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# ON THE TERMINOLOGY OF THE COMPUTATIONAL COMMUNICATION

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**Teorik Makale**

**Theoretical Article**

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## ABSTRACT

As any other technological products, computers have become an integral part of human life, with their improving capabilities and many scientific disciplines have begun to utilise the facilitating functions of computers. The fact that computers play a key role in the researches carried out in disciplines of social sciences has enabled the computer to be used in communication research. Furthermore, the advent of internet and the rise of user-generated content have created a new source of data on human actions. Due to these developments computational communication science which is based on the gathering and analysis of data consisting of the traces left by people in digital environments has emerged. In this study, it is argued that the term “computational communication” is an incorrect terminology for this scientific field and that an alternative title/titles should be proposed. It is obvious that communication encompasses a multitude of facets beyond the mere transfer of data from one point to another or the interpretation of data. Similarly, the term "computational", encompasses a spectrum of operations that extend beyond the mere utilisation of a computer as a tool. Shortly, this paper addresses the content of computational communication science and its incompatibility with the terms "computational" and "communication".

**Keywords:** Computational, Communication, Media, Terminology, Interaction

# HESAPLAMALI İLETİŞİMİN TERMİNOLOJİSİ ÜZERİNE

## ÖZ

Tüm teknolojik ürünler gibi bilgisayarlar da yapabilirlikleri geliştikçe, insan hayatında daha büyük bir alan kaplamaya başlamıştır. Başlı başına bir bilgisayar bilimi var olmakla birlikte birçok bilimsel disiplin bilgisayarların kolaylaştırıcı işlevlerinde faydalanmaya başlamıştır. Sosyal bilimlerin çeşitli disiplinlerinde yürütülen araştırmalarda, bilgisayarın çeşitli yazılımlar vasıtasıyla kilit rol oynaması bilgisayarın iletişim araştırmalarında da kullanılmasını sağlamıştır. Dahası İnternet teknolojisinin gelişmesi ve kullanıcıların birer içerik üreticisi olması insan eylemlerine ilişkin yeni bir veri kaynağını var etmiştir. Bu gelişmeler sonucundan bilgisayarlı/hesaplamalı iletişim bilimi ortaya çıkmıştır. Bu bilimsel disiplin kısaca insanların dijital ortamlarda bıraktıkları izlerden oluşan verilerin toplanması analiz edilmesine dayanmaktadır. Bu çalışmada bilimsel bir alan olarak bilgisayarlı/hesaplamalı iletişimde hatalı bir terminoloji kullanıldığı iddia edilmekte ve alternatif başlık/başlıklar önerilmektedir. Nitekim iletişim, verilerin bir noktadan bir diğer noktaya taşınmasından veya verilerin yorumlanmasından çok daha fazlasını


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ihtiva eden sosyal ve psikolojik bir süreçtir. Türkçeye bilgisayarlı/hesaplamalı olarak tercüme edilen "computational" terimi, bilgisayarın aracı olduğu bir işlemden daha fazlasını anlatmaktadır. Bu terim, insan zihninin yapabileceği oldukça karmaşık ve girift işlemleri anlatmaktadır. Dolayısıyla bilimsel bir alanda bilgisayar kullanılması o alanının "computational" olarak adlandırılması için yeterli değildir. Özetle bu çalışma bilgisayarlı/hesaplamalı iletişim biliminin muhtevasına ve bu alanın hem "computational" hem de "communication" terimleriyle uyumsuzluğuna yani terminolojik problemine ve alternatif terminolojiye odaklanmaktadır.

**Anahtar Kelimeleri:** Hesaplamalı, İletişim, Medya, Terminoloji, Etkileşim

## INTRODUCTION

The entire achievements, inventions, creations and destructions of human-being throughout history can be attributed to the capacity of the human mind. The human mind has consistently demonstrated its capacity to astonish through its ability to perform a wide range of feats. Conversely, the capabilities of the human mind are not without limitations. For instance, the most apparent capacity of the mind is the ability to perform complex computations, which can be time-consuming. Nevertheless, not all individuals exhibit the same mental performance, and it may be challenging to identify individuals with above-average mental performance. Consequently, it has become imperative to develop a device that possesses the extraordinary computational abilities of humans and overcomes quantitative and temporal limitations. Consequently, it will become considerably simpler for individuals to perform intricate computations. The device that attempts to emulate the computational capacity of humans is the computer, which occupies a significant role in daily life. While it is not inconceivable to function without it, it is evident that a life devoid of it would be severely disrupted.

The advent of computers naturally gave rise to the field of computer science. In addition, the utilisation of computers in other scientific disciplines commenced and subsequently became prevalent. In the most fundamental sense, computers have supplanted typewriters in the composition of scientific texts, yet on a considerably larger scale, they have commenced to assume the role of data collection and analysis instruments for scientific research. The advent of Web 2.0 has ushered in a paradigm shift in the realm of digital media. Prior to this, the typical user was merely an audience member, able to access content on the web. However, with the advent of Web 2.0, this has changed. Users have begun to produce content, becoming content creators in their own right. This has led to the emergence of information sharing networks in digital media, which have transformed the way users engage with digital media. These networks have become an integral part of users' daily lives. Consequently, digital media has become a vast repository of data. In contrast, analytical tools are being developed in conjunction with the advancement of software. Consequently, computers occupy a pivotal position, acting both as a data source and as a data analysis tool, particularly in the field of social sciences. Communication, as a social science, has also begun to benefit from this functionality of computers, thus giving rise to the field of "computational communication science".

Computational Communication Science is a discipline that aims to collect and analyse people's traces in digital media as data through computers, with the objective of making determinations about people's behaviour. The main hypothesis of this study is that the term “Computational Communication” does not correspond to the research subject of this discipline. In this context, it is not sufficient for an object or phenomenon to be computer-mediated in order to qualify it as “computational”. The term “computation” is used to describe complex operations that are characteristic of the human mind. The fact that computers attempt to emulate human cognitive abilities does not imply that they possess the same capabilities. However, data obtained from digital media or a computer in any form is not in itself “communication”. In order for an activity to be a communication, it must be an 'intentional' activity, and the data does not provide the “intentionality” of the person concerned. Consequently, both the terms "computational" and "communication" are erroneous in this context and should be replaced with more appropriate terminology.

The objective of this study is twofold: firstly, to elucidate the terminological mistake pertaining to the term ‘computational communication science’ and, secondly, to rectify this mistake by proposing an alternative terminology. In addition, the study aims to initiate a discussion on this terminology. To this end, the conceptual and theoretical framework of ‘computational communication science’ is presented, the justifications for the aforementioned terminological mistake are elucidated, and alternative titles are proposed.

## 1. Overview of Computational Communication Science

Computational communication science emerged as the social sciences began to utilise the computational method (Lazer et al., 2009, s. 722). "The focus on "text-as-data" in much of the work in computational social science places the field of communication at the center of this evolving domain" (Shah et al., 2015, s. 13). The recognition of users as content producers and their ability to interact in the digital media has been established as a valuable source of data on human behavior, thanks to the advancements in web technologies. The application of computational methods in social science and communication, through the analysis of browsing data using various softwares, has led to the development of new insights and perspectives in these fields (Alvarez, 2016, s. 3; Conte et al., 2012, s. 332). Therefore, computational communication can be considered as a subfield of computational social science.

According to Theocharis and Jungherr (2021, s. 4) computational sociala science is a "scientific field in which contributions develop and test theories or provide systematic descriptions of human, organizational, and institutional behavior through the use of computational methods and practices". At its most fundamental level, utilising standardised computational methods on well-structured datasets is necessary. At a more advanced level, developing or extensively modifying bespoke software solutions is required to solve analytically intensive problems. Accordingly, it is obvious that computational communication is positioned at the intersection of computational social science and communication.

The use of computational methods in communication science has come into question with the abundance of data available from social media interactions to digital newspaper archives, the development of advanced data analysis tools, and the strengthening, cheapening, and ease of use of data collection and coding tools. According to some scholars the use of computational methods in communication science is a reliable and efficient way to analyze data. Since, "*computational communication involves, large and complex data sets, consisting of digital traces and other "naturally occurring" data; requiring algorithmic solutions to analyze*". In this context, computational communication science is an emerging subfield that studies the role and function of computational algorithms in acquiring and analysing computer-mediated data sets, mostly from the web. The main aim of computational communication is therefore to develop and test communication theories (Van Atteveldt et al., 2019; Van Atteveldt and Peng, 2018, s. 2). Then, computational communication involves two distinct phases: accumulating information and processing, analyzing, and storing it (Feinman and Carballo, 2022, s. 92). Due to the high number of users and tools that allow for individual initiatives, the datasets of computational communication research consist of "naturally occurring" actions and interactions, such as behaviour on Amazon, reactions on Twitter and personal connections on Facebook (Matei and Kee, 2019, s. 6). As the second phase, computational communication science to understand human communication developes and applys digital tools that often involve a high degree of automation for observational, theoretical, and experimental research (Hilbert et al., 2019, s. 3915).

Computational Communication asserts that communication actions and social behaviours can be comprehended by gathering digital traces and footprints of users and analyzing them with computational methods. Thereby, it is aimed to put forward new communication theories. Traces and footprints include all types of user activity such as commenting, mentioning, liking, buying, clicking any website, following, unfollowing, rating, posting etc. The development of tools and methods for data gathering and analysis, and the improvement of existing tools, are also part of computational communication. The reason the field is termed as Computational Communication is that the data considered as communication is gathered and analysed using computer algorithms. In the following sections, an evaluation of this terminology, which is the primary focus of this study, will be provided.

As an emerging field computational communication researches have significantly increased in the past decade. Numerous articles on computational communicational have been published within recent years (Choi, 2020; Domahidi et al., 2019; Feinman and Carballo, 2022; Geise and Waldherr, 2021; Hilbert et al., 2019; Matei and Kee, 2019; Ophir et al., 2020; Theocharis and Jungherr, 2021; Van Atteveldt et al., 2019; Van Atteveldt and Peng, 2018; Waldherr et al., 2021). Among these, "*When Communication Meets Computation: Opportunities, Challenges, and Pitfalls in Computational Communication Science*" (Van Atteveldt and Peng, 2018), "A roadmap for Computational Communication research" (Van Atteveldt et al., 2019), and "*Outlining the Way Ahead in Computational Communication Science: An Introduction to the IJoC Special Section on "Computational Methods for Communication Science: Toward a Strategic Roadmap*" (Domahidi et al., 2019) can be considered as the manifesto of the field of computational communication.

At the beginning, an interest group of "Computational Methods" was founded within the International Communication Association (ICA) in 2016, later on interest group has become a division of the Association. ICA Computational Methods Division has founded journal of "Computational Communication Research" and in 2019, Amsterdam University Press published its inagural issue. Likewise a "Computational Communication Science Lab" has been established within in the University of Vienna, Department of Communication and become one of the sponsors of journal of Computational Communication Research. In almost all the articles, researches and academic meetings in the field of computational communication research, it has been claimed that computational methods offer many advantages and challenges for communication research.

### 1.1. Advantages

The field of computational communication science has recently emerged as scholars use computational approaches to answer fundamental questions about human behaviour, interaction, and communication. New types of data and computational methods enable the discovery and empirical testing of ideas that classical methods can not test. Some scholars argue that these new methods are essential for advancing the field. The authors assert that recent trends have created new opportunities for communication researchers to access existing data sets and collect large amounts of structured and unstructured data. Additionally, they are pioneering new computational approaches to data analysis, such as automated content analysis, network analysis, and computer simulation, which enable contextual analysis of data (Geise and Waldherr, 2021, s. 5; Jünger et al., 2021, s. 1483). Likewise, it is argued that computational methods provide new opportunities for conducting surveys, field experiments, and virtual experiments in digital labs (such as apps and websites) and this enables researchers to efficiently scale their studies from individual to group levels with confidence. On the other hand, some scholars argue that computational approaches have the capability to rapidly collect, process and generalize large amounts of information to serve the public interest and examine the public agenda by informing policy makers and practitioners (Hilbert et al., 2019, s. 3917; Shah et al., 2015, s. 9). Van Atteveldt and Peng (2018, s. 7) asserted that computational methods allow for the analysis of social behaviour and communication in ways that were previously impossible. They identified four distinct advantages that computational methods offer to the field of communication. (1) Digital traces of online social behaviour serve as a powerful new behavioural laboratory for communication researchers. The measurement of actual behaviour in an unobtrusive manner is enabled by this data, rather than relying on reported attitudes or intentions. (2) Observing people's reactions to stimuli in their natural environment is more effective than in a controlled laboratory setting. (3) Increasing the scale of measurement enables examination of more nuanced relationships or effects in smaller sub-populations than is typically possible with the sample sizes available in communication research. (4) Computational methods enable scientists to share and reuse data and analysis tools, thereby making impossible research possible and difficult research easier. Furthermore, the use of computational methods facilitates interdisciplinary collaboration.

The field of computational communication is expanding and gaining attention as time passes. This is evidenced by the increasing number of journals, institutions, and articles. An increasing number of publications on computational communication have revealed more findings about the advantages of the field as well as its shortcomings and contradictions. Thus, computational communication sicence has faced several scientific challenges. To comprehend the terminological criticism which is the primary focus of this study, initially it is quite important to examine the challenges which computational communication science faced and took place in the literature.

### 1.2. Challenges

Scholars have identified several challenges in computational communication science, including an excessive focus on methodology, a lack of theoretical grounding, over-reliance on data and issues with data reliability, limited accessibility of tools, attempts to understand human behaviour through automation, and a neglect of interpretation. It is important to note that much of the challenges stems from scholars' positivist approach to the computational communication science.

Computational methods in communication science are data-driven and lack theoretical positioning. This is evident in how social phenomena are understood and in how research is analysed. There is a lack of theory in this emerging field. It is clear that the rapid development of computational methods has not been matched by a similar emphasis on theoretical developments within the academic community. This means that there are problems with how computational methods relate to the basic ideas of social research. (Jünger et al., 2021, s. 1483; Waldherr et al., 2021, s. 153). Accordingly, the theoretical deficit brings with it a problem of representation. One of the main challenges of computational communication research is how well the data or model represents the real social world and how safe it is to draw conclusions based on this data or model (Geise and Waldherr, 2021, s. 15). If the phenomenon under study does not correspond to a theory, there is a high risk of obtaining meaningless masses of data rather than meaningful findings about social reality (Ruths and Pfeffer, 2014, s. 1063–1064). In fact, the main issue here is paradigmatic choice: Positivism or interpretivism. The validity of analysing human behaviour by automation is questionable. At this point, computational communication science faces another important challenge.

Positivists assert that computers can understand human behaviour. But even with lots of data, it's not always easy to get useful information from it. This view has been criticised a lot. Computers can only do what they are programmed to do. The next generation of social science and communication methods must combine meaning discovery, theory building, and causal inference. Computational clustering alone cannot solve these issues. Communication is important for human action and interaction. To understand human meanings, we must consider the embodied universe of human experience. (Matei and Kee, 2019; Waldherr et al., 2021). Social contexts and phenomena cannot be objectively given and deductively explainable social facts. Instead, they are the result of an interpretive interaction process that largely defies automation. Computational communication researchers' study of these phenomena requires a confident understanding of the interpretive process and its complexities. Because "research automation appearing to be at odds with basic methodological assumptions about human interaction" (Jünger et al., 2021, s. 1483).

Scholars may be attracted by the ease of research and analysis provided by computational communication and overlook these problems. However, there are different challenges related in the field of computational communication: Reliability and validity of data and accessibility of tools and data sets. In computational commununication researches it is recognised that most data sets are derived from social media. Van Atteveldt et al. (2019) notes that these data sets are often a by-product of naturally occurring behaviours and may not accurately represent the behaviour of interest. In other words, the accuracy, validity or functionality of these datasets is questionable (Ünal, 2020, s. 185). For example, the Instagram content of an individual who seeking to create a more socially acceptable image may not reflect his/her social reality (Soncu, 2016). Therefore "…*It is not always clear what these data really mean substantively, and what conclusions from it might be drawn or not drawn*" (Geise and Waldherr, 2021, s. 16). Additionally, social media companies and other commercial organisations own most of the necessary datasets. This poses a threat to the accessibility of data and the reproducibility of studies. (Van Atteveldt et al., 2019, s. 3). In a similar vein, Theocharis and Jungherr (2021, s. 2) state that in the field of computational communication research there a is "*rift … between those low and high in resources*". They draw attention to the risk that increased use and demand for computational methods and datasets may exacerbate existing inequalities in opportunities to contribute to the social sciences in general. Institutional incentives can effectively prevent the problem of validity worsening due to difficulties in accessing data in digital media and computational communication tools. (Hilbert et al., 2019; Van Atteveldt et al., 2019).

Lastly computaional communication science has a replicability issue as a methodological standard has not yet been agreed upon. Since the researchers work freely, the scientific nature of the field is ambiguous. Namely, the computational communication science is uncertain about how the computational turn is impacting communication and contributing to the discovery of meaningful answers to core research questions. On the other hand, computational communication tools are capable of accessing important personal information. For this reason, it tends to raise ethics and privacy issues. The fact that comprehensive protocols have not yet been prepared is an important problem (Domahidi et al., 2019, s. 3879; Geise and Waldherr, 2021, s. 16–18; Van Atteveldt et al., 2019, s. 3).

## 2. Being Computational

The term “compute” originates from the Latin word “computare”, meaning "arithmetic, accounting, reckoning". Apearently, its meaning has been extended to include non-numerical “reckoning”. The Latin orginated word “computare” itself comes from *com*, meaning “with”, and *putare*, meaning "to settle, clear up, reckon". Namely to “compute” has meant, “to settle things together” or “to reckon with (something)” (Rapaport, 2010). According to English dictionarist Samuel Jackson (1785), to “compute” means “to reckon, to calculate, to number, to count” and “computation” means “The act of reckoning; calculation. The sum collected or settled by calculation.”

As for the term “computer”, it is now widely recognized as an electronic device utilized for information processing. However, historically, it referred to individuals who performed computations. Before 1962, NASA (National Aeronautics and Space Administration) relied on the expertise of highly skilled mathematicians, many of whom were black, to perform intricate calculations. Nevertheless, in 1962, NASA made the transition to an IBM system for the first time. Astronaut John Glenn, the first US astronaut to orbit in space, announced that he would board the space capsule only on the condition that Katherine Johnson (1918), a member of the "Coloured Computers" team, would make and approve the computations before launch, as the IBM 7060 made errors in the computations. The fact that the first American astronaut in history relied not on electronic systems but on the computations of a human being is probably a very interesting example. As can be seen, the word "computer" today does not refer to machines, but to "people" in the past (Yücel and Adiloğlu, 2019, s. 53). As it is understood, computation means making complex calculations and reckoning in the mind. While being computational is a human ability and characteristic, the imitation of this feature in machines and devices as much as possible has led to the terming of machines as computer/computational.

The analogy between the human mind and machines has been one of the focal topics of the philosophy of mind. Inquries on this subject have led to the emergence of the computational theory of mind. Putnam, the first computational mind theorist, clearly stated that computation is a human ability and it is imitated in machines. In his famous article “Nature of Mental States”, he made an analogy between the mind and machines, suggesting that pain or any other mental state is a functional state. He tries to prove this claim on the concept of "pain". Putnam examines the concept of pain with the questions “*Is pain a brain state*?” (1975, s. 429) and “*Must an organism have a brain to feel pain?*” (1975, s. 439). Putnam asserts that feeling pain is a form of functional organization, which is also linked to distinguishing between different types of sensory input related to pain, such as tingling and aching, etc. He argues that machines are also capable of experiencing pain, much like humans have organs that perceive the external environment. Consequently, machines can be equipped with 'pain sensors' to detect pain, danger, or external pressure. Putnam's definition of “computational” is not detailed, but it can be understood as “*Under some definitions, everything is a Probabilistic Automaton*” (Putnam, 1975, s. 433).

Machines can imitate the computation capability of humans and choose appropriate reactions from their pre-programmed responses in certain events and situations This similarity between machines and the human mind has led to the misconception that machines can become computational in nature. For example, computers activate their cooling systems when their sensors detect excessive heat, just as people sweat or seek cooler environments in response to high temperatures. This process is defined as computation by Putnam.

On the other hand, Jerry Fodor, philosopher of mind and the foremost proponent of the computational theory of mind, provided a detailed explanation of the concept of computation. Jerry Fodor asserts that all theories of psychological cognition rely on computational operations and a representational system in which these operations occur. As a matter of fact, in his behavioural model, Fodor (1975) argues that the representation system he mentions is a tool that can represent not only the behavioural options of the organism, but also the possible consequences of acting according to these options, a preference order determined on these consequences, and of course the situation it finds itself in at the beginning. Accordingly, using such a model of behaviour requires a firm acceptance of the assumption that the agent has a representational system. Because, according to this model, decision-making is a computational process; the action performed by the agent is a result of computations based on the representation of possible actions. So, to summarise : "*No computation without representation*" (Fodor, 1975, s. 31).

At this point, Fodor suggests that the representational system will need a mechanism for expressing instensive properties. This mechanism is a computational mechanism which is inherent in natural languages (Fodor, 1975, s. 32). Current models of decision-making, language acquisition, and perception are treated as computations. Organisms perform these computations using a language (Fodor, 1975, s. 51).

In this context, Fodor distinguishes between two types of language: public and private. Public languages, such as English, French, and Italian, allow us to transmit our thoughts. Their rules and principles are derived from individuals' inner states and psychology. Public languages enable effective communication between individuals by establishing a consensus on the forms of use (Fodor, 1975, s. 56). Fodor asserts that the private language is a representational language that is essential for the computational mechanism. It represents both the grammar that will be learned in the future and the observed utterances (Fodor, 1975, s. 57). Namely, private language is the language in which people perform the computations underlying their behaviour (Fodor, 1975, s. 68). Given that the first media unique to human beings is speech, i.e. language (Poe, 2011, s. 36), it is clear that if there is no computation, there is no natural language. And if there is no natural language, there is no communication. Hence, every communication process is inherently computational.

Computational communication researchers termed this scientific field as "computational" because, as mentioned previously, the data collection and analysis process is carried out by computers and computers are computational. Upon analysis of the theories of philosophers of mind and the etymology of the terms "computation" and "computer", it is clear that this process cannot be considered computational. Being computational is a capability inherent to the human mind and involves thinking and intricate decision-making processes. The electronic device we now refer to as a "computer" was termed by analogy to the human mind, however computers are not computational by their very nature. On the other hand, all communication processes are computational. The term "computational communication" is like constantly mentioning one of the characteristics of communication. The term 'computational communication' should be used when referring to this aspect of communication. Otherwise the term "computational communication" is similar to the term "watery sea". Just as there is no sea without water and all seas exist from water, there is no communication that is not computational and being computational is a prerequisite for communication. The **main conclusion** we have drawn so far is that computational communication science is wrong termed and, as an emerging field, its terminology should be re-evaluated.

## 3. Communication, Communications or Interaction

As in the 19th and 20th centuries, it can be said that communication has left its mark on the 21st century. Although the concepts, theories and approaches to communication change as the world changes, its place in the lives of human beings has always been vital. Communication is of equal importance to both tribal and modern people, both in terms of interpersonal communication and on a social scale. The significance of communication has remained constant over time and the interest in the nature of communication has grown exponentially. This has led to the publication of hundreds of articles, the development of numerous theories and models, the construction of concepts, and the formulation of definitions aimed at answering the question of "What is communication?"

The term communication is derived from the Latin word "communis", which means "common", "public", "general". Derived from communis, "communicationem" (eng. communication), means "a making common". Accordingly, the term communication emphasises jointness, being common, being united. It is first necessary to acknowledge that communication is more than the transfer of information. This understanding will then allow us to review some of the definitions of communication that have been proposed in the literature.

According to one of the most comprehensive definitions of communication, “Communication is the verbal interchange of thought or idea” (Hoben, 1954, s. 77). In the other word “Communication is the process by which we understand others and in turn endeavor to be understood by them” (Andersen, 1959 as cited in Mayer, 2001, s. 100). Similarly, Berelson and Gary's definition of communication as a transmission is as follows: “Communication: the transmission of information, ideas, emotions, skills, etc., by the use of symbols-words, pictures, figures, graphs, etc.” (1964, s. 527) Alex Gode's definition of communication is very close to the Latin meaning of communicationem (1959, as cited in Dance, 1970, s. 206): Communication “is a process that makes common to two or several what was the monopoly of one or some”. On the other hand Cartier and Harwood considered communication as a means of replicating memories (1953, s. 73). Stevens, who approaches communication in terms of action and stimulus, defines communication as a response to stimulus (1950, s. 263). The eminent psychologist Theodore Newcomb, renowned for his ABX equilibrium model, also acknowledged the influence of stimuli and defined communication as “transmission of information, consisting of a discrimi- native stimuli, from a source to a recipient” (1953 s. 393).

There is no consensus on the definition of the concept of communication, with hundreds of definitions in existence. As can be understood from the definitions above, all of these definitions point to a mechanical process in which data is sent from a source to a receiver. Indeed, communication studies are dominated by linear models on the sender-channel-receiver axis. Notable scholars who have developed models of the communication process include Lasswell, Shannon and Schramm. Their work is so compelling that it has become the accepted norm to conceptualise communication in accordance with their models, rather than proposing alternative frameworks.

These models tend to reduce the human being to a machine or device. As a matter of fact, television and its remote control work in accordance with these models. When the button “1” on the remote control of the television is pressed, a signal is sent to the television, which receives this signal and switches on the channel in the 1st row. However, it is evident that there are significant differences between human and television. The human being is a mental being before all else, and it is this mental nature that enables them to communicate. When the mental nature of human beings is ignored when answering the question of what communication is, a conceptual confusion arises. This confusion causes the concept of communication to be used in the same sense with the concepts of "communications", "news" or "interaction", and intentionality is ignored. Communication is not the same thing as these concepts, and there can be no communication without intentionality.

Since communication does not consist of the exchange of information, it is not the same as news (correspondence). Additionally the process of collecting and distributing data with the possibilities provided by digital technology can be defined as communications. The concept of communications defines the process of gathering determined and encrypted signals in a certain centre and distributing them from that centre to certain points. The concept of communications is related to a field we can call "informatics" (Anık, 2014, s. 2). In other words, communications is the process of distributing messages from one point to another in various forms. It is not a social and psychological action, but rather a technological, systemic and mechanical process. In the process of communications, the focus is on the means, not on the person or society. Namely, communications is not related to the science of communication in the field of social sciences.

On the other hand interaction is defined as an action or effect produced by each individual involved in the interaction. Regardless of the nature of the action or effect, it is the result of the mutual action between the individuals involved. Interaction is not communication. For interaction to be considered communication, an intentionality must be created between the parties involved. This intentionality must be mutually understood and shared. In other words, communication is interaction with evident intentionality (Anık, 2014, s. 29–35).

The concept of intentionality emerged in the scholastic age, but it was Brentano, inspired by Descartes' dualism, who elucidated it in a manner that is, for the most part, consistent with its contemporary meaning. Subsequent to this, Husserl sought to elucidate the experiences of the mind with the concept he had acquired from his master, Brentano. Currently, the philosopher of mind John Searle is one of the scholars who elucidates the character of intentionality in the most detailed manner

(İngeç, 2022, s. 98–103). According to John Searle the term "intentionality" is used to describe the relationship that the human mind establishes with the external world (2015, s. 99) The concept of intentionality is related to meaning. Humans express their thoughts, feelings and aims through language, which is made up of words and signs. These signs are symbolic and are derived from the communication intentions of the speaker. They are expressed with a specific intention, which gives them the capacity to carry different meanings according to the intentions of the speaker. Therefore, there are no sentences in which the meaning is moulded. There are sentences that carry different meanings based on different intentions. The individual expresses the words that will serve their intentions through the signs that will fulfil this service. In this way, they attempt to make their intentions visible and understandable (Searle, 2015, s. 165–166). In the other word intentionality is the mental condition of being oriented towards a specific goal or objective. This implies the ability to deliberately differentiate between the means and the aims of an action (Balconi, 2010, s. 160).

The following case study clearly demonstrates the position, role and function of intention in communication (Cohen et al., 1992, s. 1):

> With the Wednesday advertising supplement in hand, a supermarket patron approaches the butcher and asks,
>
> “Where are the chuck steaks you advertised for 88 cents per pound?” to which the butcher replies, ‘How many do you want?’ Despite all the theorizing about language that has been done by linguists, philosophers, computer scientists, and psychologists over the past thirty years, this simple interchange is magical. What makes the butcher's response a perfectly natural one?
>
> Intuitively speaking, the answer to this question should be straight-forward. The shopper wants to know where the steaks are because he wants to go to that location, put them into his cart, take them (along with other items) to the cashier, pay, and leave. The butcher realizes that is what he wants to do but knows that the steaks are behind the counter, where shoppers are not allowed. He decides to help the shopper achieve his goal, by getting the steaks for him. But the butcher is lacking a crucial piece of information: how many steaks should be get for the shopper? Hence his question.

The butcher's response was not perceived as unusual by the customer, and the process was completed without incident, indicating that both parties' intentions were understood. It is possible for words and actions to have a transcendent meaning. However, in order for communication to take place, it is necessary to understand this transcendent meaning, that is to say the intention.

To resume the principal topic, just as the computational communication science can not be defined as computational, nor can it be defined as communication. Data obtained from digital media or computerised environments may lack the intended meaning necessary for communication. For instance, actions such as following, liking or re-sharing/re-posting on social networking sites are frequently perceived as a form of approval and appreciation. Nevertheless, any user may follow an individual they dislike for various reasons. They may, for instance, like a tweet they disagree with in order to archive it. They may also repost an idea they consider to be bad in order to demonstrate how ridiculous the individual who originated the idea is. Even a user who visits a personal blog every day may be visiting that blog not because they like it, but to find content to criticise. The issue at hand concerns the intention of the individual, rather than the act of manipulation or the provision of false data. In contrast, the user may only be following individuals they like, liking or reposting opinions they agree with, and visiting sites whose content they like. Concisely, if the intention is unambiguous, communication will take place; otherwise, it will not. For this reason, in most digital media applications, the actions of users are termed as “interaction” instead of communication. A two-probability situation is not compatible with the scientific method. Consequently, a field defined as scientific cannot be based on probabilities.

Furthermore, just as these actions themselves cannot be considered as communication, consequently, communication messages designed on the basis of these actions will not ensure the realisation of the act of communication, as they will be aimed at people whose intention is not understood. Therefore, the field of computational communication science can not be termed as communication.

## CONCLUSIONS AND RECOMMENDATIONS

The advent of computational communication science coincided with the advent of the computational method in the social sciences. The emphasis on "text-as-data" in a significant proportion of the work in computational social science has placed the field of communication at the centre of this emerging field. The recognition of users as content producers and their ability to interact in the digital media has been established as a valuable source of data on human behaviour, thanks to the advancements in web technologies. The application of computational methods in social science and communication, through the analysis of browsing data using various software, has led to the development of new insights and perspectives in these fields. Consequently, computational communication emerged as a subfield of computational social science.

As stated above, Computational Communication Science is a emerging subfield that studies the role and function of computational algorithms in acquiring and analysing computer-mediated data sets, mostly from the web. The main aim of computational communication is therefore to develop and test communication theories. The field of computational communication posits that the actions and behaviours of users in communication contexts can be understood by gathering traces and footprints of their activities in digital media and analysing them with computational methods.

In the majority of articles, research and academic meetings in the field of computational communication research, it has been asserted that computational methods offer a multitude of advantages and challenges for communication research. The advantages of computational methods are outlined by authors as follows: recent trends have created new opportunities for communication researchers to access existing data sets and collect large amounts of structured and unstructured data. Additionally, they are pioneering new computational approaches to data analysis, such as automated content analysis, network analysis, and computer simulation, which enable contextual analysis of data. Otherwise, scholars have identified several challenges in computational communication, including an excessive focus on methodology, a lack of theoretical grounding, over-reliance on data and issues with data reliability, limited accessibility of tools, attempts to understand human behaviour through automation, and a neglect of interpretation. It is important to state that most of these challenges stems from scholars' positivist approach to the computational communication science.

The academic community has frequently discussed the nature of computational communication, the advantages it offers, and the challenges it will face. Some determinations have been made. However, the terminology of the field of computational communication has not been discussed. This may be because, from a superficial point of view, it is easily assumed that the terminology of the field and the subject it focuses on overlap. Nevertheless, there is a terminological mistake in the field of computational communication science. This mistake involves two distinct phases: Being computational and using the term communication. A superficial determination of which object, creature or process is computational and which actions of people are called communication resulted in an irreversible mistake.

It is not accurate to refer to a scientific field as computational, given that the primary data source and processing tool is the computer. The term "computer" merely represents the objective of a device that functions in a manner analogous to the human mind. To be computational necessitates the engagement of complex mental processes, and only humans are capable of fulfilling this requirement. This is because only humans possess reason, intelligence, logic, and consciousness. Conversely, only humans can communicate because only humans are computational. In essence, being computational is a prerequisite for communication. In other words, there is no non-computational communication; communication is computational. In this context, the term computational exceeds the content of the field and computational communication sicence is a verbiage like watery sea. Consequently, the term "computational" must be discarded.

On the other hand, while many behaviours of people may have communicative value, it is possible that behaviours that can be defined as communication may not contain any communicative value. It is important to state that data such as comments, likes and favourites obtained from web pages or social networks are not in themselves a form of communication. Furthermore, the interpreted form of these data may often not contain a communicative value. The determination of whether the intention behind the act of communication is understood is crucial. Communication is only possible when the intention of the message is understood by both parties. Otherwise, communication cannot take place. It is not possible to ascertain the intention of an individual from data such as photographs, comments, likes, or reposts shared on the web. Therefore, such data lack communicative value. Furthermore, the scientific merit of theories based on data that lacks communicative value will be open to question. Therefore, it is not reasonable to use the term communication for the field of computational communication science. Namely the term "communication" must be abandoned.

In conclusion, it is **recommended** that alternatives be considered for the title of the field of computational communication science and that the current terminology be changed. It is evident that the term "computational" is used in this field in the sense of "computer-mediated." Additionally, the term 'communication' in this field is actually used instead of "interaction" "communications".Therefore, the most reasonable title suggestion would be "**Computer-Mediated Interactions**". Furthermore, the titles "**Computer-Mediated Communications**" or "**Interaction Data in Digital Media**" are also worthy of consideration, given that the field of study focuses on the interactions of individuals in digital media. This would ensure that the terminology used in the field aligns with the research topic.

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