Communication science and information science: Convergences and divergences

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In the last few decades, the disciplines of communication science and information science have experienced a tremendous increase of published works. Although faculty from both fields have participated in shared research programs, the subject of their relationship as disciplines has lacked scientific inquiry. Three factors account for this situation. First, the terms information and communication often are understood as interchangeable disciplines. Second, research topics in information science and communication science include new digital technology which leads to redundancy and ambiguity. Third and lastly, required research methods cross-cut disciplines without distinguishing methodologies associated with communication science from information science. This paper discusses the relationship between communication science and information science in terms of major divergences and convergences in order to offer a clearer identity and more contributive work in both disciplines.

Keywords: communication, information, information science, communication science.

Introduction

Since their foundation as articulated disciplines in the 1800s, the social sciences have undergone important developments. Several disciplines have taken shape under the auspices of the social sciences. In recent years, for example, the fast-growing information and communication technologies have brought the fields of communication science and information science to light. However, the identities of communication science and information science have received less attention than have information and communication technologies. As Wilson (2010) noted, “it is also evident that the link between information and communication is necessary and strong: and yet, there is little research connection between communication studies and information science. Surely this is a major gap” (n.p.). This paper suggests the breaking of barriers between the works done in communication science and information science. Surely this is a major gap” (n.p.). This paper suggests the breaking of barriers between the works done in communication science and information science. Also, this paper seeks to raise awareness about the duplication of works, the ambiguity of identities, and the lax use of the terms communication and information in defining one’s works. It calls communication scientists and information scientists to a tighter and clearer synergy in increasingly budget-short and competitive university settings.

The increased segmentation and sub-specialization in academia calls for greater collaboration among researchers. Wilson (1996) remarked, “most research in the social sciences and humanities is done by scholars working alone” (192). This type of research also impacts works done in communication science and information science. In 2010, Cooren discussed the increasing, and at times alarming, fragmentation of communication science. To this effect, a mutual recognition of published works in areas of communication science was proposed. “It would rather suggest the complexity, of amending it, or even of seeing the question in its entirety, but always with the idea in mind to stimulate a dialogue [emphasis mine] capable of countering fragmentation in the field of communication” (Cooren 2010, 104; see paraphrased idea Cooren 2012, 2; Eadie 2011).

“Il s’agirait plutôt de la complexifier, de l’amender, voire de la questionner dans son entièreté, mais toujours avec en tête l’idée d’alimenter un dialogue [emphasis mine] capable de contrec une fragmentation du champ de la communication” (Cooren 2010, 104; see paraphrased idea Cooren 2012, 2; Eadie 2011). Several authors have raised the same concerns in information science (Brier 1999, 2008; Day 2010, 2011; Leckie, Given, and Buschman 2010; Saracevic 2010a). For example, the lack of collaboration deplored in communication science was also noted in information science. “The relative isolation is conceived as unproductive for all areas [of information science]” (Saracevic 2010a, 2573). This paper takes the debate to the relationship between communication science and information science, wherein awareness about the works of one must be acknowledged. The remarks leveled in both communication science and information science resonate with the observation Kunz and Rittel (1972) made that information-related fields have evolved in silos. Rather than offering a unified definition and theory of information-related disciplines, this paper examines different perspectives regarding communication science and information science to allow for clearer mutual recognition, stronger connections, and firmer contributions between two of the closest, yet still distinct, disciplines of academia: communication science and information science.

There should be as many definitions, theories, and concepts in communication science and information science as there are research questions. Nonetheless, we cannot deny the object of our works. Academia requires researchers to make
contributions to and connections with others’ works, especially when these works relate to the same topic. Failure to take account of this in our respective bodies of works defeats our mission as scientists. Scientific work is defined by the researcher’s proposed theories. The proposed theories are the means by which our work is a continuation of and a response to the concerned bodies of knowledge. Cibangu (2013) discussed the contributions of information science to the broader academic research. The stronger the connections of our works are to the concerned literature, the more contributive are our findings.

It is important to avoid the pride of universality (see Cibangu 2012a), whereby information-addressing publications tend to be lumped together for the sake of representativity by region or topic without any connective tissue between them. With the best of intentions, authors can forget the basic statistical rules of sampling in regard to adequate representativity. Representativity may be tempting in the production of encyclopedias and large-scale publications of information topics wherein authors are invited because of their expertise and/or origins in the hopes of covering the broadest or most global spectrum of research. However, behind the façade of representativity, the concerned bodies of research may lack grounded connections of contributions. It is also important to avoid the particularities commonly manifested in applied research of information technologies and up-to-date novelties. While they can be beneficial, novelties of information technologies do not qualify us as scientists. Rather, the theories arrived at qualify us. Our proposed works ought to be grounded in the relevant literature, tracing the gaps and insufficiencies in order to craft a theory. Just as in the social sciences, theory creation needs more attention in both communication science and information science (see Cibangu 2012b). We cannot undertake scientific works that bypass the bodies of knowledge of both communication science and information science by assuming that the reader will figure it out. Grounding research in the bodies of knowledge helps furnish a field’s methodological and related positions. This paper launches the debate at the roots, namely our identities as to what we do and say we are as communication scholars and information scientists. While it does not seek a unified identity within and beyond any science, the paper calls for greater clarity about our works in a highly interconnected world.

Significant advances of communication and information technologies have brought the concepts of communication and information, and the disciplines that deal with them, to the forefront of our daily lives. One would expect that concepts as salient as communication and information would be straightforward in people’s minds. In more ways than one, however, both experts and the general public are under the impression that communication and information are too elastic to be dealt with effectively (see also Ibekwe-SanJuan and Dousa 2014). All too often, the concepts of communication and information are treated as means, rather than as ends in themselves. Imagine that we treat the following concepts yet known to be elastic as means: culture, peace, love, and family. What would be our sense and knowledge of these concepts? We would end up with little to no knowledge about what peace really is and requires, regardless of the means at hand. As long as communication and information lack focus in research, confusion will abound. Consequently, ambiguity as to what differentiates communication science from information science has become pronounced. Meanwhile, as will be apparent below, the bodies of knowledge, research goals, activities, organizations, and publication venues of communication science and information science are shown to be separate and distinct. Disinterest in the convergences and divergences of communication science and information science can only lead to confusion, poor management decisions, and redundant research priorities and programs. Moreover, there are other disciplines than communication science and information science which are at once close and distinct. Instances of close and distinct disciplines with full-blown doctoral programs include nursing/medicine, statistics/mathematics, business/economics, literature/language, art/drama, physics/atmospheric sciences, etc.

Communication and information technologies, the present dominant focuses of communication science and information science, have been proven as vital factors in phenomena as diverse as genocides (e.g., Rwanda, Kosovo, Khmer Rouge, etc.), terrorist bombings of innocent civilians around the world, the change of regimes in North Africa and the Middle East in early 2011, reduction of cancer spread in developed countries, prevention of disaster in population-dense and flood-prone places, etc. Given the importance of these phenomena, we cannot afford poorly conceived sciences that deal with products as widespread and pressing as communication and information technologies. Drawn from all facets of our information-loaded societies, sustained inquiries of communication and information technologies and related disciplines are needed to make the world a better place. While communication science and information science are not a panacea for the world’s problems, fragmentary and unengaged views of communication science and information science leave us unequipped in our fast-changing and information-intensive world.

This paper regards the social sciences in the broader sense of the word, in which the social sciences and human sciences or humanities are interchangeable and involve the study of people’s interactions and inner expressions (see Cibangu 2012a). The humanities and social sciences share the same challenges and characteristics with respect to humans and their relationship with information and communication technologies, the current focus of communication science and
information science. The paper uses the words *communication science* and *information science* for communication studies/disciplines and information studies/disciplines, respectively, but both communication science and information science are examined within the socio-human sense rather than in the strict sense of network engineering (Bawden and Robinson 2013; Buckland 1999, 2012; Cibangu 2002, 2010c, 2012a, 2012b; Craig 1989, 1999, 2009; Ibekwe-SanJuan 2012; Ibekwe-SanJuan and Dousa 2014; Simonson, Peck, Craig, and Jackson 2013). Technical dimensions may well be implied so long as they are based primarily on the socio-human sense of research. The socio-human sense involves the human agency and its related behaviors, artifacts, values, institutions, etc. The paper uses Liddell’s and Scott’s *Greek-English Lexicon* and Lewis’s and Short’s *Latin Dictionary*. This paper is organized around five points: (1) brief history of communication science, (2) brief history of information science, (3) convergences, (4) divergences, and (5) practical considerations.

**Brief history of communication science**

Systematic works of communication go as far back as Antiquity, of which some of the most indicative were Aristotle’s and *The Eloquent Peasant’s* (Parkinson 1991) writings. Although tailored to the skills of rhetorical persuasion, these writings provide milestone reflections about the field of communication. For the history of the idea of communication, Peters (1999) contributes a commendable seminal work whereas the works of Littlejohn and Foss (2009, 2011) provide substantive guidance for the theories of communication science. Other works such as Anderson (1996), Craig (1989, 1999), Craig and Muller (2007), Herbst (2008), Johannesen, Valde, and Whedbee (2008), Miller (2005), Poe (2011), and Scannell (2012) are particularly noted for their theoretical reflections about communication science. From Antiquity to the 1700s, communication issues were debated under the umbrella of the humanities and arts. The humanities were taught in the forms of persuasive speech, creative writing, graphic painting, engaging conversation, sublime meditation, inner examination, moving drama, expressive building, descriptive artworks, and victorious sports and games. The humanities sought to supply humans with communicative skills in order to live better lives. The humanities elevated the soul and body of humans to a fuller life. The humanities dealt with lifeworlds, valuing and enhancing all human sensory expressions. Human expressions such as the arts, writing, building, speech, and objects were considered as the means with which to methodically fulfill human potential. Communication was, and still is, the portal of life accomplishment.

One of the most powerful examples is found in Plato (*Phaedrus*, 275d-e) who resisted the hegemony of writing, complaining that it hampered the richness of human oral communication.

Aristotle stated the object of written and spoken words as follows:

> Therefore, things (expressed) in the voice are symbols of the experiences in life, and things written are symbols of the experiences in the voice. But just as writings are not the same for all, so neither are voices. Nevertheless, the experiences of life, of which these (voices and writings) are principally the signs, are the same for all. And the things, of which voices and writings are the images and facts are indeed the same. (*On interpretation*, 16a 5)

Voices and writings are signs of lived experiences. Signs do no monopolize the object, but rather point to it. While they are unique per individual and case, lived experiences display the same effects, structures, and processes. No human being experiences that which cannot, will not, or never has been experienced by other humans. The experiences of life such as death, birth, suffering, joy, famine, immigration, poverty, abuse, and entertainment are the same among humans. Stated differently, the things of which voices and writings are the images such as pictures, videos, artworks, and records and facts that include matter, format, style, and number remain identical. For example, concepts such as table, river, sun, infant, peace, and rain are the same, but their images and facts are shaped and constructed according to spaces and times. Aristotle laid the foundation of epistemology, putting in unison realism and constructivism. In this sense, the basics of human communication, namely the sharing of meaning and experiences, were outlined (Habermas [1981] 1984, [1981] 1987).

It is through human interaction that voices and writings receive their fuller expression. Of note is the view of voice and speech as items that are more inclusive than the mere fixed and monolithic expressions of an author (Bakhtin 1986, 60-102).

Reality and related experiences are not mere human creations and formulations, but discrete entities with which humans mysteriously interact. Reality remains real, but its representation varies.

Experiences encountered in the voice and spoken words correspond to the whole sense-experiences. Therefore, the experiences of life surface in people’s communication. The Greek participle *παθηµάτωσι* [pathēmāta], from the noun *παθός* [páthos] meaning: conditions, emotions, experiences, sufferings, etc. reflects the lifeworlds with which human communication is filled and concerned. More specifically, despite the fact that writings and speeches differ among humans, communication remains the same in that it conveys and responds to the experiences of life. Pertinently, concerning written and spoken things, Aristotle used the Greek noun *σµύβολοτα* [súmbola], meaning covenant, contract, pledge, etc.

In detail, written words hold a contract with spoken words, 1. Accent marks of some Greek diacritics are not fully reproduced.
and vice versa (Harris 2000, 22-23). Written and spoken words are not above each other; rather, despite their diversity among humans, they each unravel and actualize the experiences of life. Upon this contract and the underlying life experiences, lifeworlds is then anchored human communication.

Furthermore, Aristotle laid the foundation of communication science with the statement that “λόγον δὲ μόνον αὐτοκράτορος ἔχει τῶν ζώων” [then, of the living beings man alone owns conversation (chitchat)] (Politics, 1253a 10). Humans are conversation makers. For various reasons, humans undertake conversations. While chitchat may be deemed as a disturbance, it is a distinctive feature of humans. It is part of human nature to be a chitchatter; no other being is. The statement that conversation is the central descriptor of humans largely inscribes itself against the Enlightenment era. The Greek word λόγον (logos), commonly translated by the English word reason, from the Latin ratio, is not as rational as usually thought, although it received the powers of reason in the Enlightenment era. Besides the meaning of reason, λόγον signifies speech, discourse, conversation (chitchat), expression, opinion, tale, story, fable, and prose. Equally, the Latin word ratio, used for the Greek logos, displays a meaning more mundane than rational. Ratio also signifies business, affairs, interests, and matter. As an example, fables and interests figure among the most irrational human entities. It is no accident that a word as strong as logos would involve unruly and irrational items in its primary meanings. It follows that, in addition to having reason, humans are beings of speech, discourse, conversation, expression, opinion, tale, stories, fables, and prose, all of which are the topics of communication science.

Nonetheless, in the mid-1700s, the commendation of human expressions and experiences met with rejection among the Enlightenment champions. Emphasis was placed on reason to conquer nature and its laws. Reason became the privileged tool of scientific work. Senses and life experiences were deemed irrational and unfit for scientific work. Hence, this era was also called the Age of Reason, and the spectacular achievements and discoveries of the Industrial Revolution in England sparked the Enlightenment dreams. The most influential works were the writings of the English philosopher Francis Bacon (1561-1626) and French philosopher René Descartes (1596-1650). Bacon's ([1620] 1889) Novum organum and Descartes’s ([1637] 1987) Discourse on the method set a new tone in the methodology of scientific research. Novum organum and Discourse on the method called into question the tenets inherited from Aristotle’s magisterial works, especially the Organon which put sensory expressions to the center stage of human communication. The goal was to dominate nature and replicate its laws. Communication revolved around the laws of nature, and the humanities and related human sensory expressions were considered to be insignificant. Communication had to follow the objective norms and methods of reason in order to replicate the universal laws embedded in nature. Feelings, opinions, and emotions were rejected as idols and deterrents of the objective methods of science. Descartes noted that the only thing that characterizes us as humans, and distinguishes us from animals was reason, and reason needed strict methods free from feelings, ideas, stories, conversations, fables, and prose. The Antiquity-propelled themes of communication such as speech, rhetoric, conversation, art, and drama lost their potency. In this Enlightenment-celebrated world view, human communication was supplanted by computation, matter, rationality, technology, conquering power, natural forces, and material inventions. It was in this context that most universities in North America and Western Europe were created, and that the traditional branches of the social and human sciences were officially established. The social and human sciences were modeled on quantitative, normative, and prescriptive methods of communication to comply with the aim of the Enlightenment.

In the 1800s and 1900s, however, the universal powers of reason acclaimed by the Enlightenment proponents came under attack from within the emerging social sciences. Some of the most vocal opponents of absolute and demonstrable rationality were Dilthey (1833-1911), Freud (1856-1939), Husserl (1859-1938), Marx (1818-1883), Simmel (1858-1918), Bakhtin (1895-1975), and Vygotsky (1896-1934). With their multidisciplinary reflections, these and several 18th- and 19th-century authors put forth masterly materials for the variety of topics raised in the history of communication science which called into question the sanctity of reason. Dilthey ([1922] 1988) brought into focus the meaning of human reality, all of which required not replication but interpretation. Freud ([1900] 1913) drew attention to the fact that the powers of reason are shaped and propelled by the deep-seated feelings, emotions, and impulses of humans. Husserl ([1913] 1962) showed the importance of research about human experiences. Marx ([1857] 1977) demonstrated that reason and the laws of society were determined and constructed according to the economic and class interests of the bourgeoisie. Simmel (1908) advocated for the unmanipulated and non-preset knowledge about others and their worlds. Bakhtin (1981, 1986) defended the complexity and multi-activeness of writing and authorship. Vygotsky ([1934] 1986) found that the child development unfolds through human interaction. Absolute rationality and its correlate conquest of nature and knowledge, the dreams of which the Cartesian and Baconian tenets were the vehicle, were challenged, and therefore ceased as the canon of scientific discourse. As could be anticipated, far beyond the idea of nature-conquering reason, communication received different areas of research interest. For space constraints, however, I will address the perspectives of Bakhtin and Vygotsky.
Bakhtin (1981, 1986) strongly defended human speech. Against the Cartesian belief of reason (I think, therefore I am), he developed the idea that I speak, therefore I am. Emphasizing the notion of speech genres, Bakhtin refuted the simplistic views that limit speech, more precisely, communication to oral means. Human expressions involve more than simple mouth movements. “The nature of the utterance and of the speech genres is of fundamental importance for overcoming those simplistic notions about speech life, about the so-called speech flow, about communication and so forth” (Bakhtin 1986, 67). Knitted by elements as diverse as world views, customs, milieus, systems, values, individuals, and histories, speech life transcends a simple transfer of words. An excellent example is poetry, a well-known genre of writing. Imagine that someone limits the notion of writing to poetry, by founding a department of poetry. How much would the person know about writing and its numerous genres? This is what happens with speech, wherein the whole human communication is limited to mouth manifestations. Communication achieves social dialog within which humans experience their lifeworlds, and of which words are only a fraction.

The living utterance, having taken meaning and shape at a particular historical moment in a socially specific environment, cannot fail to brush up against thousands of living dialogic threads, woven by socio-ideological consciousness around the given object of an utterance; it cannot fail to become an active participant in social dialogue. After all, the utterance arises out of this dialogue as a continuation of it and as a rejoinder to it. (Bakhtin 1981, 276)

Social dialog gives life to words. Words represent a continuation and a response to life. Communication science seeks to investigate and promote social dialog. This reminds us of the Aristotelian definition of humans previously discussed, namely the contract between spoken and written words and the experiences in life.

Although predominantly known in psychological circles, Vygotsky’s work put speech on a par with reason. Spoken words regain their role as integral to human experiences. “Therefore we all have reasons to consider a word meaning not only as a union of thought and speech, but also as a union of generalization and communication, thought and communication [emphasis mine]” (Vygotsky [1934] 1986, 9). Speech takes the connotation of human-filled communication in and by itself. In another ingenious contribution to communication, Vygotsky (1978) laid foundations for interpersonal communication with his idea that the child internalizes and appropriates concepts, words, and skills through the interaction he has with society’s members. Interaction becomes the basis of communication through which the child’s abilities develop. With these two authors, speech and human communication recovered their centrality over the absolute power of reason.

Authors of the traditional social and human sciences came to grips with a variety of communication topics.

The study of communication emerged as a special field of research in the United States from the late 1930’s through 1950’s. Scholars who made contribution to communication focused principally on critical issues associated with emerging new media systems… Studies of communication began attracting interest in Europe in the 1960’s and 1970’s and soon gained supporters worldwide. (Schiller 2001, 887)


Today, under diverse focuses, communication science displays an increasing array of themes and domains (Devito 2011; Johannesen, Valde and Whedbee 2008; Littlejohn and Foss 2009, 2011; Simonson, Peck, Craig, and Jackson. 2013). These themes speak to and derive from the history of communication science. The most prominent themes and related research domains that have characterized communications science the last several decades include argument/rhetoric, speech delivery/speech communication, media/mass media, person-to-person interaction/interpersonal communication, intercultural communication, intrapersonal communication, international communication, organizational communication,
communication for development, and online interaction/social or digital media. These history-inherited themes have entailed specific bodies of works and publication venues that can be now classified under the banner of communication science. The scenario is not entirely different from that of information science.

**Brief history of information science**

Humans had sought information for different reasons. Discussions related to information date back far into history. For the history of the concept of information, Capurro (1978, 2009) and Capurro and Hjørland (2003) provided helpful reflections, whereas the works of Case (2012), Fisher, Erdelez, and McKenney (2005), Hjørland (2014), Leckie, Given, and Buschman (2010), Spink (2010), and Spink and Cole (2006) constitute important sources of theories for information science. In recorded history, the earliest scholarly works of information are found in ancient Egypt (Parkinson 1991) in various contexts (e.g., health, relationships, agriculture, pasturage, construction, travel, astronomy, metallurgy, trade, language, culture, law, etc.). The construction of edifices as immense and millennia-lasting as the pyramids speaks to sophisticated works of information acquisition and organization concerning the design, plan, landscape, conduct, management, implementation, coordination, manpower (e.g., health, safety, nutrition, housing, etc.), equipment, materials, transport, and maintenance of the buildings. Pyramids display systematic structural uniformity from place to place and time to time across Egypt. Such an enormous and well done enterprise could not be possible without duly conserved and transmitted information packages.

With a statement so consequential for information science, Aristotle presented knowledge as naturally inscribed in human beings. Aristotle wrote, “πάντες ἀνθρώποι τον εἴδεναι ὑπέρτοι τὰς φύσεις [all men, by nature, yearn for the act of knowing (concrete knowledge)]” (*Metaphysics*, 980a 22). The Greek infinitive εἰδέναι [εἰδαιν] means to see, behold, perceive, know, or be versed in. Therefore, the verb εἰδέναι conveys the connotation of knowledge involving the whole senses. Moreover, since the infinitive is used here as a noun, it indicates an active meaning of the word. It implies that information is a deeply longed for and senses-processed phenomenon. In this regard, information is context-bound. Humans are information beings. Another of Aristotle’s correlated statements, foundational to information science, showed human nature as compatible with scientific knowledge. Aristotle argued, “καθώσπερ ἀνθρώποιν τὸ ζωον θίητον ἐπιστήμης δεκτικον [just as exactly concerning man a mortal living being (that is) receptive to scientific knowledge]” (*Topics*, 128b 35). The Greek word ἐπιστήμης [ἐπιστῆμα] has the meaning of scientific or expert knowledge/information. In the Age of Reason, human nature and the related feelings and emotions were seen as idols that hindered the acquisition of scientific information. However, without any qualifier, the whole package of human nature, including feelings and emotions, is shown to be welcoming scientific knowledge. Not only do humans strive for information, but their nature is the receptacle of scientific information. It shows that scientific knowledge can dwell among humans. Scientific information was thought to be reserved to the gods in Antiquity.

While books, and more precisely paper and papyrus, constituted important information technologies in Antiquity, they were not the means by which the term information was exhausted. Believed to have its siege with the gods, information in Antiquity was manifested in a variety of materials such as buildings, mummies, masks, paintings, and personal objects. The Middle Ages relayed the beyond-papyrus/paper conception of information and witnessed a tremendous technological progress with the artful and expressive construction of cathedrals, museums, libraries, monasteries, and castles across Europe (see Cibangu, 2012b). Information then enjoyed a holistic view.

In the Modern Times, however, with the works of the Enlightenment fathers, particularly those of Bacon (1561-1626) and Descartes (1596-1650), came the idea of information as a power with which to conquer nature, humans, and reality. Presently, the nature-control idea of knowledge stills rules technological inventions and authors’ philosophical underpinnings across disciplines. Bacon insisted, “nam et ipsa scientia potestas est [and indeed knowledge itself is power (emphasis mine)]” ([1597] 1857, 241). The Latin word scientia reflects the sense of practical/concrete knowledge. It is safe to argue that the Baconian meaning of the word scientia, translated by knowledge, is that of practice- or task-oriented information. Practice-oriented information is largely employed in current social science materials. For example, concrete knowledge is presented as key in the famous diagram of the concept of information (Taylor 1986; for action-oriented knowledge in general see Buckland 1991a, 1991b, 1991c, 1996, 1997, 1999, 2012). This is a knowledge that has the practical connotation of skill and/or action. Taken this way, knowledge was, in extensive areas of Bacon’s oeuvre, presented to have the nature of power (see Bacon [1620] 1889, 180, 192, 347-48, 569). One example is sufficient: “Etenim ipsum Posse et ipsum Scire naturam humanam amplificant, non beant [in fact, power and knowledge each extend human nature, but they do not make humans happy (fulfill them)]” (Bacon [1620] 1889, 180). As is clear below, although acknowledged by Bacon, the inability of practical knowledge to fulfill human potentials has been largely overlooked in academia. Remember that happiness/fulfillment involves a great amount of inner feeling/emotion. Extending humans’ practical knowledge does not necessarily imply happiness. In addition, Descartes recommended knowledge to be methodic and rational, namely free of the human feelings and ideas.
The Cartesian conception of knowledge as rational and the Baconian conception of knowledge as power over nature have each left a far reaching impact in the social and human sciences, especially information science. Unlike Antiquity wherein knowledge was beholden to deities and/or ideas, the Baconian knowledge was thought to be exclusively human to allow for the replicability and conquerability of reality. Reality was seen as conquerable, manipulable, and controllable. European explorers conquered lands across continents and established colonies. The underlying assumption behind the conquistador-mindset of nature was one of the replicability and universality of human knowledge, harnessed to experiment, implement, and devise artifacts and actions across spaces and times. In the 1900s, as the Cartesian and Baconian beliefs received further impetus from the inventions of information technologies, they underlie the discussions and associations concerned with information. For example, in 1945, Vannevar Bush conceived the Memex, a device with which to process and control information (Bush 1945). In 1948, Shannon developed the information theory to measure information. In 1952, however, Garfinkel (2008, 101-265) gave one of the most comprehensive accounts about information and communication (detail below). This groundbreaking work has received minimal attention in communication science and information science. The terms information science and information scientist were first used by Farradane in 1953 and 1955, respectively (Farradane 1953, 1955).

In 1958, the Institute of Information Scientists, UK, was formed, and was merged in 2002 with the British Library Association to become the Chartered Institute of Information Professionals (http://www.cilip.org.uk/). In 1937, the American Documentation Institute was formed, and in 1968, the American Documentation Institute became the American Society for Information Science, and the American Society for Information Science and Technology [ASIS&T] in 2000 (http://www.asist.org/). ASIST publishes the Journal of the American Society for Information Science and Technology [JASIST]. Information was seen as document. Newly identified information scientists followed traditional methods of engineering. In 2012, due to an increasing number of international contributing scholars within its venues, the ASIS&T changed its name to the Association for Information Science and Technology, and the Journal of the American Society for Information Science and Technology became the Journal of the Association for Information Science and Technology (Sonnenwald and Bruce 2014). The name change took effect in 2013, but the acronyms JASIST and ASIS&T continue to be used. The term American has been dropped. As Sonnenwald and Bruce (2014) explained, “this change reflects increasing recognition among ASIS&T members that the challenges addressed by the information sciences cross geopolitical and socio-cultural boundaries, in addition to crossing disciplinary boundaries” (1). The major journals of information science include Journal of Information Science, Library and Information Science Research, Journal of the Association for Information Science and Technology, Journal of Documentation, Information Processing & Management, Library Trends, and Information Research.

Along these transformations, information science has inherited two major trails of research (see also Cibangu 2010a, 2010b, 2010c). On the one hand, the Enlightenment-infused perspective values the measurement and controllability of information. The explicaiton, implementation, measurement, and control of information technologies and related forces dominate the discussions of information. On the other hand, the Antiquity-led perspective emphasizes the transcendence of information encountered in people’s lifeworlds. The immersion into and/or compliance with people’s agency, experiences, struggles, cultures, and values become the overarching theme of research and its conclusions.

An important precision to make about information science regards the field of information systems, variely called information management. While information systems refers to the concept information in its works, it is not the sub-field of information science in the strict sense of the word. Information systems is a branch of management science that seeks to supply corporates and executives with greater organizational and managerial skills and hands-on business models (Anderson et al. 2011; Hillier and Hillier 2010; Ladley 2010; Rainier and Cegielski 2012; Ross n.d.). Information use is only one of the many aspects that characterize the business world, though it is an important one. As Ross (n.d.), the CISR’s [Center for Information Systems Research] director, stated, “since its establishment in 1974, MIT [Massachusetts Institute of Technology (USA)] CISR has been studying one question: How do organizations generate business value from IT [Information Technology]? [emphasis in original]” (n.p.). The end product is not information, but greater business (i.e., managerial, entrepreneurial, financial, and administrative skills and tools) using information technologies. Major areas of information systems (Anderson et al. 2011; Hillier and Hillier, 2010; Ladley 2010; Rainier and Cegielski 2012; Ross n.d.) include operations research [operations management], business decision-making, finance, accounting, business strategy, entrepreneurship, marketing, stochastic processes, administration, and manufacturing. “The three areas of major and continuing interest [of information science] are information retrieval [knowledge organization], user and use studies [human information behavior], and metric studies [citation analysis, bibliometrics, Webometrics, etc.]” (Saracevic 2010a, 2573). Authors need to be aware that information systems and information science represent two separate bodies of knowledge, with different activities, organizations, venues, and goals.
Several points conflate communication science and information science, of which I have selected three most recurrent: (1) transmission of information, (2) information and/or communication, and (3) ways in which communication science and information science are presented. First, the transmission of information concerns a variety of information phenomena: process, measurement, access, dissemination, transfer, and effects. One of the best analyses of the transmission of information can be found in Shannon’s (1948) work. Interestingly enough, Shannon considered communication and information as interchangeable, leaving an indelible mark on the social sciences. For example, according to The Oxford American Dictionary, communication is the practice and science of transmitting information whereas Bates (1999), Bates and Maack (2010), Borko (1968), and Saracevic (1992, 1999, 2010a, 2010b) listed the transmission of information among the defining features of information science. Dissemination is another concept of information transmission. Peters wrote, “my aim here is to contrast two Grundbegriffe in communication theory, dialogue and dissemination [of information]” (1999, 35).

Likewise, information science is presented as the discipline of information dissemination (Bates 1999; Bates and Maack 2010; Borko 1968; Saracevic 1992, 1999, 2010a, 2010b). Relayed by the Shannonian perspective of information, the word communication does not improve clarity either. The second point of conflation is information and/or communication. In 1971, curricula of information science simply included communication and information theory (Belzer, Isaac, Finkelstein, and Williams 1971). Information and communication were considered synonymous terms, and this perspective has persisted. In 1992, Ruben noted close relationships between communication and information. The Shannonian influence could and can still be seen. Ruben claimed, “communication study focuses on the ways in which individuals process information” (2002, 157). In 2007, Bonito proposed the concept information sharing to make sense of communication in small groups. In 2012, debating risk communication models, Braun and Niederdeppe developed the idea of information sufficiency, with a view to improve information seeking and processing. In 2014, Literat and Chen put forth the Communication Infrastructure Theory [CIT] wherein individuals are primarily seen as seekers and negotiators of information.

Since the last few decades, there have been persistent efforts toward presenting communication chain as that which distinguishes information science from other disciplines (Bawden and Robinson 2012; Robinson 2009; Robinson and Karamuftuoglu 2010). More precisely, Saracevic noted, “information science is a field devoted to … addressing the problems of effective communication of knowledge [emphasis in original]” (1992, 11). Effective communication is thought to distinguish information science’s goals. In sum, Peters maintained:

The conceptual mix-up, or some would argue, an offspring of fragmentation, is still with us. In defining what is unique to information science, Robinson and Karamuftuoglu (2010) argued, “the information scientist therefore has a uniquely generalist approach to all aspects of the communication of information” (n.p.). In 2013, Robson and Robinson presented a new model in information science, saying, “a new model is now presented that incorporates these factors [affecting the communication of information] and links information seeking and communication” (185). Describing the field of communication science, Calhoun (2011) emphasized, “the topics studied by communication researchers are extraordinarily diverse. They range from extremely micro accounts of the use of mobile phones to extremely macro accounts of global flows of information and influence” (1486). The same is true of information science (see Dillon 2012; Furner 2012; Hjørland 2014). On the one hand, communication is considered central in defining information science, and on the other, information is considered central in defining communication science. It follows that there needs to be collaboration between communication science and information science.

The third and last point of conflation regards the ways in which authors suggest the complexion of communication science and information science. For example, in his information science’s review, Saracevic (2010a) classed communication theory and communication science as areas of information science, whereas information science is presented as part of communication science in the International Encyclopedia of Communication (see Ingwersen 2008). In other words, communication science and information science consider each as the container of the other. Such description implies areas of convergence. It is noteworthy that, due to the wide array of convergent points found between them, information science and communication science are considered by French speaking scholars as one discipline called ICS [information and communication science(s)] (Ibekwe-SanJuan 2012). Not
surprisingly, Ibekwe-SanJuan (2012) noted, “the cohabitation
of information science with communication science in the same
(inter-) discipline brings its own trials that render the quest for
identity and visibility more difficult” (1706). Consequently,
convergence does not exclude distinctiveness.

Divergences

The themes, venues, activities, organizations, and ensuing
bodies of literature clearly differentiate communication science
and information science. Describing what is unique to
information science in one of her most forgotten reflections,
Bates explained that information science, journalism, and
education, for example:

… deal with distinct parts of the transmission of human
knowledge – information science with the storage and
retrieval of it in recorded form, education with the
teaching and learning of it, and journalism with the
discovery and transmission of news [emphasis mine].
(1999, 1044)

Storage and retrieval represent a core feature of information
science. Recording information means to deposit in a given
form such as culture, language, paper, and custom. Recorded
information is a sign/pointer, not a possessor of the information
universe. As Garfinkel remarked, “it must make sense to talk of
its [of information] clarity or ambiguity, of its uniqueness and
typicality; of its private, public, personal, impersonal,
anonymous or identified character… without implying any
notion of a finite total [emphasis mine]” (2008, 111). The
information universe resists totalitarian usage and reification.
Information represents the world of pattern(s). “Information is
information, not matter or energy. No materialism which does
not admit this can survive at the present day” (Wiener [1948]
1965, 132). Closely related to this characteristic is the
organization of information. Organization here concerns the
deliberate selection of information for future usage. Bates
elaborated, “the domain of information science is the universe
of recorded information that is selected and retained for later
access” (1999, 1044). The most distinctive feature of information
science proves to be storage, organization, and retrieval of
information.

In their landmark study outlining the specifics of communication
science, Brenders and Norton stated, “the word communication
is reserved to mean more than simple information [emphasis
mine]… Communication works interactively” (1996, 17).
Brenders and Norton clarified, “communication incorporates
the notion of the enthymematic process… a process in which
selected information triggers an enthymematic response
characterized by nonrandom connections corresponding to
and coordinated with the sender’s connections [emphasis
mine]” (1996, 17). Note the notion of nonrandom and
coordinated connections. An important aspect of
communication science is the heart-to-heart dialog. As Peters
noted, “communication is a registry of modern longings …
where nothing is misunderstood, hearts are open, and
expression is uninhibited” (1999, 2). Communication implies
openness of hearts and of nonverbal and verbal expressions.
Stated differently, communication deals with negotiated
behavior of information and/or meaning. “For human
communicators the process of communication is viewed as a
complex set of interactions, transacted (negotiated) across a
wide spectrum of cultural and situational contexts” (Findlay
1998, 33). Dialogical information characterizes communication
science. As Cooren stressed, communication studies deal with
“ça communique” (2012, 12). This French expression refers to
the whole-package interaction-intensive phenomena within
which interactants share information. Communication is based
on comprehensible expressions and undertakings between the
dialog’s participants. Communication engages “net-work”
(Garfinkel 2008, 114). Communication science studies the
processes of nonrandom connections, open dialog, and/or
transacted behavior. Bringing a distinct flavor, Calhoun (2011)
asserted, “my own sense [of the communication field] is that
media is most defining, but that the most creative media studies
don’t stand on their own, they connect media to other issues”
(1481). As for the information field, Hjørland (2014) concluded,
“the unique focus of LIS in relation to other disciplines is
therefore: the study of the information ecology in order to
facilitate its utilization for many specific purposes” (225).

Practical Considerations

It is one thing to invoke information technologies and their
adoptions in communication science and/or information
science, but it is another thing to be aware of and contribute to
the works of others. To make things worse, definitions are
controversial among researchers. Researchers are hesitant to
define and identify their works for fear that there will be a blast
of criticism, blame, rejection, and disappointment. Rather than
proposing a war of definitions, this paper stimulates dialog
about our inevitably interconnected works. We cannot help
our readers and policy makers, nor make progress about
information technologies by assuming that the works of others
are different from ours. The best example is with housing.
Although we use the same construction materials, equipments,
contractors, and places to build our houses, we are not
confused as to where and what our houses are. Rather than
knowing the best definition of a house, a person should know
how to arrive at her own house in a yet confusing
neighborhood. This is how we can make progress in our
neighborhood, community, and nation, in this case,
communication science and information science. Another
aspect of work that specialists in communication science and
information science all too often acclaim is that of
interdisciplinarity. There is no such thing as a science that
does not involve and/or require other disciplines. Our works will be more contributive if we can show how our interdisciplinarity differs from that of others. Experts on both sides, namely communication science and information science, have come to the realization that the concepts used in respective fields are “in need for systematic consideration” (Hjørland 2014, 205) or “call for rethinking” (Putnam and Mumby 2014, 14).

This paper offers an invitation to concerted works of communicators and information scientists rather than provide an exhaustive and prescriptive account of achievements in the disciplines of communication science and information science. In a networked world, we cannot thrive in ghettos. For a theme as immense as information and communication, collaboration will only strengthen contributions and reduce duplications. As Ibekwe-SanJuan reminded us, “it has been particularly difficult for ICS to distinguish itself as a separate scientific field from other neighboring fields such as sociology, psychology, anthropology, ethnology, semiotics, journalism, and even computer science” (2012, 1697). There are other cognate areas from which a distinction is needed both in communication science and information science, such as philology (rhetoric), literature, museum studies, ethics (philosophy), education, management, development studies, women studies, ergonomics (in its section of Human Computer Interaction), and public health. By addressing or borrowing theories/topics that cross-cut domains and/or belong under established expertise and bodies of literature, the works of others should be acknowledged as best as possible. This paper calls communication- and information-related researchers to move beyond a preoccupation with new communication and information processes and tools to the identification of research questions true to their respective niches. Researchers in communication science and information science can then avoid duplication.

One of the most influential figures in the fields of communication science and information science, the American mathematician Norbert Wiener (1894-1964), deserves a special mention. It is inexplicable that although Shannon unequivocally acknowledged how his “communication [information] theory is heavily indebted to Wiener for much of its basic philosophy and theory” (1948, 34), Wiener had received only passing attention in communication science’s and information science’s literatures. Wiener argued:

If the difficulty of a physiological problem is mathematical in essence, [then] ten physiologists ignorant of mathematics will get precisely as far as one physiologist ignorant of mathematics, and no further. If a physiologist who knows no mathematics works together with a mathematician who knows no physiology, the one [former] will be unable to state his problems in terms that the other [latter] can manipulate, and the second will be unable to put the answers in any form that the first can understand. … A proper exploration of these blank spaces on the map of science could only be made by a team of scientists, each a specialist in his own field but each possessing a thoroughly sound and trained acquaintance of the fields of his neighbors; all in the habit of working together, of knowing one another’s intellectual customs, and of recognizing the significance of a colleague’s new suggestion. … We had dreamed for years of an institution of independent scientists, working together in one of these backwoods of science, not as subordinates of some great executive officer, but joined by the desire, indeed by the spiritual necessity, to understand the region as a whole, and to lend one another the strength of that understanding. ([1948] 1965, 2-3)

Communicators and information scientists are urged to fill the blank spaces left on the map of information-related specialties. This is not to bring about an executive body of officers to patrol the dos and don’ts of communication science and information science. The habit of working together is not acquired overnight, but takes time and committed action. Such effort raises awareness about our divergences and convergences. For example, in an era where agreement is difficult to reach within and between families, groups, neighborhoods, corporates, and nations, communication science has its hands full. Or, in an era where, one format of information, be it digital, tends to take over the world of information, information science must lose no time.

**Conclusion**

As scholars in the disciplines of communication science and information science, we have been doing and saying the same things for too long, leaving aside the paths that take us to brighter horizons. This paper is a small contribution to the much needed debate about a clearer and firmer cachet of the science of information science. The habit of working together is not acquired overnight, but takes time and committed action. Such effort raises awareness about our divergences and convergences. For example, in an era where agreement is difficult to reach within and between families, groups, neighborhoods, corporates, and nations, communication science has its hands full. Or, in an era where, one format of information, be it digital, tends to take over the world of information, information science must lose no time.
of information and communication cannot and should not be supplantled by one format and/or area of study.

References


