


## NAVIGATING WITH OUR EYES, SPEAKING WITH OUR FINGERS: ICTs and the ecology of life

NAVEGANDO COM OS OLHOS, FALANDO COM OS DEDOS: as TICs e a ecologia da vida  
NAVEGANDO COM LOS OJOS, HABLANDO CON LOS DEDOS: las TIC y la ecología de la vida

### Sylvia Caiuby Novaes

PhD and Master in Social Anthropology from the University of São Paulo (USP). Full Professor of Image Anthropology at USP. [sylvia.caiuby.novaes@gmail.com](mailto:sylvia.caiuby.novaes@gmail.com).

 0000-0002-7415-2010

### Victor Eiji Issa

Doctoral student at the Graduate Program in Social Anthropology and Master in Social Anthropology at the University of São Paulo (USP). [issaeiji@gmail.com](mailto:issaeiji@gmail.com).

 0000-0002-9785-4963

Mailing address: Universidade de São Paulo (USP), Avenida Professor Luciano Gualberto, 315, sala 15, Cidade Universitária, São Paulo-SP, Brasil - CEP: 05508-010.

Received: 04.03.2020.  
Accepted: 05.27.2020.  
Published: 07.01.2020.

### ABSTRACT:

This article presents some questions that arose during the process of producing my ethnography of the uses of Information and Communication Technologies (ICTs) in the city of São Paulo. I propose, based on what Tim Ingold calls the ecology of life (INGOLD, 2000), that communicating, relating and expressing yourself using such technologies are skills that are developed from a process of constant discovery and rediscovery of our bodies, senses and their relationship with the environment that surrounds us.

**KEYWORDS:** Impacts of the use of ICTs; skills; ecology of life; technology.

## Introduction

Now, whenever I think about those people, my legs carry me off down the street so that without realizing it I found myself at the door of the Hotel Pharoux. I was in the habit of dining there. But, not having deliberately walked there, I deserved no credit for the act, but my legs, which had done so, did. Blessed legs! And there are those who treat you with disdain or indifference. Even I, until then, held you in low esteem, getting annoyed when you tired, when you couldn't go beyond a certain point and left me with a desire to flap my wings like a hen tied by the feet.

That time, however, it was a ray of light. Yes, legs, my friends, you left the task of thinking about Virgilia to my head and you said to one another, "He's got to eat, it's dinnertime, let's take him to the Pharoux. Let's divide up his consciousness, one part can stay with the lady, we'll take over the other part so that he goes straight ahead, doesn't bump into people or carriages, tips his hat to acquaintances, and, finally, arrives safe and sound at the hotel." And you followed your plan to the letter, kind legs, which obliges me to immortalize you with this page (MACHADO DE ASSIS [1997 {1881}]).

In the excerpt above, we see the central character of the novel *The Posthumous Memoirs of Bras Cubas* thanking his legs for having led him to his destination without his realizing it. In our everyday life, in a not so poetic way, we often find ourselves doing something “automatically”. Speech, for example: for most people, it is an act so routine that it seems to “flow”, it seems to be a “natural” ability of human beings. We forget the complex mechanics involved in this action. For us to speak, we need to make two membranes located inside the larynx - the vocal cords - come together, so that the air in our lungs makes them vibrate, producing a sound, which is our voice. And we also forget the whole story, the whole meshwork of relationships, with our body and the environment around us, behind the process of developing this skill.

The same is true for the use of information and communication technologies (ICTs). Before proceeding with the discussion, it is important to define what technologies we are talking about. Gillian Marcelle presents us with a clear definition of the concept:

Information and communication technologies (ICTs) are a complex and heterogeneous set of goods, applications and services used for producing, distributing, processing and transforming information - - included in this set are the outputs of industries as diverse as telecommunications, television and radio broadcasting, computer hardware and software, computer services and electronic media (e.g. Internet, electronic mail, electronic commerce, computer games).

ICTs are a systemic, pervasive set of technologies that are associated with fundamental institutional, social and economic restructuring (MARCELLE, 2000).<sup>1</sup>

Such technologies have spread around the world and, as Kenski points out, “considerably increased the speed and power of the ability to record, store and represent written, sound and visual information” (2007, p.34)<sup>2</sup>. Communicating, relating and expressing yourself using such technologies are skills that are very much used in the lives of inhabitants of different places on the planet, so much so that we often do not realize the number of skills and agents, material and human, involved in the process registration, stock and representation of written sound and visual information. Just as we were able to walk distracted, to the point of simply letting ourselves be carried by the legs, as we saw in the case of *Brás Cubas*, just as in an ordinary dialogue we articulate in a fraction of a second a series of words that we barely remember when we learn their meaning, we also type an email on a computer keyboard or type on a touchscreen a message in some

---

<sup>1</sup> Text available at <http://www.un.org/womenwatch/daw/csw/marcelle.htm>.

<sup>2</sup> My translation.

messaging application without realizing the meshwork of relationships that we have been weaving to develop such skills.

In this article, my objective is precisely to discuss some new ways of relating to and with the world through ICTs. It is important to bring such a discussion, because even though there are already numerous works focused on the way people interact online and offline (HORST and MILLER, 2012; HINE, 2015; NARDI, 2015; BOELLSTORFF, 2016; SEGATA and RIFFIOTIS, 2016), trying to show how there is no opposition or separation between these two spheres, I try to think of this interaction under a perspective guided by the anthropology made by Tim Ingold.

Before continuing this reflection, it is important to note that even though I made a comparison between walking and speaking, there is a big difference between these ways of acting in the world and those that I will talk about in this article: speaking and walking are techniques that depend only on one instrument, our body. A long time ago, Marcel Mauss in his essay *Les techniques du corps*, reminded us that

The body is man's first and most natural instrument. Or, more exactly, without speaking of an instrument: man's first and most natural technical object, and at the same time a technical mean, is his body (MAUSS, 2008, p.407).<sup>3</sup>

In the case of certain ways of expressing ourselves, communicating or accessing information, digital technologies are practically an indispensable means of having access to action in the world. For example, I can even access and create a *Facebook* account through a public computer, but I will have certain inconveniences that I would not have if I had access to this social network through my own device. Another example is the fact that I cannot use the *Whatsapp* application without a cell phone number. Because it is an application whose function is to allow, register and manage the sending of private messages, there is no point in not using a device of your own. Realizing this need for a device is important to be aware of the fact that the process of developing certain skills is influenced by the possibility of having access to certain tools - which in general are expensive. We cannot forget that performance of the device also influences the type of experience that the user will enjoy. In general its performance such as data storage capacity, capacity and speed in data processing, user interface is directly proportional to its price - that is, it is influenced by factors such as the person's purchasing power.

---

<sup>3</sup> My Translation.

I am not saying that walking and speaking are skills that are developed homogeneously among members of the same social group. We are born with a mouth, tongue, larynx, lung, hips, legs, feet and fingers, there are a multitude of different ways of using the voice (for example in intonation and height or in the way of positioning the tongue during speech even between speakers of the same language) and to move our lower limbs. There are people who were born without a limb or who suffered an accident that caused damage to their body, but that does not make them unable to use their bodies in a creative and brilliant way. What I want to point out is how access to certain tools plays a significant role in access and experience in what De Souza and Silva (2006) calls hybrid spaces. To get an idea of the importance of this factor, it serves as the basis for Dannah Boyd's argument against the use of the term "digital natives". She writes:

Because teens grew up in a world in which the Internet has always existed, many adults assume that youth automatically understand new technologies. From this perspective, teens are "digital natives," and adults, supposedly less knowledgeable about technology and less capable of developing these skills, are "digital immigrants." (...) but this does not mean that they inherently have the knowledge or skills to make the most of their online experiences. The rhetoric of "digital natives," far from being useful, is often a distraction to understanding the challenges that youth face in a networked world (BOYD, 2014, p.176).

Further on, the author continues:

Variations in experience also result in another form of digital inequality: differential levels of skills. For more than a decade, sociologist Eszter Hargittai has surveyed internet users, including youth, about their web skills. She shows that far from being a generational issue, there are significant differences in media literacy and technical skills even within age cohorts. Variation in skills is linked in part to differences in access to computers. On one end of the spectrum, those teens who have their own laptops and smart phones often access the internet wherever they go for everything from fashion advice to homework assignments. At the other end of the spectrum are teens who have limited opportunities to access the internet and then only in highly regulated, filtered contexts like school computer centers or libraries (idem: p.194 - 195).

As the reader may have noticed, I often use the term "skill". It is an important term proposed by Ingold, for the construction of the theory that is called an ecology of life (INGOLD: 2000, 2012; VELHO: 2001; CARVALHO and STEIL: 2012; CICHOWICZ and KNABBEN: 2018). Let us present an overview of this theory so that the reader can better understand the analysis I propose here.

## The anthropology of Tim Ingold

The *ecology of life* offers interesting resources for thinking about the relationship between humans and digital information and communication technologies. Ingold brought a renewal in the thinking of many anthropologists by proposing a perspective that is willing to study the human being as a totality that is in a constant process of formation. This totality is not thought through a separation between the human being - in many approaches believed as an entity closed in itself, endowed with a mind and culture that distinguishes it from other living beings - and the world around it -, but rather as a being that is in a constant process of formation from a flow, of a joint interaction of people with the environment that surrounds them. Dualities hitherto strongly established in Western thought, such as nature and culture, subject and society, body and mind, subject and object, are overcome, allowing to develop an approach in which technology and humanity no longer appear as two distinct spheres, in which one overlaps the other, but rather as interacting elements, in a relationship that Ingold calls *engagement* (2000; 2010), a relationship that, from practice, imprints on human beings a set of skills, which according to the author, is what constitutes the so-called "knowledge".

*Skill* is one of the key concepts in Ingold's theory. In chapter 19 of *The Perception of the Environment*, the author talks about string bags, known as *bilum*, widely used by Telefol, a group from Papua New Guinea, and highlights how children, from an early age, start to make bilums. When talking about the scholarship making process, he highlights how:

These skills, then, far from being added on to a preformed body, actually grow with it. In that regard they are fully part and parcel of the human organism, of its neurology, musculature, even anatomy, and so are as much biological as cultural. After all, a human being, with its particular aptitudes and dispositions, is a product of neither genes nor culture, nor of both together, but is rather formed within a lifelong process of ontogenetic development. To be sure, the skills of looping are acquired, in the sense that at whatever stage in the life-cycle they may be identified, a history of development already lies behind them (INGOLD, 2000, p.360).

According to Ingold's theory, what many researchers (not just anthropologists) call cultural variation, consists primarily of variations in skill. Life is not a simple realization of pre-fixed forms, or "representations". Being in the human world is not like the operation of a computer, guided by algorithms, or in other words, it cannot be summed up as the execution of genetically or culturally determined actions. Life is a constant adjustment of our perception, our body and our senses to the environment that surrounds us. It is a

constant adjustment because, inspired by the phenomenology of Merleau-Ponty and the ecological approach to perception proposed by the psychologist James Gibson, Ingold argues that the history of our experiences in the world influences our perception. Life is a process of constant discovery and rediscovery.

It is important to highlight that here the existence of genes is not denied or that there is knowledge, practices and symbols that are socially shared. The way Ingold thinks about the acquisition and construction of knowledge and new representations, through what he calls the education of the senses (2000; 2010) is based on the idea that life should be thought of as a *meshwork of relationships*, or *lines*. It is not by chance that the author used the example of making bums, based on the interlacing of threads. What makes reading Ingold's texts interesting but challenging at the same time is that he uses metaphors and puns all the time, often not translatable into another language. In the case of the process of making the bags, the threads, ties and the act of weaving are words that appear literally in the process of description, but it is also the analogy chosen by Ingold to explain how life is the intertwining of history that people build and they tell each other from a person's relationships with their environment. Not a finished story, but one that is constantly becoming, that follows the flow of this interweaving of experiences. Being in the world - human life - would be a mesh of threads.

For a long time, the term "culture" was thought of as a set of representations that guide our action in the world, a concept that, as we have seen, the ecology of life seeks to deconstruct. About the term "culture", he writes:

Human beings, it seems, differ from other animals in that they are peculiarly able to treat the manifold threads of experience as material for further acts of weaving and looping, thereby creating intricate patterns of metaphorical connection. This interweaving of experience is generally conducted in the idioms of speech, as in storytelling, and the patterns to which it gives rise are equivalent to what anthropologists are accustomed to calling 'culture' (INGOLD, 2000, p.361).

A very interesting point of the approach proposed by Ingold is that it allows us to escape from some common determinisms when thinking about the relationship between human beings and the environment that surrounds us, as we saw above when quoting genes and culture. But, from the point of view of reflections on digital technologies, it also allows us to deal with a certain technological determinism, that is, the idea that social and historical phenomena are directly influenced by new technologies. This idea stems from the idea that machines operate according to processes that are independent of human will and, with their presence increasingly prominent in different sectors of society,

these would have a central role in the development of societies. Let's look at this excerpt from A Declaration of the Independence of Cyberspace:

Cyberspace consists of transactions, relationships, and thought itself, arrayed like a standing wave in the web of our communications. Ours is a world that is both everywhere and nowhere, but it is not where bodies live.

We are creating a world that all may enter without privilege or prejudice accorded by race, economic power, military force, or station of birth. We are creating a world where anyone, anywhere may express his or her beliefs, no matter how singular, without fear of being coerced into silence or conformity.

Your legal concepts of property, expression, identity, movement, and context do not apply to us. They are all based on matter, and there is no matter here (BARLOW, 1996).

Could it be that the "real" does not influence the relationships that are built using ICTs? Let us move on to the central discussion of this article.

### **Navigating with our eyes, talking with our fingers**

During my fieldwork, many times I came across people who complained that they had already been "blocked" on social networks or in messaging apps without understanding why they suffered such a punishment or told me they had "blocked" someone to express how much something offended them. "Block" is a term so present in the daily life of many people in São Paulo (the city where I do my research) that it sounds like something whose meaning is "obvious", that needs no explanation. But what would become of us anthropologists if we did not question the obvious?

"Block" is to cut off the access that a person has to his phone number or account on any social network. I chose to start with this example because it illustrates how much can be said without using a single word. It is a learned *skill*. It is a form of expression, which is definitely not "intuitive". In fact, it is interesting to see how many people use the term "intuitive" to explain a tool, whether it is hardware or software, or to describe their experience of using certain technologies.

I started this article talking about how certain skills like walking and speaking have already been so incorporated into our everyday experience that we barely remember when and how their development process went. The same is true of many skills related to the ICTs. There is a lot of literature that proposes to analyze the contents developed from the uses of these technologies or the role played by the technologies in our "social

structure”, however there is still a lot to think about the relationship of these technologies with the body, what role the organism plays in the processes of construction, meaning and use of digital tools. If we remember what John Perry Barlow says about cyberspace, this for him is a space where “bodies do not live”. But, if it is not with our bodies, how do we interact in this “cyberspace”?

Thinking about the answer to this question, I gave this article the title of *Navigating with our eyes, talking with our fingers*. A great example is the process of writing this text. I am sitting on a chair, facing a small table in my room. I am using my fingers to type words that link to form a text that I hope is coherent and attractive. I move my fingers quickly, already knowing where the keys are. I am using a text processing and editing program. Using one of its functions, I know that I have already typed more than ten thousand characters. But, just as we walk to a place without knowing how many steps we take until we reach our destination, I don't care about the movement of my fingers, what I care about is writing what I'm thinking. There are a number of elements arranged on the screen. I see this huge set of symbols in every corner of the screen, but I don't feel confused. I confess that there are many symbols and terms that I have no idea what they are for, but I recognize the functions that are part of my daily experience when using this software. In the street, we don't pay attention to everything that appears in our field of vision. We see a tree, but we don't know exactly how many leaves and branches are in its canopy. Our visual experience depends on where our eyes go. Our eyes are not born “programmed” to aim at a particular object, symbol or color, but as we live and learn, as we develop certain skills, we direct our gaze. It is a process that does not depend only on the eyes, not only on our brain, nor on genes, nor on “culture”. It is a skill built on the relationship of our body and the environment that surrounds us.

I understand the fascination that the idea of cyberspace provokes for many people. Being able to generate and share a multitude of contents for the most remote parts of the world is something that impresses.

Joon Ho Kim (2004, 2005) presents very good reflections on the construction of an imaginary around the notions of “cyberspace” and “cyberculture” and its dissemination in common sense. According to the author, such constructions are a response to what the author calls the creation of a “new order of the real” caused by the dissemination of technologies called “cybernetics” and the popularization of scientific discourses around the possibilities opened up by such technologies.



if, on the one hand, cybernetics was not very successful as a science, it decisively influenced modern culture with residues from its explanatory models, engendering, together with other residues that are ceaselessly produced by technology and science, what we could call of "cyberculture". Such residues are certain notions and values arising from technical and scientific discourse that, moved to the level of common sense, introduce new distinctions in the old interpretive schemes so that they can face the properties of a world, as Escobar (2000, p. 62), in which the boundaries between the domains of organic, techno-economic and textual have become permeable" (KIM, 2005, p. 24-25).<sup>4</sup>

It is very common nowadays, for teenagers and adults to say that the professional future is "in technology". If many did not incorporate the use of terms such as cyberspace in their daily vocabulary, it is clear how digital technologies are very present elements in their network. Another example is the discomfort or even despair caused by feeling in a place without internet access.

I briefly mentioned the function of blocking people in messaging applications and social networks as an example of new forms of action made possible by ICTs, but there are many other examples. Before proceeding, it is interesting to reflect on how typed text is not a mere copy of the act of speaking. These are completely different skills, but this difference seems to go unnoticed, giving the feeling that we are having a "normal" conversation in real time, with the difference in physical distance between people. According to Kim:

The virtual reality of the graphic interface is a "bricolage" built through collections of "messages" - the infographics - and constitutes not only the layer of sensitive interaction between man and cyberspace but also the most socially shared mediation modality, unlike the purely textual mediations. But the imagetic representations of digital information imply a discontinuity between what we see and what is really behind the simulation. Virtual reality operates in two directions, one that creates sensory worlds of digital information and the other that works by hiding the technological and material structure of cyberspace (KIM, 2005, p.47).<sup>5</sup>

It is interesting to highlight that as more than a mere copy, we are actually facing a kind of dissimulation. Ahead Kim continues:

An "infogram" is both a means of concealing the abstract world that engenders it and a means of making it tangible. "As' images', they [virtual realities] do not allow us to understand the abstract model that engenders them, but they open a window for it" (Queáu, 1993, p.92). However perfect a simulation model may be, it will always be marked by

---

<sup>4</sup> My translation.

<sup>5</sup> My translation.

two ambiguous movements: the same power to simulate worlds is the power to fake and mask "(...) The graphical interface naturalizes the technological precisely because it hides it It brings to perception a reality that previously could only be accessed with the mastery of complex texts, making it accessible as a form of experience within the reach of the eyes and hands. Thus, the graphic interface allows to replicate aspects of our world and create new worlds too (KIM, 2005, p. 47-48).<sup>6</sup>

To mask while making it tangible: incredible manipulation of meanings provided by ICTs! Kim reminds us how in the early days of computing, commands were given through the binary language, switching to hexadecimal, changing towards the graphic languages we use today.

Oliveira e Paiva in her article *A Linguagem dos Emojis* discusses how digital communication technologies had a great influence on human interaction, introducing changes in language, analyzing the grammar, syntax and discursive function of emojis and stickers. She writes that:

The social practices of language happen in a complex way due to the interrelationship of the various agents and ways of producing meaning and the technologies that mediate these practices. The language is in a constant process of change and adapts to the propitiatives and restrictions present in digital technologies. Past and current experiences serve as input for new behaviors, both for technology developers and their users (OLIVEIRA e PAIVA, 2016, p. 397).<sup>7</sup>

Language changes have an effect on the relationship between technology developers and users. It is a two-way street: contrary to the idea that it is up to users to only use the resources made available - since they do not participate in the process of developing technologies, which is up to the industry -, what is perceived is that they use the tools in a creative and unexpected way so that the language does not remain static, changing over time. The industry makes devices, but not the language.

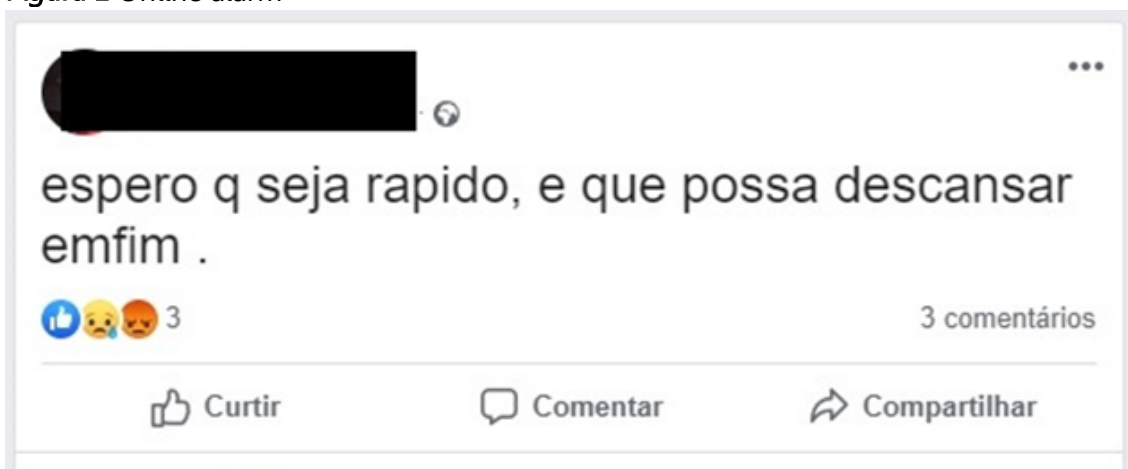
The skills developed with the use of ICTs are not limited to the exchange of words through texts or audios or the incorporation of images in their way of expressing. The scope of our ideas, desires, feelings has also changed. Let's see this print, sent by a participant of my research:

---

<sup>6</sup> My translation.

<sup>7</sup> My translation.

Figura 1 Online alarm



Source: Facebook post print sent to me (reproduction authorized).

The text, written in Portuguese, says "I hope it will be quick and that I can finally rest". It is clearly an intention to commit suicide. The person (about whom, in order to preserve their identity as much as possible, I will not give details such as age and gender) who made this post on his *Facebook* timeline, was going through a period of struggle with depression. He lives with his parents and says he has a healthy relationship with them, but he said he felt alone, a deep loneliness, accompanied by unexplained sensations and feelings. He needed to talk, but she did not know with whom and nobody contacted her, either through applications or on social networks. I have this person added to my *Facebook* account and I confess that I was taken aback by seeing this post. I called her on *Whatsapp* and we talked a little.

Days later, I asked if I could talk about what happened. He told me it was an attitude, not false - he was really thinking about taking his own life - but strategically. According to what he told me, he knew that a lot of people see Facebook and wanted to draw attention to himself. That's why I titled the image "*online alarm*". Just as we have a more or less accurate notion of the distance we can reach with a step, or the limits of our voice, the person knew the "reach" that his outburst could reach. "I did it because I needed people to talk to", he justified.

Just as we know the difference between using a knife or scissors (we would hardly try to cut an apple with scissors or allow someone to cut our hair with a knife), we also know how to use the applications and chat sites to trigger their respective features. However, it is also a fact that many times these features have unintended consequences, not even predicted by the user. Notions like "public" and "private" are changing. I have often heard complaints from people who were angry because a person they barely knew

commented on a post. They felt invaded. However, are our posts on social networks public or private? It is not necessary to give a verdict on this issue, what matters is the sensation of invasion of intimacy.

Flirting is also a skill that has been influenced by digital. The likes given on social networks, mainly in photos, are a way that boys and girls use to signal interest in someone. Flirting starts with likes that, if they are reciprocated, lead to a "private" conversation, made possible either with an existing feature on the social networks themselves (like *Facebook Messenger*) or with a bold comment (another social network feature is the possibility of publicly commenting on something posted), asking for the person's *Whatsapp* number. And it is interesting to see how the use of likes varies according to the age of the user. This use for seductive purposes is more used among teenagers. Among older people, it is a way of being polite, showing interest and appreciation for something. This is also practiced among young people and teenagers. The likes, comments and shares of a post are signs of social prestige. I remember that when I worked as a teacher of Sociology at a state school I had a teacher profile that I used on *Facebook*. Once the students called me "famous" because a photo I had posted received a large number of likes.

Another factor that I could see during my experience as a teacher was how the students no longer copied the content written on the blackboard, they simply preferred to take a picture. It was interesting to see how other teachers complained that it "dulled" the students or was seen as simple laziness, because for them the gesture of copying was a sign of effort and interest in the subject. Well, I confess that I realized that in many cases the complaint was the result of vanity - seeing someone record their thoughts generates a certain feeling of empowerment - or a certain envy that only the teacher has to take the trouble to write countless lines. But what really matters is how the use of technology has impacted the way knowledge is recorded.

As I stated above, different applications have different characteristics that are being explored by users, allowing them to develop a series of skills. Although under a superficial look they seem to serve the same thing - to exchange messages - the experience perceived by different people can vary considerably. Let's see this other print:

Figura 2 Shared feelings

me sinto uma bomba relógio.  
tá tudo meio certo durante um  
período, ai parece que a cada dia  
que passa eu estou prestes a explodir,  
mas eu só vou aguentando. e agora eu  
pergunto, até quando?

16:56 · 18 mar 20 · [Twitter for Android](#)

Source: Print of Twitter post sent to me (reproduction authorized).

The text on the print says "I feel like a time bomb. Everything is kind of right for a period, then it seems that with each passing day I'm about to explode, but I just keep going. And now I ask: until when?". The participant who sent me this print says he hates *Facebook*. As he says, "it's a lot of bullshit". He prefers to use *Twitter*, a social network that gives him a greater sense of anonymity and discretion. Just like the print shown above, we see an outburst, but the explanation given is different: the person who made the post shown in figure 2, did not want to draw attention, on the contrary: he just wanted to share and talk, better saying, see the way to think and feel about other people, and precisely with people with whom you are not intimate, about emotional problems. He says he feels irritated when he perceives a judgment or hypocrisy by people he talks to in person or on other social networks. According to him "the fact that the person barely knows me, gives me more security and confidence".

In the same way that we learn what a microphone does with our voice, to the point that this tool causes dread in some people, in both cases that we saw about the use of social networks we could see how ICT users are learning the power and reach of their words. But it is also very important to pay attention to the differences pointed out between the two cases shown. They are good examples of what Ingold teaches us about the need to pay attention to the history of people's relationship with their environment. It does not matter so much in this discussion to say whether it is correct or not to use terms such as cyberspace or digital environments. But what matters is to point to the fact

that there is no opposition, or separation, between the “real” and the “virtual”. The experiences provided by ICTs affect and at the same time are ways of dealing with sensations, emotions and feelings experienced in the world outside the screens. And this experience, as well as talking and walking are not homogeneous: just as there are people who love to make trails while there are others who cannot bear to put their feet in the mud, there are also people who have fun posting photos and memes on Facebook, while there are others who think it is just a “waste of time”.

Another point to be highlighted is that I often compared the actions of speaking and speaking with the use of ICTs, articulating my arguments in order to associate speaking with the mouth and parts of the body directly associated with the mechanics of their action or walking with the lower members. But it is important not to create in the reader the idea that there is a separation between parts of the body and our senses in learning and practicing these skills. Our body and senses are always acting as a whole and in connection with the environment that surrounds us (INGOLD, 2008). Vision influences speech. When we learn to speak, we copy the movement of the lips and even the gestures of people and pay attention to that in our daily communication. Just remember, if the reader has already tried to learn another language, how much the experience of learning a new word differs just by hearing its pronunciation or seeing it used in person or on television. Nor are we just walking with our legs: sight and hearing are essential senses to guide our steps. Blind and / or deaf people connect to the world through other *lines*, they also weave their mesh of relationships, for example, think about how touch is a sense developed very differently from people who see and hear<sup>8</sup>. People with an amputated limb also have to learn to relate to the prostheses implanted in their body.

In the use of ICTs, our senses are also influencing. Think of an online game. First, we see what is happening on the screen. I may be sitting in a chair, but without touch I would hardly use a keyboard and mouse or a touch screen. Games always have a soundtrack or sounds associated with some player action. But, playing cannot be described as the mere “joining” of these senses. Not only because they make up a totality that goes beyond the mere union of parts, but also because the experience provided by one sense affects that provided by another. Hearing influences seeing and both influence feeling and so on. What makes a game attractive? It depends on each person, but in general, a “cool” game is one that provokes emotions. Imagine yourself in a tense situation: the soundtrack changes, which creates an “atmosphere” of tension, accompanied by a change in the

---

<sup>8</sup> on this subject, a good reference is the text *Stop, Look, Listen! Vision, Hearing and Human Movement*, available in portuguese at <https://journals.openedition.org/pontourbe/1925>.

game's scenario. The muscles become more tense, some people even sweat. It is not a sequence of events, but all of these factors act simultaneously. Tension affects seeing, hearing and feeling. The ability to play can be compared to dancing in the middle of this orchestra of images, sounds and buttons to be pressed.

## Conclusion

In this text I tried to demonstrate how the ecology of life is an interesting theory to think about the relationship between humans and digital information and communication technologies. The way Ingold thinks about the acquisition and construction of knowledge and new representations, through what he calls the education of the senses (2000; 2010), arguing that the mind is not confined within our brain, but that it permeates our peripheral organs and connects to the surrounding environment, helps to think about the relationship with ICTs without falling into separations like "real versus virtual" or "body versus technology".

Decades ago, in 1985, when Donna J. Haraway published *A Cyborg Manifesto*, she pointed out to us that:

Certain dualisms have been persistent in Western traditions; they have all been systemic to the logics and practices of domination of women, people of colour, nature, workers, animals - in short, domination of all constituted as others, whose task is to mirror the self. Chief among these troubling dualisms are self/other, mind/body, culture/nature, male/female, civilized/primitive, reality/appearance, whole/part, agent/resource, maker/made, active/passive, right/wrong, truth/illusion, total/partial, God/man(...)

High-tech culture challenges these dualisms in intriguing ways. It is not clear who makes and who is made in the relation between human and machine. It is not clear what is mind and what body in machines that resolve into coding practices. In so far as we know ourselves in both formal discourse (for example, biology) and in daily practice (for example, the homework economy in the integrated circuit), we find ourselves to be cyborgs, hybrids, mosaics, chimeras. Biological organisms have become biotic systems, communications devices like others. There is no fundamental, ontological separation in our formal knowledge of machine and organism, of technical and organic (HARAWAY, 1991, p.177-178).

We are all cyborgs. The author uses the figure of the cyborg - both as a metaphor and as a political myth - to show us how technoscience plays a central role in social relations in the contemporary Western world. The cyborg embodies the breaking of some borders. The massive presence of technology in contemporary times causes a profound,

ontological change in Western thought. ICTs are definitely part of our environment, and they do not create an environment apart from our everyday lives.

By highlighting some skills that have emerged and are always reinventing themselves through the use of some devices and software, I wanted to show how our being in the world is affected by such use. ICTs, being part of the network of relationships that constitute our being, allow our eyes to navigate more distant waters and our ideas, thoughts and dramas, through our fingers, reach new horizons.

### References

- BOELLSTORFF, Tom. "For Whom the Ontology Turns: Theorizing the Digital Real".  
Current Anthropology 57(4). 2016.
- BOYD, Danah. It's complicated: the social lives of networked teens. London: Yale  
University Press. 2014.
- CARVALHO, Isabel C. M. e Carlos A. STEIL. "O pensamento ecológico de Tim Ingold".  
Anuario de Antropología Social y Cultural en Uruguay, Vol. 10. 2012.
- \_\_\_\_\_. "Epistemologias ecológicas: delimitando um  
conceito". Mana 20(1). 2014.
- DE SOUZA E SILVA, Adriana. "From cyber to hybrid: mobile technologies as interfaces of  
hybrid spaces". Space & Culture, 9 (3). 2006.
- HARAWAY, Donna. "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in  
the Late Twentieth Century". In: Simians, cyborgs, and women: the reinvention of  
nature. New York: Routledge. 1991.
- HINE, Christine. Ethnography for the Internet: Embedded, Embodied and Everyday.  
Londres/Nova York: Bloomsbury. 2015.
- INGOLD, Tim. The Perception of the Environment: essays on livelihood, dwelling and  
skill. Londres/Nova York: Routledge. 2000.
- \_\_\_\_\_. "Da transmissão de representações à educação da atenção". Educação  
33(1). 2010 a.
- \_\_\_\_\_. "Ways of mind-walking: reading, writing, painting". Visual Studies 25(1).  
2010 b.
- \_\_\_\_\_. Being Alive: Essays on movement, knowledge and description.  
Londres/Nova York: Routledge. 2011.
- \_\_\_\_\_. "Trazendo as coisas de volta à vida: emaranhados criativos num mundo  
de materiais". Horizontes Antropológicos 18(37). 2012.



- KENSKI, Vani M. Educação e tecnologias: o novo ritmo da educação. Campinas: Papirus. 2007.
- KIM, Joon Ho. "Cibernética, ciborgues e ciberespaço: Notas sobre as origens da cibernética e sua reinvenção cultural". Horizontes Antropológicos 10(21). 2004.
- \_\_\_\_\_. Imagens da cibercultura: As figurações do ciberespaço e do ciborgue no cinema. Dissertação de Mestrado em Antropologia Social, USP. 2005.
- KOZINETS, Robert V. Netnography 2.0. In: R. W. BELK, Handbook of Qualitative Research Methods in Marketing Edward Elgar Publishing. 2007.
- MARCELLE, G. 2000. Gender, Justice and ICTs  
<http://www.un.org/womenwatch/daw/csw/marcelle.htm>.
- MAUSS, Marcel. "As técnicas corporais". In: Sociologia e Antropologia. São Paulo: Cosac & Naify. 2008.
- MILLER, Daniel e SLATER, Don. "Etnografia on e off-line: cybercafés em Trinidad". Horizontes Antropológicos 10(21). 2004.
- MILLER, Daniel. Tales from Facebook. Cambridge: Polity Press. 2011.
- MILLER, Daniel e HORST, Heather A. Digital Anthropology. London: Berg. 2012.
- MILLER, Daniel e SINANAN, Jolynna. Visualising Facebook. London: UCL Press. 2017.
- OLIVEIRA e PAIVA, Vera Lúcia M. A linguagem dos emojis. Trabalhos em Linguística Aplicada 55(2). 2016.
- RIFIOTIS, Theophilos. Desafios contemporâneos para a antropologia no ciberespaço: o lugar da técnica. In: Civitas - Revista de Ciências Sociais 12(3). 2012.
- RIFIOTIS, Theophilos e SEGATA, Jean. Políticas etnográficas no campo da cibercultura. Brasília: ABA. 2016.
- TADEU, Tomaz (Org.). Antropologia do ciborgue: as vertigens do pós-humano 2ª. ed. Belo Horizonte: Autêntica Editora. 2009.
- VELHO, Otávio. De Bateson a Ingold: passos na constituição de um paradigma ecológico. In: Mana 7(2). 2001.

**Acknowledgements:** Victor Eiji Issa's<sup>9</sup> research for this article was supported by CAPES (Commission for Enhancement of Graduate Researchers, Brazil) - Finance Code 001. Sylvia Caiuby Novaes has a grant from CNPq (301161/2018-6) and research grant from FAPESP (2018/21140-9).

---

<sup>9</sup> The research for this article was conducted by Victor Eiji Issa, who is guiding Sylvia Caiuby Novaes' PhD.

**RESUMO:**

Este artigo apresenta algumas questões que foram surgindo durante o processo de produção de minha etnografia dos usos de Tecnologias de Informação e Comunicação (TICs) na cidade de São Paulo. Proponho, com base naquilo que Tim Ingold chama de ecologia da vida (INGOLD, 2000), que comunicar-se, relacionar-se e expressar-se utilizando tais tecnologias são habilidades que se desenvolvem a partir de um processo de descoberta e redescoberta constante de nossos corpos, sentidos e relação destes com o ambiente que nos cerca.

**PALAVRAS-CHAVE:** Impactos do uso de TICs; habilidades; ecologia da vida; tecnologia.

Este artículo presenta algunas reflexiones que surgieron durante el proceso de producción de mi etnografía de los usos de las Tecnologías de la Información y la Comunicación (TIC) en la ciudad de São Paulo. Propongo, en base a lo que Tim Ingold llama la ecología de la vida (INGOLD, 2000), que comunicarse, relacionarse y expresarse utilizando tales tecnologías son habilidades que se desarrollan a partir de un proceso de descubrimiento y redescubrimiento constante de nuestros cuerpos, sentidos y su relación con el entorno que nos rodea.

**PALABRAS-CLAVES:** Impactos del uso de las TIC; habilidades; ecología de la vida; tecnología.