer** (the answers were checked by teachers, analysing the shortcuts, submitted by the students).

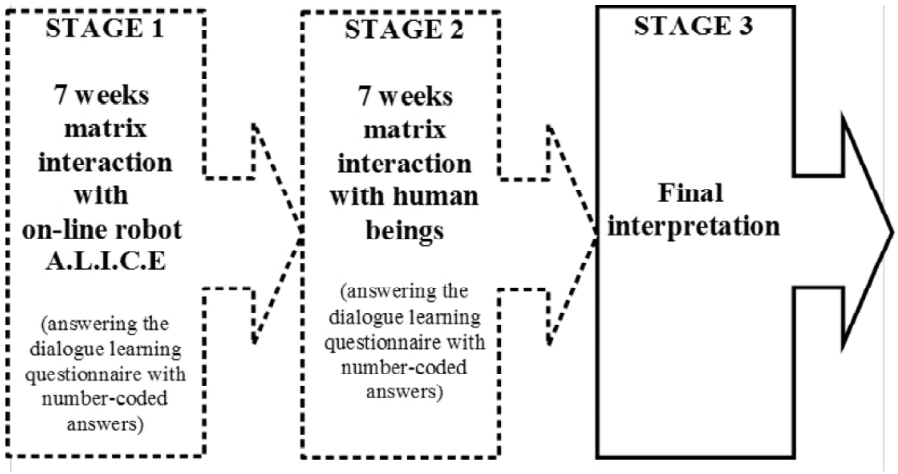

Figure 3: The experiment's procedure scheme

TABLE 1: THE DIALOGUE MATRIX

COLLABORATIVE TALK STIMULUE	*Week 1*	*2*	*3*	*4*	*5*	*6*	*7*
I agree with your answer because ...							
My idea is like yours because …							
Could you explain this idea in other words?							
How do you know your answer is right?							
So, what I hear you say is …							
I disagree with your answer because …							
My idea is different because …							
I don't understand …							
What is another way we could use to check?							
I got it, thanks.							

Stage 2. Within 7 weeks time they were interacting with people (using the Russian version of the matrix), recording the speech, and had to register the number of times they could use the expressions from the dialogue matrix in their dialogues.

QUESTIONNAIRE

Upon completion of each stage of the experiment the students had to provide their answers to the following questionnaire (Table 2). The questionnaire was adapted from the questionnaire used in Ma's (2009) and Mozgalina's (2015) study, enriched with our own questions and translated into Russian.

TABLE 2: DIALOGUE LEARNING QUESTIONNAIRE WITH NUMBER-CODED ANSWERS

Completely disagree				*Completely agree*	
1	2	3	4	6	7

1. I did this task only because my teacher asked me to do it. I wouldn't have done this task on my own.
2. I did this task but I am not sure if it was worth it.
3. I did this task for my own good.
4. I think that this task is good for my knowledge of dialogue.
5. I don't know; I don't see what this task brought me.
6. If I had the opportunity, I would continue doing this task.
7. If I had a chance I wouldn't have finished the task. This task is something that I had to do.
8. I think that this task was very useful for my knowledge of dialogue.
9. This is a task that I could do very well.
10. I think that this task is practical and I can use its results in my everyday dialogues.
11. I believe that this task was important for me.
12. I felt good when doing this task.
13. I did this task, but I am not sure it was a good thing to pursue it.
14. I had some problems with doing this task in class.
15. I liked to study communication this way.
16. I fought with my parents about doing this task for my class.
17. I did other things (for example, watching a film or playing computer games) when my parents thought I did this task.
18. It wasn't hard for me to study dialogue and communication this way.
19. I think I've learned dialogue too little while doing this task.
20. I think I've learned dialogue too much while doing this task.
21. I knew why the task was important for my progress in dialogue making.
22. I can name some new skills which I've developed while doing this exercise.

The experiment's targets

1. The enhancement of interest in natural dialogue, as well as in dialogue with an artificial intelligence engine.
2. Interpersonal competence development.
3. Exposure to simple dialogue starters.
4. Science popularization.
6. The actualization of the feeling of achievement.

The experiment's principles

1. All cognition principle: students were exposed to audio recordings, listening and speaking to people in class and outside the classroom.
2. The principle of equal opportunities and free education to everyone.
4. Reflective practices on task completion.

5. Flexibility and choice autonomy while implementing the task.
6. Meaningful tasks which can further develop communicative competences.

3. RESULTS

The central contribution of this paper is the analysis of empirical material, collected through all the stages of our experiment. The analysis of the questionnaire answers made it possible to develop the following graphs (Figure 4, Figure 5).

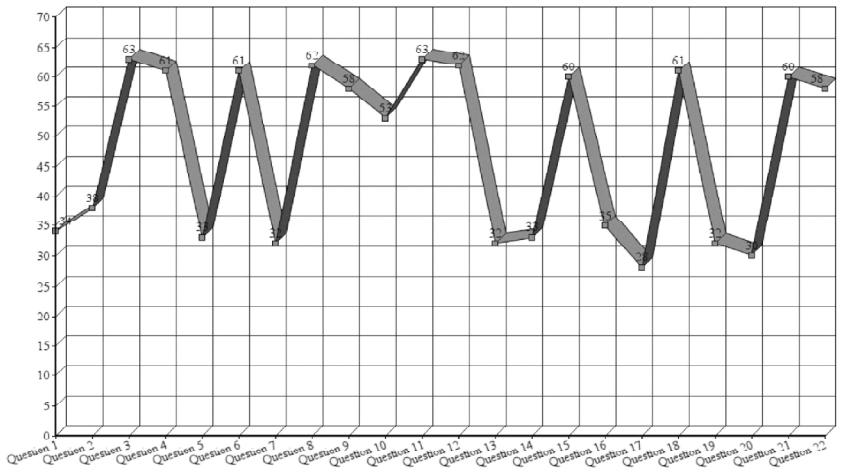

Figure 4: The answers to the questionnaire after talking to the chatter bot

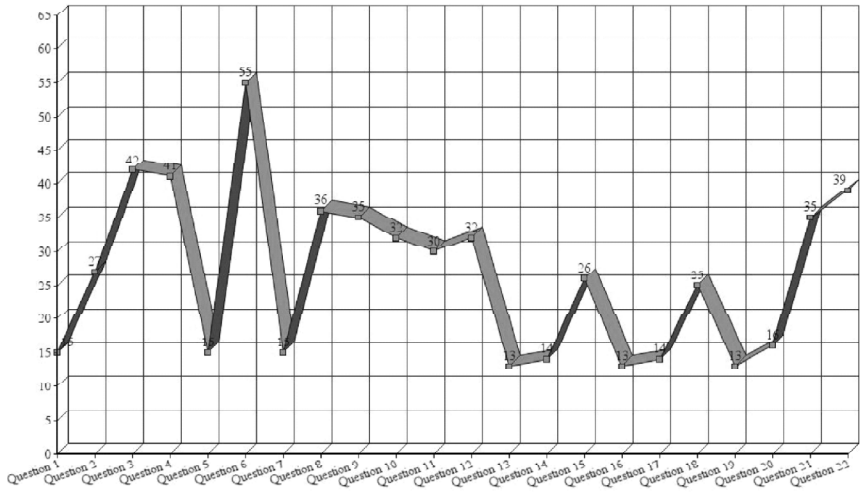

Figure 5: The answers to the questionnaire after talking to human beings

TABLE 3: THE DIALOGUE MATRIX AFTER TALKING TO THE CHATTER BOT

COLLABORATIVE TALK STIMULUE	*Week1*	*2*	*3*	*4*	*5*	*6*	*7*
I agree with your answer because ...	45	54	52	63	54	55	34
My idea is like yours because …	35	45	49	43	45	43	34
Could you explain this idea in other words?	180	189	199	145	189	100	111
How do you know your answer is right?	45	42	45	44	35	30	12
So, what I hear you say is …	76	86	82	89	86	82	88
I disagree with your answer because …	120	139	135	239	139	123	194
My idea is different because …	38	25	28	27	25	34	56
I don't understand …	450	550	559	580	550	250	342
What is another way we could use to check?	35	17	27	47	17	19	16
I got it, thanks.	290	349	410	249	339	555	347

TABLE 4: THE DIALOGUE MATRIX AFTER TALKING TO HUMAN BEINGS

COLLABORATIVE TALK STIMULUE	*Week1*	*2*	*3*	*4*	*5*	*6*	*7*
I agree with your answer because ...	14	22	12	14	13	13	11
My idea is like yours because …	0	3	2	0	2	0	3
Could you explain it another way?	5	6	2	5	7	0	2
How do you know your answer is right?	3	5	4	3	10	7	8
So, what I hear you say is …	5	4	3	2	6	7	2
I disagree with your answer because …	12	14	13	12	14	12	13
My idea is different because …	0	0	0	0	0	0	0
I don't understand …	25	26	53	48	27	35	58
What is another way we could use to check?	0	0	0	0	0	0	0
I got it, thanks.	50	78	89	72	100	84	76

The results have convincingly demonstrated students' preference for dialogues with artificial intelligence over dialogues with human beings).

4. DISCUSSION

The study evaluated two types of dialogues: a dialogue with an artificial intelligence engine and human-beings. The motivation was measured with the help of a questionnaire, as was the receptivity of different dialogues' types in educational process. The results show that, generally speaking, students welcome the idea of talking to a chatterbot rather than to a human being (Gillie *et al.,* 2015). They also indicate that students find it difficult and even useless to talk to human-beings, as they cannot predict the development of communicative situations, they are not sure of the reaction of their interlocutors and they are not able to use the phrases from the matrix (Table 3, Table 4). On top of that, many of them deny any possibility of matrix dialogues with human beings. The results demonstrate that our task to talk to an artificial intelligence chatter bot motivated students to learn more about new technologies and remember linguistic units from the matrix. The following benefits of dialogues to artificial intelligence as an introductory activity to students contribute to such results as: to present different communicative units in an

integrated manner, multiple repetition of communicative patterns and a high degree of predictability of discourse.

However, here we face an urgent debate of the very nature of a dialogue. Current understanding of ***technodialogue*** is a predetermined form of interaction, similar to the positivist understanding of dialogue as a form of direct contact between 2 parties, not allowing to consider substantive (topical) side of human interdependencies and self-realization of individuals. This form of a technodialogue is ''too symmetrical and is centered only around 1 logos'' (B. Waldenfels, 2011). An automatic binary scheme (dialogue-contact) turns out to be a limitation: it allows to record the bond, to designate the positions of the participants, relative to each other, but does not take into account spiritual complexity and structure of dialogue participants and their relationship. This process inevitably results in a new type of ''logo central mindset''.

In his exceptional review of emotional life of postmodern films P. Duncan shows postmodern reality as a strong mixture of different emotions, teaching us ''to acknowledge more explicitly and to name more clearly the emotional life that energizes it'' (Duncan, 2016). The distinctive feature of this emotional turmoil is longing for a simple predictable talk with a machine rather than a human being. This simplified talk is rooted in postmodern trend of a small-scale discussion with a big-scale irony and game playing (Brown, 2005).

Postmodernity technodialogues deny any attempts to shape human-beings' coexistence in the form of specific interaction of human individuals. Diverse human interactions are dismissed by insignificant game-like talks to a machine. Technodialogues nullify the very nature of multidimentional forms of people's talking consistency. How did we arrive to this stage of dialogue denial? The answer is in the limited nature of dialogue itself. Let us consider this point in greater detail.

The twentieth century has clearly demonstrated the limitations of traditional (historical, logical, etc.) communicative patterns of people, connected by the same type of live hood (Berlant, 2007). Quite often traditional old schemes proved to be ineffective when they were employed to an adequate reflection of an ever-changing world, interdependence and interaction of different social and cultural participants (Baudrillard, J. 2005). This lack of socio-philosophical and cultural-historical theory and methodology was identified back in the second half of the XIXth century by V. Dilthey and many other distinguished scholars. However, this problem is still relevant and open to a broader discussion.

Existing interpretations of the dialogue are strongly influenced by concepts of sociality, ranging from propositions of M. Weber to theoretical interpretations of J. Habermas. According to these spectacular philosophers, any dialogue is based on the scheme of direct interaction between human individuals. The objective side of human interdependencies, to a large degree, is still on the margins of social

concepts. It is critical to understand that any dialogue is such a unique phenomenon, highlighting not only the information, given in direct intercourse, but also the most important implications which are left behind and left unspoken.

Present-day versatile diversity and uncertainty of the subject have caused a shift from a **dialogue** to the form of a **polylogue.** The given form of a dialogue is gradually substituted by a transitional format of group discussion-polylogue, born in a particular situation, context with a great degree of ambiguity and challenge (Derrida, 1978). Human-beings are not dismissed by machines. Polylogue format, realized in blogs, chats and forums, is gaining popularity and accelerating the processes of human interaction.

Polylogues are coming out with new and insightful information every single day. This type of interaction is one of the main resources we use on a daily basis to stay ahead of the ever-changing social curve. Modern types of communicative interaction make it possible to learn all about the latest important developments that are impacting our lives, our bottom lines, and even our future. They provide their readers with the context around critical developments so that readers could see the social situation more efficiently, more profitably and more successfully (Zavyalova, 2014).

5. CONCLUSIONS

The conducted experiment has made it possible to demonstrate the diminished role of a dialogue between human-beings in modern communicative space, resulting in gradual transformation to new formats of public interaction. Students believe that talking to a chatter bot is a bigger entertainment and an excellent education opportunity, for it provides a greater degree of autonomy and predictability than talking to a human being. However, it is right to assume that dialogues with human beings are substituted by polylogues in forms of blogs, chats and forums. Careful communicative analysis of modern interaction types cover everything we need to know:

- the insights we need to make smarter decisions;
- the new trends in interaction that can disrupt existing social situation or open up exciting new opportunities;
- the right moves to grow the interaction skills to advance.

Communication is an integral part of human's habitat and it is important to see its rules and regulations.

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