On the Essence of Technology (the Case of Collaboration between Chinese and Russian Enterprises)

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Abstract. The subjects of technology and communication have been studied widely during the last decades. After Martin Heidegger many researchers have noted connection between these notions. Heidegger himself argued the essence of technology is connected to intentionality. This perspective did not find a due resonance in the later studies on the nature of technology. In search of efficient ways of business communication our research focuses on the phenomena of intentionality, communication and technology. The aim of the study is to discover how the three mentioned components are reflected in interactions for business purposes. With this aim a questionnaire for enterprise senior employees was developed. Answers to the questionnaire revealed communication features, means and barriers of communication between representatives of Chinese and Russian enterprises. Taking into account that most of the collaboration took place via technological means of communication, we had to consider the influence of ICT on the communicative process. Results of the analysis showed that such communication is dependent upon disposition and intentions of the participants.

1. Introduction
In his well-known work M. Heidegger argued that the essence of technology lies beyond the area of technological [1]. The essence of technology derives from its orientation to the world, which M. Heidegger calls “enframing” [2]. In its own turn, enframing emerges from the human need for a precise and scientific knowledge of the world. Such a demand puts forward intention, which constitutes a mental state, like, for example, beliefs, love or hatred exhibiting intentionality [3]. M. Heidegger described enframing in terms of orientation and attitude [2]. Such an approach points out a constructive role of human agency. Thus in search of the nature of the technological, our attention turns to the individual's intentionality as a feature of communication with the use of ICT.

It seems logical to assume that the essence of technology lies in intentionality. This assumption is supported by W. Arthur's view on the nature of technology. In his book "Nature of technology" W. Arthur stated that all technologies, standard or not, belong to “purposed systems” [4]. In a common sense a purposed system presents intentionality. The author suggests that the essence of technology lies in communication, since intentionality is highly integrated into the discussion about communication. In "Beyond the Constitutive-Representational Dichotomy: The Phenomenological Notion of Intentionality" A. Corey argued that “humans are fundamentally suspended in a network of intentional relations by explicating the phenomenological notion of intentionality by Heidegger and Merleau-Ponty” [5]. The fact that the essence of technology lies in communication appears to be
grounded, though not definite enough. Portuguese scholars A. Fidalgo et al. analyzed interaction between man, mobile technology and communication in terms of attitude, willingness, intentional expression and acts of speech [6]. According to the authors, relationship between technology and communication are reflected in the interfaces used in social media, like, e.g., Facebook. In unison, O. Yang claims that ICT actively reshapes our understanding of ourselves and of our world [7].

In 2005 J. Budd presented a paper on phenomenology, where he articulated the idea that communication by dialogue can release phenomenology's potential in terms of understanding the nature of technology [8]. N. Arnaud and B. Fauré in their work "Communicative Approach to Sociomateriality: the Agentic Role of Technology at the Operational Level" conducted a qualitative research in French transport industry and reached three conclusions:

1. sociomateriality is the expression of what matters in conversation;
2. communicative practices are at the core of skillful achievement in interorganizational collaboration;
3. communication is at the heart of modern forms of work organization and deserves more researchers’ and managers’ consideration [9].

Sociomaterial perspective is also recommended as a theoretical framework theorizing computer mediated communication (W.J. Orlikowski, S.V. Scott [10]), W.R. Grace [11], F. Fonseca, A. Bavdaz [12]). Within this approach technology is ascribed with both material and social features, including its relation to routines, humans, organizations. Technology is vastly used for communication in various organizational settings, providing electronic texts with qualities of a particular digital medium within the analysis. As opposed to a synchronous face-to-face communication, computer-mediated practices dismiss the traditional for the context concepts of an author, audience and community. Sociomaterial perspective moves us towards interpretations within the area of material and the embodied intersubjective interactions.

The findings of N. Arnaud and B. Fauré are specially inspiring here since this article is devoted to the discussion of collaboration between Chinese and Russian enterprises in terms of communicative nature of technology. There is a long history of geopolitical relationship, economical common interest and socio-cultural connections between China and Russia, the two ancient and powerful countries. The recent decades have been marked by a significant rise in the intensity of business relationship and intercultural communication [13]. Collaboration between enterprises brought significant mutual benefits in diverse fields, such as Sino-Russian bilateral trade, nuclear energy, electric power, chemical industry, agriculture and mineral development [14]. In order to achieve better collaboration, better communication is critical [9]. Regardless the theory of intercultural communication so far, international business communication presents a serious potential for technological and socio-cultural development in the 21 century [15][16]. This fact states a necessity to further investigate the ties between the two countries in terms of communication, its ways, channels and settings. Taking into account the geographical conditions and vast territories of the two countries, as well as the technological turn in communication of the 21 century, in this research we are analyzing the communicative nature of technology and its implications relevant for the mutual relationship between the nations in business area.

2. Literature review

2.1. Definition of intentionality

Intentionality is the power of minds to be about, to represent, or to stand for, things, properties and states of affairs. “The puzzles of intentionality lie at the interface between the philosophy of mind and the philosophy of language. The word itself, which is of medieval Scholastic origin, derives from the Latin word intentio, which in turn derives from the verb intendere, meaning being directed towards some goal or thing.” [3] In the philosophical dictionary [17], it is explained as metaphorical stretching of consciousness to be of something. F. Brentano reintroduced it at the end of the nineteenth century, and held that intentionality is the hallmark of the mental [3]. Both F. Brentano and E. Husserl
conceived of intentionality primarily as a conscious phenomenon, and proposed that mental (conscious) phenomena should be defined as ‘those that contain an object intentionally within themselves’ [17].

E. Husserl suggested that “all consciousness is consciousness of something”, and described intentionality as the fundamental characteristic of consciousness [5]. J.P. Sartre in "Being and Nothingness", like E. Husserl, identified intentionality with consciousness, stating that they were indistinguishable from one another. However, he interpreted intentionality in a freer manner, arguing that the “being of the external world is essentially meaningless and so people must create meaning from out of the “nothingness” of consciousness” [18]. In J.P. Sartre’s model of intentionality, the core of consciousness is of phenomenological scope; its occurrence is a consciousness-of-an-object, and beneath or behind it lies their “being-in-itself” [19].

Russian scholar, L.V. Mikeshina, referring to Heidegger, claimed intentionality to be the first “discovery” of phenomenology. She also wrote intentionality is not a relation to an external subject that could be endowed with experiences and which would be revealed in some experiences; experiences are intentional in themselves, as such”[20]. Another Russian scholar, N. Blokhina explains that intentionality traditionally refers to the intention of consciousness towards objects or states of affairs in the world, and includes not only ordinary intention to do something, for example, to go to the cinema, but also belief in something, hopes, desires, emotions, perceptions and much more [21].

2.2. Intentionality and communication

It is widely accepted that between intentionality and communication there is a very close relation, concerning language, sociology, culture, cognition, speech act, etc. For example, A. Corey states that in communication research intentionality is used mainly to address whether acts of communication, by definition, require an “intent to communicate” and also when and to what extent we can “know about” those intentions [5]. In the broad sense according to A. Corey, scholars seek answers to why people do or say what they do and at what level of conscious awareness their intentions are placed. In his work A. Corey employed intentionality to demonstrate how to accommodate representational accounts regarding J. Dewey’s work on language and the concept of a constitutive character of human speech.

R. Koerber claimed that communication contains three aspects: intentionality, understandability and significance [22]. In his eyes, intentionality relates to higher forms of communication. As he referred to P. Freire, communication is both dialogue and participation, which is a concept of intentionality. Additionally, he claims intentionality and the other two aspects are all contextual in nature, and contextual intentionality is quantifiable, so are the other two.

B. Absher discussed about communication, language, intentionality, intentional states, speech acts etc. by referring to M. Hiedegger, L. Wittgenstein, J. Searle et al. He found the capacity of sentences and marks to represent reality is not intrinsic but is derived from the intentionality of the mind [23]. It is also found that there is a double level of intentionality in the performance of the speech act which derives its capacity to represent the world from direct and inherent relation of intentional mental states to their conditions of satisfaction. In the process of an utterance formation, first of all, the intentional state is expressed; and then comes the intention.

D. Zoller combined M. Heidegger, culture, and intentionality, and found many interesting facts concerning communication, language, sociological perspectives, intention, mental/intentional content, etc. For example, it is written that “a system like an economy or the government communicates only with itself in its own language and by its own rules” when “it is not even clear that the level of individual intentionality has anything to do with the makeup of the social world as it is today” with the reference to N. Luhmann [24].

L. Mikeshina wrote that taking into account the communicative nature of activities and knowledge of the subject in society, it should be borne in mind that intentionality is always collective, even if it belongs to an individual subject, which should be taken into account when analyzing the nature of a social fact [20]. J. Searle defined collective intentionality as a human capability of collaboration [21].
N. Blokhina additionally specified that collective intentionality is usually needed when people compete and even conflict.

Collaboration, competition, conflict are three common types of relationship between enterprises. In leadership terms (micro view) according to R. Campbell [25], intentionality refers to identifying a specific outcome for a communication interaction, recognizing how one should or does appear to one’s audience, and adapting one’s behaviors, tone of voice, word choice, etc., to convey the desired motivation in pursuit of a goal.

3. Results and discussion

3.1. Communicative nature of technology: perspective of revealing and enframing
M. Heidegger in “The Question Concerning Technology” states the essence of technology lies in revealing and enframing [1]. Revealing is described as a process through which "bringing-forth comes to pass ... something concealed... into unconcealment". And then: "...every bringing-forth is grounded in revealing.” As for enframing, Heidegger wrote: “Enframing, as a challenging-forth into ordering, sends into a way of revealing … Enframing means that way of revealing which holds sway in the essence of modern technology and which is itself nothing technological … It is the way in which the real reveals itself as standing-reserve...” Revealing and enframing have direction, i.e. they are purposed. These two phenomena interact with the environment, happen in man, through man, within human doing. They are expressed in a claim (an utterance). So, revealing and enframings, being technological, are manifested through communication. In other words, communication is the core of the notions, that present the nature of technology. Thus the essence of technology lies in communication.

After M. Heidegger the idea that the essence of technology belongs to the area of communication has been supported by many scholars. Following S. George [26], enframing equals to the total understanding of reality as compliantly manipulable resource. Understanding of reality is a part of communication discourse. K. Gülenç and H. Aritürk [27] explained enframing as gathering of human beings within the order, and enframing is an epoch where human beings claim to be the masters of Earth. It is also clearly stated that “the essence of technology means the way in which intelligibility happens for us these days, that is, as ‘enframing’”. Intelligibility proves that enframing means a process of communicating, thus once more it becomes evident that the essence of technology is of communicative origin.

3.2. Communicative nature of technology: perspective of intentionality
Intentionality is treated as being particularly relevant to the philosophy of technology [28]. A. Corey wrote the world in its various profiles is always disclosed by and according to multiple and diverse intentional relations [5], while treating intentionality from M. Heidegger’ perspective, i.e. close to revealing. S. Tala [29] acknowledged that technology is humanity’s way of being in the world. It is not just a means to an end, but rather a mode of human existence, which very much fits with understanding of intentionality explained before.

Studying the subject of philosophy of technology, A. Jacob used D. Ihde's human-technology relations patterns [28] to demonstrate where intentionality is placed in the relations between I, technology and world. To sum up in relations patterns (embodiment relations, hermeneutic relations, alterity relations), intentionality stays close to technology as showed in figure 1 (see Figure 1 "Simplified D. Ihde's Human-technology Relations").

![Figure 1. Simplified D. Ihde's Human-technology Relations](image-url)
It has been acknowledged that intentionality and communication are so closely related that we may assert communication and intentionality can be used interchangeably. At the same time the essence of technology can be revealed or enframed in the same context following the logic of argumentation above. There are also researchers like J. Zuern and H. Ikaheimo suggesting the essence of technology lies in intentionality directly. H. Ikaheimo proposed recognition as a cognitive technology for communication [30]. As a cognitive function, recognition emerges in three forms: identification, acknowledgement and a human sense of recognition. The latter manifests as an altruistic and intrinsic motivation to understand intentionality, in which, as it has been implied, the essence of technology lies.

3.3. Communication and collaboration between Chinese and Russian enterprises

Since we have stated essence of technology lies in communication, we would like to introduce a recent empirical study on international communication and collaboration between Chinese and Russian enterprises as an example to demonstrate how the understanding works. Initially we draw from the authors' professional experience of joint international projects between Chinese and Russian enterprises. Secondly, we have conducted a qualitative research survey, which consists of a set of questions in the Russian language to study the aspects of communication and cooperation between enterprises.

Participants of the research are sales/purchasing managers, directors of factories, professors at universities, representatives of organizations based in Arkhangelsk, Russia, taking part in Sino-Russian collaboration among enterprises. Universities are also included within the group of enterprises, since in the era of academic capitalism they can also be treated as such [31]. Three of the observed enterprises belong to timber industry: Region Les Corporation, LLC Torgmaster, China Forestry Group Corporation; two in education: Northern (Arctic) Federal University (NArFU), Office of Chinese Language Council International (Hanban); one in pulp and paper industry: LLC Tramp. Five of the participants are Russian, and two are Chinese, who know Russian well enough to fill in the survey form.

We found that Region Les Corporation has been working with China and is constantly looking for Chinese partners. It has worked with Russian Forest, a Shanghai company, which arrived to sign a new contract, while Region Les Corporation was opening a new modernized workshop [32]. The Corporation is also working with a few other Chinese partners. LLC Torgmaster is a middle size enterprise, actively seeking new partners from China, because the market is seen as appropriate in terms of requirements and prices. China Forestry Group Corporation has entered Arkhangelsk market half a year ago, and is now operating in the northern market successfully. It is partially moving out of Arkhangelsk to the Republic of Komi for its own interest. NArFU and Hanban have been cooperating with each other for about two years, which boosted Chinese study in Arkhangelsk in terms of both language and culture to a large extent. LLC Tramp, now named as Arkhangelsk Carton, is planning for a new base of pulp production from wasted paper by means of a new machine line produced in China.

3.4. Features of communication at business meetings

It has been found out, that 83.3% (5) of enterprises often communicate in Russian, 50% (3) in English and 33.3% (2) in Chinese; 33.3% (2) of them have business deals with their partners around twice per quarter, 33.3% (2) have business operations around five times per quarter, one company has multiple business operations. 33.3% (2) of them plan to meet their partners from one to five times in a quarter, 33.3% (2) plan "multiple meetings", 16.7% (1) plan six to ten meetings a quarter, and 16.7% (1) mentioned distance communication once a year. Face to face meetings are most preferred. Although assistance of agents is described as especially useful in terms of overcoming language barriers by the participants, 83.3% (5) of them would like to attempt at direct contacts. In terms of communication means, email as the most popular and effective way got 83.3% (5), while direct conversation is anyway twice more preferred and phone calls are also frequently used. Social networks got 66.7% (4), among which Wechat dominates with 66.7% (4), comparing to Whatsapp/Viber with
16.7% (1). VK, a Russian domestic social site, was mentioned among other social media names. As for the communication barriers, language as a hindrance to communication was considered by 66.7% (4) of the participants, whereas cultural peculiarity was chosen by 50% (3) of them.

All respondents thought of the collaboration between Chinese and Russian companies in positive ways. It was mentioned that the participants set a goal to preserve agreeable dispositions and enjoy their collaboration with the intent to team up and cooperate in professional areas. The answers to the survey show high willingness of enterprises to communicate with each other through varied communication means in spite of barriers. The main communication objectives are to build contacts, sign business deals and operate in business area for profitability. Overall, communication between enterprises was aimed at getting mutual understanding in order to achieve best possible material and financial outcomes.

In the world of technology communication also happens without human language to express mental or intentional content by sense and reference. To illustrate the process of non-verbal communication, we can mention the color of cables used in the process in different with different functions. European standards are accepted and used in Russia which are different from Chinese standards. For instance, black stands usually for the negative in China, while in EU stands for signals. In China red is a positive sign, whereas in EU brown is used for the purpose. As has been found out in the course of observation and interviews, Chinese engineers are aware of the difference and use tapes to mark wires without additional explanation to the workers, who are competent to deduce meanings with the use of abductive logic. Generally, motivation for success, entrepreneurial spirit, common sense, technical and technological knowledge, life experience as well as good intentions are listed as the methods of effective communication by the participants of the survey.

4. Conclusion

The role of communication between Russian and Chinese enterprises is continuously growing. Communication has brought two nations closer, and, more importantly, triggered economic and technological growth in diverse fields. This research clarifies understanding of intentionality, essence of technology, and the relation between them and communication. Based on the analysis of the Heidegger's philosophical concept of enframing, the fact of the essence of technology lying in the area of communication has been justified. Besides, the conducted survey illustrates features of communication between Chinese and Russian enterprises, including frequent contact, varied means for communication and intercultural barriers between them. Through the analysis of their collaboration, it can be observed that enterprises are striving for the highest profit, the safest production, the easiest and most authentic negotiations, which matches the concept of intentionality with its focus at goal and enframing. The tendency to pursue efficiency and succeed in business brings about humans' positive and active commitment. Cases of miscommunication may occur, but better understanding of the essence of technology and communication makes sustainable and efficient collaboration between Chinese and Russian enterprises highly possible.

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