ОТ ЛИНГВИСТИКА КЪМ СЕМИОТИКА: ТРАЕКТОРИИ И ХОРИЗОНТИ В ИЗСЛЕДВАНЕТО НА КОМУНИКАЦИЯТА

ЮБИЛЕЕН СБОРНИК В ЧЕСТ НА ПРОФ. МИЛЕНА ПОПОВА

DE LA LINGÜÍSTICA A LA SEMIÓTICA: TRAYECTORIAS Y HORIZONTES EN EL ESTUDIO DE LA COMUNICACIÓN

HOMENAJE A LA CATEDRÁTICA MILENA POPOVA

Университетско издателство „Св. Климент Охридски"
Editorial Universitaria "San Clemente de Ojrid"

Спина / Lomo

ОТ ЛИНГВИСТИКА КЪМ СЕМИОТИКА: ТРАЕКТОРИИ И ХОРИЗОНТИ В ИЗСЛЕДВАНЕТО НА КОМУНИКАЦИЯТА ЮБИЛЕЕН СБОРНИК В ЧЕСТ НА ПРОФ. МИЛЕНА ПОПОВА

Back cover

Тази книга е признание за значимостта на научното творчество на проф. Милена Попова, за приноса ѝ в отварянето на нови полета на изследване в българската испанистика, за безкористната ѝ подкрепа и отзивчивост в отношенията с колегите и студентите. Тя е и знак на уважение към човека и учения, посветил живота си на мисията на просветител. Съдържанието на юбилейния сборник отразява еволюцията на научните възгледи на изследователката и включва области като синтаксис, прагматика, типология на езика и лингвистични универсалии, семиотика, дидактика, прагматика на хумора и др. Многобройните участници в настоящия том са свидетелство за престижа на юбилярката, за научните и професионалните ѝ контакти като преподавател в бакалавърската и магистърската степен на специалността „Испанска филология", гост-професор в редица университети в страната и чужбина, ръководител на магистърската програма „Семиотика, език и реклама (на английски език)", ръководител на Катедрата по испанистика и португалистика (2007–2011 г.) и заместник-декан на Факултета по класически и нови филологии (2015–2019 г.) на Софийския университет „Св. Климент Охридски". Участието в сборника на най-изтъкнатите испански и български учени в областта на лингвистиката и семиотиката наред с млади колеги представлява великолепна основа за стимулиране на диалога между различни идеи, поколения и научни направления. Събраните текстове са един възможен прочит на актуалните теми, предизвикателствата и хоризонтите в изследването на комуникацията.

Este libro es una muestra del reconocimiento a la obra científica de la catedrática Milena Popova, de su contribución a la apertura de nuevos campos de investigación en los estudios hispánicos y de la generosa disponibilidad que siempre ha mostrado hacia sus colegas y alumnos. Es también una muestra del respeto a la persona y a la investigadora que ha dedicado su vida a la misión de educar. El sumario de este volumen refleja la evolución de sus ideas e incluye áreas científicas como sintaxis, pragmática, tipología lingüística y universales, semiótica, didáctica, pragmática del chiste, etc. Los numerosos participantes del homenaje son una prueba del prestigio de la Dra. Popova, de sus contactos científicos y profesionales como profesora en los programas de licenciatura y máster en Filología Española, como catedrática visitante en varias universidades en Bulgaria y en el extranjero, directora del Máster "Semiótica, lenguaje y publicidad (en inglés)", directora del Departamento de Estudios Iberoamericanos (2007-2011) y vicedecana de educación de la Facultad de Letras Clásicas y Modernas de la Universidad de Sofia San Clemente de Ojrid (2015-2019). La participación en este tomo de los lingüistas y semióticos más destacados de España y Bulgaria junto con investigadores jóvenes constituye una base sólida para la promoción del diálogo entre distintas ideas, generaciones y corrientes científicas. Los textos recopilados son una lectura posible de los temas actuales, los desafíos y los horizontes en el estudio de la comunicación.
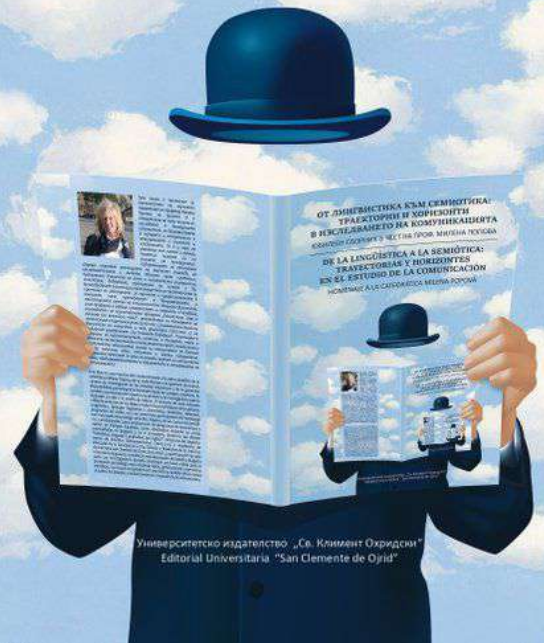
Slipping through the Net: The Politics of Internet Metaphors[*]

- **PRE-PRINT -**

Julia Rone, Postdoctoral Researcher at POLIS (Department of Politics and International Studies), University of Cambridge

Abstract

The current paper is situated at the crossroads of critical Internet research and cognitive linguistics research on metaphors. We analyze the use of metaphors in relation to the Internet in three main aspects. First, we discuss the conscious and deliberate use of metaphors in the process of designing different desktop and Internet applications. Second, we explore metaphors used to describe the Internet, Internet applications and online practices. In particular, we focus on metaphors describing the Internet as a "series of tubes", an "information superhighway", and as some sort of independent "space" or "place". In the same section, we explore also the use of metaphors such as "the cloud" and "sharing" in order to describe Internet-related services and practices. Third, we examine, how the Internet itself and the network form are used as metaphors to describe society and social movements in particular, but also often to prescribe how they should be organized. In analysing each of these types of metaphors, we explore how they obscure complex techno-human constellations of labour and power and the political dimensions of "being together" both online and offline. Metaphors not only help us understand emerging technologies and societal transformations but also influence the way technologies and social life itself are approached and constructed. While some of the more recent metaphors considered in this paper reveal (and construct) a world of atomized individuals entering in market relations or "sharing" goods beyond the state, the possibility of publicly-owned, collectively governed, and truly open Internet applications has remained obscured for almost three decades. If we understand better how the Internet-related metaphors we "live by" have obscured other potential futures, we can start challenging them and conceive of new possibilities – for our technologies but also for the society we live in.

Key words: Internet, metaphors, information highway, sharing, cyberspace

Click me, click on me
Link me on the Web
Baby, I'll hyperlink to you
Surf me on the Web
My page is all for you
Call me on the Web
I'll open my windows to you
              Les Horribles Cernettes, "Surfing the Net"

Les Horribles Cernettes were a parody pop group founded by employees of the European Organization for Nuclear Research, known better as CERN. Their image was the first image of a music band and one of the first ever photos to be uploaded on the World Wide Web. This is definitely not a coincidence since the World Wide Web was invented by the British scientist Tim Berners Lee, who was at the time working at CERN. The reason why I have chosen to start my paper on Internet metaphors with a song by *Les Horribles Cernettes* (their acronym suspiciously coincides with the acronym of the Large Hadron Collider) is that the song "Surfing the Net" offers a fascinating early collection of metaphors to understand Internet applications and practices.

To begin with, "web surfing" is nothing but a metaphor to describe the process by which the user "follows" a link from one webpage to another by clicking on it. In fact the very word "page" is used metaphorically in order to design/describe texts "commonly written in HyperText Markup Language (HTML)" that are "accessible through the Internet or other network using an Internet browser" (Computer Hope, 2018). By talking about "surfing" or "pages" we describe unknown and unprecedented practices and objects with the help of known practices and objects and encourage particular types of associations, while excluding others. "Surfing" on the web is leisurely, relaxed and cool. Talking about "surfing" does not focus on the addictive sides of reading information online, nor on systematic work-related research. Similarly, talking about "pages" brings the smoothening familiarity of printed books to online texts. It is enough to see the source code of any "webpage" we are browsing in order to understand that the metaphor "hides" all the instructions and logical operations taking place in order to make it possible for us to read the "page". Ultimately, when *Les Horribles Cernettes* sing "surf me on the Web, my page is all for you" they are using metaphors invented for one thing (Internet applications and practices) as metaphors for another thing (courtship, love).

Going beyond love songs, this paper analyses different possible uses of Internet-related metaphors. First, we discuss the use of metaphors in the design of Internet applications. In the

second part of the paper, we focus on metaphors used to describe Internet-related applications and corresponding practices. And finally, in the third part, we examine, how the Internet itself and the network form are used as metaphors that help us understand the way society, and social movements in particular, are organized.

The crucial question that runs through all these cases is *What slips through the net?* What types of meanings are highlighted by metaphors and what types of meanings are hidden? What types of political actions are encouraged by using particular metaphors and what types of actions are precluded, silenced, made unthinkable?

The paper is situated at the crossroads of critical Internet research (Andrejevic, 2011; Couldry, 2014; Lovink and Rasch 2013; Lovink, 2016; Mosco 2004) and cognitive linguistics research on metaphors (Johnson and Lakoff, 2003). While there has been a growing literature on the "myths" of digital media and the utopian promises associated with them (Couldry 2014; Morozov, 2012, 2014; Mosco, 2004), there have been fewer works dealing critically with Internet-related metaphors and the political function of highlighting and obscuring certain aspects of techno-human operations they perform (for notable exceptions, see Markham, 2003; Osenga, 2013; Wyatt, 2004). This paper attempts to bridge the gap in the literature and provide an unusual, yet systematic, perspective to the ways in which metaphors have helped us understand and shape technology.

To begin with, in their seminal work "Metaphors we live by", Johnson and Lakoff emphasize that metaphors are not simply poetic devices that add rhetorical flourish to our language. On the contrary, metaphors are "pervasive in everyday life, not just in language but in thought and action. Our ordinary conceptual system, in terms of which we both think and act, is fundamentally metaphorical in nature" (2003: 4). The first example the authors give to make their theory clear is the metaphor "ARGUMENT IS WAR" reflected in everyday expressions such as "Your claims are *indefensible*. / He *attacked* every *weak point* in my argument. / His criticisms were *right on target*. / I *demolished* his argument. I've never *won* an argument with him…." (ibid, 5). Because we perceive arguments metaphorically as wars, we think of strategies, we win or lose arguments, we attack the opponent, etc. But what if, the authors ask, we imagine a culture "where an argument is viewed as a dance, the participants are seen as performers, and the goal is to perform in a balanced and aesthetically pleasing way. In such a culture, people would view arguments differently, experience them differently, carry them out differently, and talk about them differently. But we would probably not view them as arguing at all: they would simply be doing something different" (ibid, 6).

Lakoff and Johnson differentiate between three types of metaphors – 1) structural metaphors where one concept is metaphorically structured in terms of another (e.g. ARGUMENT IS WAR); 2) orientational metaphors that organize immaterial concepts in terms of special orientation (e.g. HAPPY IS UP, SAD IS DOWN: I am feeling *up*; That *boosted* my spirits), and finally 3) ontological metaphors that allow us to understand our experience in terms of objects and substances that can act, can be categorized and quantified (e.g. Inflation is lowering our standard of living; My fear of insects is driving my wife crazy; It will take a lot of patience to finish this book).

Metaphors not only help us describe reality, they help us understand it and structure it and guide our actions in particular ways. Drawing on the theory of Lakoff and Johnson in order to explore the semantic and pragmatic aspects of syntactic categories in Spanish, Russian and English, Popova (2013) observes that while the metaphorization of mental processes (that are difficult to observe) is a universal process, the concrete metaphors chosen differ between languages and cultures. Introducing this comparative dimension, Popova notes that while in Spanish language there is a predominance of possessive metaphors, in English the most frequent metaphors for mental processes have to do with attribution, and in Russian – with localization (Popova, 2013: 366). Thus, in Spanish one says "él tiene calor" (literally, he "has" heat), in English "he is hot", and in Russian the dative construction "Ему жарко" is used (literally, it is hot "to" him). (ibid, 366).

Applying these insights to the study of Internet-related metaphors is particularly interesting for two reasons: First, because most Internet applications and practices are new in historical sense – they appeared in the last 40 years – to address new phenomena: from early applications such as the email to the 1990s' World Wide Web, to the rise of Web 2.0 in the 2000s to the currently popular "sharing" platforms such as *Airbnb* and *Uber*. The very newness of all these applications and the practices associated with them meant that we, as users, could observe how metaphors were consciously ingrained in their design, how different metaphors often competed to describe what was going on and to correspondingly give meaning to and structure user experience, and how contestations over metaphors often acquired a deeply political dimension. Are we indeed "sharing" with friends our information on Facebook or are we producing value for a corporate giant that trades with our data and sells it to advertising agencies? Does it matter how one describes online practices? Second, it is interesting to examine Internet-related metaphors since, contrary to the culture-specific differences that we observe in almost all other cases of metaphorization, Internet applications

are to a large extend produced and popularized by a small number of global giants (mostly situated in the Silicon Valley) that have a strong interest in imposing a set of standardized metaphors across cultural contexts. The metaphor of "sharing" for example has been exported and translated into the languages of all countries where *Facebook* is used. Thus, we can observe a particular *monopoly over metaphors* emerging with all its corresponding contradictions and political implications.

Finally, a word of caution, or rather a paragraph of caution is needed. As we are going to talk a lot about Internet-related metaphors, it is important to attempt to provide a non-metaphorical definition of the applications and practices we are going to discuss. What is the Internet, to begin with? The Internet has been described as a "globally connected network system that uses TCP/IP to transmit data via various types of media" and that includes both hardware and infrastructure, while the World Wide Web is an application communicated over this infrastructure (Techopedia Internet, 2018). Other possible Internet applications are email, peer-to-peer networks and of course social networking services (such as *Facebook*, *YouTube*, etc.) that rely on user-generated content, encourage the creation of service-specific profiles, and facilitate the formation of online networks (Obar and Wildman, 2015). In general, Internet applications are written in programming languages such as Java, JavaScript, Python, C++ , etc. The World Wide Web in particular is a network of content written in Hypertext Markup language (HTML) and accessed through Hypertext Transfer Protocol (HTTP). Social networking sites are often described as being part of Web 2.0. While Web 2.0 does not offer radical updates in terms of technical specifications in comparison with the early Web, it is different in the sense that it encourages much more user participation and replaces static HTML pages with a more interactive experience (Techopedia Web 2.0, 2018). Finally, there is no technical definition of sharing economy platforms such as *Airbnb*, *Uber*, etc. While originally ideas of the sharing economy (sharing knowledge and resources online) were most often connected to distributed peer-to-peer networks and owed a lot to the Free and Open source ideology (Bezroukov, 1999; Stallman, 2015; Raymond 1999), the current monopolists in the field are often using Web platforms built on proprietary code and extract profit thanks to their role as trusted intermediaries. In this sense, "sharing" has become a metaphor that covers a wide range of often mutually contradictory and exclusive practices that are united above all by the strategic use of this metaphor, as we will see in the second section of the paper.

After pointing out these issues, we can safely proceed to the analysis as outlined in the Introduction, focusing on what meanings metaphors highlight and/or hide, and what are the political implications of the process of metaphorization when applied to developing technologies such as the Internet.

Metaphors in the design of Internet applications

Metaphors are used not only to describe already existing objects. They are used consciously and extensively in user-interface design that tries to provide users with a better grasp of how to interact with the interface and what can be achieved with it (Erickson, 1995; Stylianidis, 2015). In fact, the use of metaphors has been one of the six design principles that *Apple* states in its Human Interface Guidelines, together with aesthetic integrity, consistency, direct manipulation, feedback, and user control (Apple HIG, 2018). According to Apple's guidelines: "People learn more quickly when an app's virtual objects and actions are metaphors for familiar experiences—whether rooted in the real or digital world. Metaphors work well in iOS because people physically interact with the screen. They move views out of the way to expose content beneath. They drag and swipe content. They toggle switches, move sliders, and scroll through picker values. They even flick through pages of books and magazines" (ibid.). *Apple* designs computer-mediated practices in a way that makes them structurally similar to familiar actions, such as flicking pages of books. *Microsoft* has also been very much focused on employing metaphors in design: "Familiar metaphors provide a direct and intuitive interface to user tasks. By allowing users to transfer their knowledge and experience, metaphors make it easier to predict and learn the behaviors of software-based representations (Microsoft Corporation 1995, as quoted in Barr et al. 2005).

The use of metaphors has been strongly encouraged in the process of design. What is more, designers are explicitly instructed how to design with metaphors, for example, not mixing different types of metaphors, choosing metaphors that are representable and that have as much structure/components as possible (Erickson, 1995; Richards et al. 1994; Stylianidis, 2015). An additional factor that has to be taken into account is the cultural background of the users. Microsoft developers settled for metaphors that compare PC activities and objects to activities and objects characteristic of the office environment. Thus, users work on a

"desktop"[†], they create "files" that can be "put" into "folders" and they "throw out" unnecessary documents in the "recycle bin". All these structural metaphors recreate the office experience for users. Yet, recent research has shown that older African users, for example, feel much more comfortable with user interfaces built around the metaphor of an African village with African cultural objects as icons (Heukelman and Obono, 2009). There is nothing necessary about metaphors used in interface design. Every designer faces the problem which might be the most suitable metaphor for the interface being built. The main criterion for success is how quickly users grasp new objects and associated practices and to what extent there is an overlap between the metaphor used (and its components) and the actual objects/practices it refers to: "To the extent that an interface metaphor provides users with realistic expectations about what will happen, it enhances the utility of the system. To the extent it leads users astray, or simply leads them nowhere, it fails" Erickson, 1995).

When it comes to metaphors in the design on Internet applications, mail applications use extensively structural metaphors based on the post office experience in order to make online communication more familiar to users, who operate with "mail boxes", "email folders", "drafts folders", etc. We already mentioned the "webpage" as a metaphor that brings experience from the world of books to make dealing with HTML documents more intuitive. And while the choice of metaphors here emphasises particular aspects of the technological applications, while obscuring others, sometimes metaphors obscure important information not only about technical affordances but also about social relations and the algorithmic work involved in delivering particular services.

For example, social networking sites such as *Facebook* and *Twitter* rely heavily on orientational metaphors, with both platforms assuming that the "newest" information should be "on top", "up", while the user needs to "scroll down for older information. Such design decisions provide a seamless user experience, especially when the same logic is applied across different platforms. But at the same time, the simple orientational metaphor of "up means new" obscures the complicated and opaque algorithmic decisions that place particular pieces of information "on top" of our newsfeed. It is by no means "natural" that new

---

[†] The "desktop" is one of the most pervasive and naturalized metaphors. It has been translated in some languages, for example it is called "el escritorio" in Spanish and "рабочий стол" in Russian, but has sometimes been adopted in its English version in languages such as Bulgarian "десктоп" (while the official translation is "работен плот" people often use the English word) or Italian – "il desktop", thus obscuring its metaphorical origins.

information should appear on top. This has been a conscious metaphorical choice, in the same way there is nothing "natural" or "automatic" in the algorithmic decision of what counts as "new" and "relevant" information for each one of us – on the contrary, both the presentation and the selection of information are the result of human decisions that have informed algorithms.

Similarly obscuring is one of the most widespread metaphors in online retailing - the structural metaphor of the "shopping cart" that we "fill" with objects when we order books or clothes online. The "shopping cart" metaphor has proven to be extremely successful and resilient creating a seamless user experience. Yet, unlike when we put things in a shopping cart and pay in a store, the process of online shopping is highly complicated and includes a variety of human actors, algorithms and work that remains hidden. As the flood of recent reports on conditions of work in the biggest online retailer – *Amazon* – have revealed, "putting things in a shopping cart" is only the beginning of a long process that involves thousands of workers across the world working in *Amazon* warehouses under often inhuman conditions. Urinating in trashcans due to restricted time breaks, constant surveillance by new technological means (such as wristbands with sensors) and the gradual transformation of the work force into "human robots", doing repetitive tasks for minimal salary, are some of the features of working in *Amazon* warehouses that whistle blowers have recently brought to public attention (Ghosh, 2018; Solon 2018). The metaphor of the "shopping cart" obscures these work relations and the human-robot work involved in packing and dispatching the goods we have bought.

To sum up, the metaphors that are consciously inscribed in design not only highlight particular technical affordances while obscuring others, which has been widely accepted in the human interface design literature. These metaphors have also important political dimensions highlighting the similarities of some Internet applications to our offline experience but hiding all the additional technical and human work necessary to make the service (and the very act of comparison) possible.

Metaphors describing Internet-related practices and objects

In 1998, the film "You've got Mail" with Meg Ryan and Tom Hanks premiered around the world. Emailing was considered an unusual, slightly risky and thrilling affair that could allow a romance between strangers to blossom. Today, as we are flooded by endless work emails and tempted by numerous platforms – from *Facebook* to *Tinder* and *Instagram*, email seems

to be the last application anyone would choose for anonymous flirting. What was once exciting and mysterious has switched to the realm of the banal. To properly understand the film "You've got Mail" we need to go back to the 1990s – a period when the Internet sounded like a magical word that no one understands but could change our lives forever. In his seminal work "The Digital Sublime: Myth, Power and Cyberspace" Vincent Mosco analyses the myth of the digital sublime that was propagated throughout the 1990s by media, politicians, academics, and of course, entrepreneurs whose over-speculation led to the famous dot-com crash, the small scale precedent of the 2008 financial crisis.

Internet was so new for the general public in the 1990s that there were few available ways to discuss it in a meaningful way. Yet, such discussions were important, since politicians and the public they represented were faced with crucial policy decisions over allocation of state funds, infrastructure building, and regulation, among others. Equally, new types of legal cases appeared that required a certain understanding of the Internet and a way of thinking about radically new situations made possible by technology, for example the possibility to buy Nazi memorabilia forbidden in France directly from the U.S. (Goldsmith and Wu, 2006). This is when and why metaphor came into play.

In her research of using metaphors to communicate information and communications policy, Osenga (2013) provides an overview of several key metaphors used to describe the Internet and their characteristics, advantages and shortcomings. She explores the following four metaphors: the Internet as a "series of tubes", as a "highway", as a "space" or "place", and as a "cloud" (43-45). In the following paragraphs, we start from this classification in order to discuss the political implications of each of these metaphors. In addition, we add one more metaphor, prominently used to describe interactions with Internet applications – the metaphor of "sharing" that has become a cornerstone of platforms such as *Facebook* and *YouTube*.

The Internet as a "series of tubes"

To begin with, the metaphor of the Internet understood as *"tubes"* (or "conduits") was made popular by the U.S. Senator Ted Stevens in a speech opposing net neutrality - the principle that all data on the Internet should be treated equally and should not be discriminated or charged differently. Stevens famously said: "[…] They want to deliver vast amounts of information over the Internet. And again, the Internet is not something that you just dump something on. It's not a big truck. **It's a series of tubes.** And if you don't understand, those tubes can be filled and if they are filled, when you put your message in, it gets in line and it's

going to be delayed by anyone that puts into that tube enormous amounts of material, enormous amounts of material" (Singel and Poulsen, 2006).

The struggle to explain what the Internet is in an easy and accessible way becomes obvious in the wording of the senator. Indeed, he provided one possible way of understanding data transfer online. If this metaphor was so vehemently rejected and even mocked (Know Your Meme, 2018) by the technical community, this was not least due to its political significance and the way it was instrumentalised. The tech-community informed by principles of open access, dumb pipes (intelligence lies at the endpoints of the network and not in the network itself), device neutrality, etc. saw opposing net neutrality as opposing the fundamental principles of the Internet. If providers could discriminate between different types of IP or devices, for example, they could make particular websites or devices pay more for using their networks (Lee, 2009). They could also prioritize particular websites making access to them faster than to others and thus affecting competition (Netflix, 2014). Thus, even if the metaphor of "tubes" was not completely outlandish in itself (think about "surfing" as an unexpected metaphor that managed to gain widespread prominence), it was the political consequences it was used to promote that made its wholesale rejection inevitable at the time.

The "Super Information Highway"

Another metaphor popularized, but with much greater success, by a politician has been the Internet as a "super information highway"– numerous authors attribute the popularity of this metaphor to Al Gore who used it throughout the 1980s and most famously in a 1994 summit (Blavin and Cohen, 2002: 270; Wiggins 2000). This metaphor is characterized by a number of key features including "1) its suitability for state involvement 2) ephemerality of information (transfer, movement), and 3) low degree of exceptionalism (nothing special – just like the phone or the mail)" (Osenga, 2013: 44). This metaphor was crucial for the Clinton/Gore administration and its programme of promoting economic growth through technology development (Clinton and Gore, 1993).

Interestingly, the father of Al Gore, Al Gore Sr. as a senator in the 1950s "was a major proponent of the creation of the Interstate Highway System, modelled after the German autobahns. No doubt Gore Jr. was inspired by the model and metaphor of his father's efforts" (Wiggins, 2000). Gore Jr. remarked in 1989 "Three years ago, on the 30th anniversary of the Interstate Highway System, I sponsored the Supercomputer Network Study Act to explore a fiber optic network to link the nation's supercomputers into one system. High-capacity fiber

optic networks will be the information superhighways of tomorrow […] This information infrastructure will cluster research centres and businesses around network interchanges, using the nation's vast databanks as the building blocks for increasing industrial productivity, creating new products, and improving access to education..." (ibid).

The metaphor of the Internet as a "super information highway" is particularly indicative of the potential of metaphors to "hide" particular possibilities and potential meanings. While it emphasizes the "infrastructure" element of the Internet, it completely overlooks the Internet's potential for political and citizen participation and the possibilities it brought as a technology for community building. The focus on community is much more strongly brought to the fore by metaphors that envisage the Internet as a place, as we will discuss in the next paragraphs. Highways are not a place to dwell in, to stop and contemplate, discuss or share thoughts and time. Highways carry atomized people in their cars, they connect different places, cities, countries, but they themselves are a "non-place" of transition and movement. The quicker one goes on the highway, the better constructed it is. Speed is the main priority. This emphasis on infrastructure in the metaphorical understanding of the Internet had very real business and political consequences - the 1990s in the U.S. were a time of massive overinvestment in Internet infrastructure and speculation that, combined with questionable accounting practices, were among the principle reasons for the dot.com crash (Greenstein, 2009; Lee, 2009).

What is more, the metaphor of the Internet as a highway was inspired, as we saw by the past experience of railways. But an important change had occurred between the times of Al Gore Sr. and Al Gore Jr: a large part of the American railways were privatized. The times of Clinton and Gore Jr. were the times of the Third Way. The State was withdrawing and was actively encouraging business to take a leading role in innovation. While the railways were once built by public actors, now they were in the hands of private actors, as powerfully described in Jonathan Franzen's National Book Award-winning novel "The Corrections": "[…] the Wroths made an irresistible tender offer and bought the railroad outright. A former Tennessee highway commissioner, Fenton Creel, was hired to merge the railroad with the Arkansas Southern. Creel shut down the Midpac's headquarters in St. Jude, fired or retired a third of its employees, and moved the rest to Little Rock. […] Five years after the takeover, the rails were still in place, the right-of-way was undisposed of. Only the copper nervous system, in an act of corporate self-vandalism, had been dismantled." (Franzen, 2001). In Franzen's book the dismantling of the copper wires – the nervous system of the railways – as

he calls them, corresponds to the slow destruction of the nervous system of Alfred, the father of the family and model railway employee, who discovers upon retirement that he suffers from Alzheimer. The private personal disease finds its counterpart in the privatization of the railways and the dismantling of a once public service.

This period of privatization of railways and the destruction of the country's "nervous system" in pursuit of profit is the same period in which Al Gore was promoting the Internet as a new information superhighway and business was rushing into investments and speculation. The belief in progress driven by technology was also an exuberant belief in progress driven by business in which the state's main role was to provide the conditions for private initiative to flourish. What the metaphor of information highway did not reveal and could not reveal was *who* was "building" the "highway" and this was the crucial question that defined the Internet as constructed, developed and used by business. It is this private initiative that still defines and explains many of the features of the Internet, despite its origins as a state-funded defence network and its subsequent development by academics. The 1990s were the period when the Internet became privatized and commercialized and if today we are worrying about private companies owning the data of billions of people, the origins of this development can be traced back to the 1990s and to the glorification of private initiative and technological solutions that characterized the Clinton-Gore administration.

Sharing

The overemphasis on private profitability and the development of "e-commerce" was replaced after the dotcom crash by a new types of rhetoric, accompanied by new key metaphors. Silicon Valley entrepreneurs moved on from static websites that "broadcasted" content one-way to much more interactive participatory web sites such as *Facebook* and *YouTube* that rely on user-produced content and participation. What is more tech entrepreneurs did everything possible to distance themselves from the culture of "greed is good" associated with Wall Street and engaged with key concepts such as *user empowerment* and *democratization*. As Evgeny Morozov aptly notes "The outside world might regard Silicon Valley as a bastion of ruthless capitalism but tech entrepreneurs fashion themselves as believers in solidarity, autonomy and collaboration. These venture humanitarians believe that they – and not the wily politicians or the vain NGOs – are the true champions of the weak and the poor, making the maligned markets deliver material benefits to those on the fringes of society. Some of the valley's in-house intellectuals even cheer the onset of "digital socialism," which – to quote digital thinker and environmentalist Kevin Kelly's 2009 cover

story in *Wired* – 'can be viewed as a third way that renders irrelevant the old debates'" (Morozov, 2015). According to Morozov, tech companies portrayed themselves as providing equal access to music, culture, communication: "Set against the background of the failing welfare state, unable to cope with the promises it made to its own people, Silicon Valley offers us a new social net: we might be forced to sell our cars and default on our mortgages, but we would never lose access to Spotify and Google. Death of starvation is still a possibility but death of content starvation is no longer in the cards" (ibid.).

Tech companies increasingly promoted an idea of "sharing" online and encouraged users to "share" their knowledge (*Wikipedia*), experiences, opinions, photos (*Facebook, Instagram*), short opinions (*Twitter*), videos (*YouTube*), computing power and labour (*NASA Clickworkers, Amazon Turk*), cars (*Uber*) and even flats (*Airbnb*). This "sharing" was supposed to allow users to connect directly to each other in what was called "the sharing economy", thus fixing the deficiencies of both markets and the state or in fact, any other old institutions that served as "gate-keepers", such as traditional media. What the metaphor of "sharing" (as applied for example to posting a photo online, an act that can be described also as "publishing") and the hype around it hid was that most of this "sharing" would happen on privately owned platforms that operate on proprietary software and extract value from our act of "sharing" (Banning, 2016; Ravenelle, 2017). While platforms such as *Uber* or *Airbnb* get fees for acting as intermediaries, platforms such as *Facebook* collect the data of their users and sell it for advertising purposes (or as Edward Snowden's revelations showed, they might even "share" personal data with governments). What is more these "social" networks monopolize and expropriate the social itself by concentrating human exchanges and conversations on private platforms (Andrejevic, 2011) that ultimately exploit data for analysis, trade and undefined future purposes. Ultimately, proprietary platforms use the metaphor of "sharing" and the language of voluntary not-for-profit projects such as *Wikipedia* in order to further their own commercial interest. This phenomenon described also as "wiki-washing" (Fuster Morell, 2011) reveals how the metaphors chosen by Silicon Valley companies are by no means simply innocent "cognitive" instruments allowing us to grasp better our online activities. On the contrary, the choice of a metaphor such as "sharing" creates a sense of sociability and care, while hiding corporate mechanisms for value extraction that structure the very possibility of sociability online (Couldry, 2014; Klinger and Svensson, 2018).

The "Cloud"

In the 2000s, the private business initiative (and ownership) that marked the development of the Internet in the 1990s remained firmly in place, while at the same time, adopting a new rhetoric of participation and empowerment. As technology developed, the range of metaphors invented expanded. Users could not only "share" their data on *Facebook* but also to upload it on the "cloud" – a metaphor describing an almost ethereal place where users could "save" their information safely and cheaply. The fact that the "cloud" was made possible by the constant operation of countless data servers across the globe, owned by a few monopolist players such as *Google* or *Amazon*, was suitably obscured by the use of metaphors emphasizing sharing, solidarity, participation, etc. What is more, the fact that *Google* data was kept unencrypted within the "cloud" made it an easy target for interception and surveillance, a fact that could have remained unproblematized had it not been for Snowden's revelations (Gellman and Soltani, 2013).

The Internet as a "place"/ "space"

Yet, the story of the privatization and the commercial appropriation and development of the Internet is not the only one. Since its beginnings as a state-funded project, the Internet had been a project driven by academics who believed in openness, sharing of knowledge and participation and actually practiced them (Leiner, Cerf et al. 2012). And while Al Gore was popularizing his vision of the "Information Superhighway", another vision put forward by the lyricist of "The Grateful Dead" John Perry Barlow gained widespread prominence. Barlow saw the Internet not as an infrastructure but as a space, a special type of space "cyberspace". In his famous "Declaration of Independence of Cyberspace" (written at the economic forum in Davos, a fact that is often forgotten) Barlow famously proclaimed: "Governments of the Industrial World, you weary giants of flesh and steel, I come from Cyberspace, the new home of Mind. On behalf of the future, I ask you of the past to leave us alone. You are not welcome among us. You have no sovereignty where we gather" (Barlow, 1996).

A convinced cyber-libertarian, Barlow strongly opposed any form of state interference in the form of laws and regulations and proclaimed that cyberspace would develop its own laws and ethics of conduit. If Al Gore saw the Internet above all as infrastructure, Barlow saw it as a "space", separate from the material and geographical constraints of our reality, where a diverse and free community could gather and build a better world: "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" (Barlow, 1996). The thrilling lawlessness and openness of this "space" allowed comparisons to be made with the American Wild West. "Cyberspace" was an unregulated, unruly, ungoverned World *Wild* Web and it is no wonder that the nongovernmental organization that Barlow founded in order to defend Internet freedom was named "The Electronic Frontier Foundation". The metaphor of the Internet as the "Wild West" (with all its corresponding highly masculine connotations), a "frontier" beyond which the unknown lies, was extremely popular and informed generations of cyber-punks and counter-culture activists.

*

To sum up, we cannot speak of one dominant metaphor of the Internet in the 1990s and 2000s for example or even now, as historically speaking, there have been many (we analyzed here only some of them) metaphors of the Internet that have coexisted and competed in every single moment. Metaphors of the Internet as an infrastructure that can bring progress thanks to private initiative have been challenged or rather complemented by metaphors of the Internet as an autonomous unruly space "independent" from the state or by metaphors of the Internet as a space for "sharing" outside both the market and the state.

There has never been one, single metaphor to describe and define the Internet and Internet-related practises. At any given moment in time, there have been multiple metaphors and the relative popularity of each of them has reflected the popularity of the political, business and cultural actors that promoted them and the dominant political climate. Each of the metaphors described in this section has had important political implications and has emphasized particular techno-political aspects of the Internet, while hiding others. Therefore, each of these metaphors needs careful consideration and an analysis of its hidden political dimensions and consequences.

Finally, there have been not only multiple metaphors trying to describe the Internet, but the Internet itself became a powerful metaphor to describe society and social movements that have been increasingly conceptualized and visualized as networks.

The Network as a Metaphor and as a Model for political action

The examples of social research viewing society through the metaphorical lens of a network are myriad. It is enough to mention Latour's Actor-Network Theory (ANT) according to

which the very notion of the "social" as some mystical substance is mistaken and what can be observed instead are assemblages, complex networks of human and technological agents (Latour, 2007). Social movement studies have increasingly focused on the network aspects of social movements (Diani and McAdam, 2003) with particular movements such as the Global Justice movement described as "networks of networks" (della Porta et al., 2006). The very definition of social movements that is currently most widespread and authoritative defines them as "'dense informal networks of collective actors involved in conflictual relations with clearly identified opponents, who share a distinct collective identity, using mainly protests as their modus operandi" (della Porta and Diani, 2006: 6).

Also, political theorists such as Hardt and Negri (2005) have tried to address the transformations of capitalism and what they perceive as the decline of class action by introducing the concept of "multitude" strongly inspired by the thought of Spinoza and by a powerful image of the "network" brought forward by theoretical work on rhizomes and by the practical everyday reality of using the Internet (but also by the everyday myths and metaphors surrounding this use). Hardt and Negri interpret the multitude as a horizontal network in which everyone is connected but retains their difference. Unlike concepts such as "class" which presuppose some homogeneity among the actors comprised within it, the "multitude" allows heterogeneity to flourish. The "multitude" is made possible by the increasing importance of immaterial and affective labour that connects people and allows them to communicate while serving capital but at the same time transcending it, escaping its logic through their very connection. In short, Hardt and Negri's theory is a modernized, or one might say updated (and equally deterministic), version of Marx. According to classic Marxist texts, the workers gather in the factory where, through their struggle they recognize themselves as members of a class. In Hardt and Negri's interpretation, workers connect to each other online and form the "multitude". As a political actor, the "multitude" acts situationally and spontaneously, it unites not on the basis of some underlying essence of all its members but on the basis of a shared target or cause. It is anarchic, unruly, individualistic and profoundly and directly democratic, beyond any form of representation. The "multitude" in its rhyzomatic form becomes the perfect political theory expression of the metaphor of the network.

The problems begin when the network is taken not only as a metaphor to describe how society is (as a heuristic form) but when it becomes a norm that prescribes how society should be. For Hardt and Negri, the "multitude" is not only a theoretical description, it is a

true agent of emancipation, even revolution. Networks are emancipatory and so society should be more like networks – horizontal, democratic, dispersed. Not hierarchical. But what if networks in real life rarely exhibit the qualities they are praised for? On the Internet, only a few sites get most of the links while all the rest remain marginal and unimportant (Lovink, 2016)? What is more, in informal political networks a handful people often end up doing most organizational work and gradually assume an informal leadership role with all risks for democracy that this entails (Gerbaudo, 2012; Treré 2016).

As the Internet has been increasingly used as a metaphor, so to speak, to design our society, all the problematic aspects of this metaphor, everything the aspects of political life it has obscured came back with a vengeance. The exclusive emphasis on society as a network of individuals obscures the fact that social class still matters for everything – from healthcare to education to choice of love partners. The metaphor of the network also hides that not everyone connects to everyone but, more often than not, people remain in their small enclosed communities. The proliferation of radical right groups online that found new ways of organizing is a case in point. There is nothing that necessarily makes the "multitude" an agent of emancipation. The political work of talking to people, resolving conflicts between different groups, of articulating causes and making compromises is still as important as ever. The network metaphor is precisely a metaphor – it helps us understand society through something else – the network. But society cannot be described fully (or designed) on the basis of this metaphor only. There is always a surplus of meaning, of facticity, of complexity that cannot be contained by the metaphor and subverts it from within.

After all "Twitter", "Facebook" and networked "revolutions" in the aftermath of the financial crisis, the enthusiasm for building our societies as "networks" with the corresponding emphasis on direct democracy has not fully subsided but has made way to more traditional ways and visions of political action. Political movements such as The Five Star Movement or Podemos that were strongly influenced by "web ideologies" and insisted on the importance of horizontal networked organization slowly transformed into political parties and moved into the political mainstream. But even in its early days the movement was not the completely non-hierarchical horizontal structure it claimed to be (Mosca, Vaccari and Valeriani, 2015; Treré and Barassi, 2015). Organizing society as a network was a metaphorically-driven political project that attracted wide support and an impressive share of protest votes. Even traditional party structures (for example, the British Labour party) opened up for reforms and adopted some of the features of "networked" movements redefining membership and

accepting more fluid forms of participation (Chadwick and Stromer-Galley, 2016). But so far the transformations of political movement and parties, brought about by the Internet as a tool and as a model for organization, have been far less revolutionary than expected.

The technological promise for conflictless, frictionless politics and economic growth has crashed after the financial crisis and neither "information superhighways" nor "sharing" nor "horizontal networks" nor any other sexy metaphor to describe technology can provide a quick fix for the current political situation. The techno-utopian impulse that led to the proliferation of metaphors has slowly given way to a certain fatigue of imagination and a rising techno-pessimism as witnessed in discussions on social media's role in the U.S. 2016 elections and the UK Brexit campaign. But most importantly, the Internet has become increasingly banal. In 2019, the Internet seems neither the panacea for political action nor an ultimate destructive force. The importance of face-to-face communication and the embeddedness of parties in concrete physical spaces is being emphasized once again (Gerbaudo, 2019). A new medium that was once considered magical and exciting has become banalized, ordinary and perhaps it is only at this stage that it will exert the most profound influence on our lives (Mosco, 2004).

Conclusion

All in all, the current paper has traced the employment of different metaphors in the design of Internet applications, the metaphors used to describe the Internet, and the way the Internet itself has become a metaphor of and a model for political organization. In analysing all these cases, we focused on the ambiguous dynamic of highlighting and hiding, revealing and concealing that metaphors create and, above all, on the political implications of this dynamic. The use of metaphors conceals not only particular technological affordances but also complex sets of human and technological relations and operations, as can be clearly seen in the structural metaphor of the "shopping cart" or the orientational metaphor of "new information is up". What is more, structural metaphors such as "information superhighway", "cyberspace", "cloud" or "sharing" all obscure (each in its own way) a set of structurally engrained capitalist relations of exploitation and expropriation. Finally, using the Internet as a metaphor for society and social organization misses crucial empirical facts, such as the persisting importance of class and the dedicated political work needed in order to create meaningful, embedded and lasting political projects.

What slips through the net of the Internet-related metaphors that we considered are other possible ways of imagining being together and communicating through technology. While most of the considered metaphors reveal (and construct) a world of atomized individuals entering in market relations or "sharing" goods beyond the state, the possibility of publicly-owned, collectively governed, and truly open Internet applications has remained obscured for almost three decades. As cries for regulation of tech giants such as *Facebook*, *Uber*, *Google*, etc. have increased, it is time to think critically of the metaphors used to understand the Internet and think of describing and constructing it in different ways. It is precisely through understanding how we have been constrained in our thinking so far that we can start thinking of new futures and alternatives. With huge private monopolies already in place, this will be a tough task but by no means an impossible one. A good place to begin would be to explore the forgotten histories of resistance to the privatization of the Internet and the alternative metaphors that have been used for it in the 1980s. Such a historical reading of the past could open avenues for new approaches to a technology still in the making.

References

Andrejevic, Mark (2011). Social network exploitation. In: Zizi Papacharissi, Ed., *A networked self: identity, community and culture on social network sites*. London: Routledge, 82-102.

Apple HIG (2018): *Human Interface Guidelines. iOS Design Principles*. https://developer.apple.com/design/human-interface-guidelines/ios/overview/themes/

Banning, Marlia E. (2016) Shared entanglements – Web 2.0, info-liberalism & digital sharing, *Information, Communication & Society*, 19:4, 489-503.

Barlow, John Perry (1996): *Declaration of the Independence of Cyberspace*.
<https://www.eff.org/it/cyberspace-independence> [14.04.2016].

Barr, Pippin et al (2005): A Taxonomic Analysis of User-Interface Metaphors in the Microsoft Office Project Gallery. 6th Australasian User Interface Conference(AUIC2005), Newcastle. Conferences in Research and Practice in Information Technology, Vol. 40. M. Billinghurst and A.Cockburn, Eds

Benkler, Yochai (2006): *The Wealth of Networks: How Social Production Transforms Markets and Freedom*. Yale: Yale University Press.

Bezroukov, Nikolai (1999): *Open Source Software Development as a Special Type of Academic Research (Critique of Vulgar Raymondism)*. https://firstmonday.org/article/view/696/606

Blavin, Johnathan and Glen Cohen (2002): Gore, Gibson, and Goldsmith: The Evolution of Internet Metaphors in Law and Commentary. *Harvard Journal of Law & Technology*, 16:1, 265-285.

Cavalcante Gonçalves, Anderson, Deller James Ferreira (2013): A teaching method for using metaphors in interaction design. https://ieeexplore.ieee.org/document/6684857

Chadwick, Andrew, Jennifer Stromer-Galley (2016): Digital Media, Power, and Democracy in Parties and Election Campaigns Party Decline or Party Renewal? *The International Journal of Press/Politics*, 21:3, pp. 283 – 293.

Clinton, William; Gore, Al; et al. (1993-02-22). "Technology for America's Economic Growth" *https://web.archive.org/web/20070619205603/http://www.itsdocs.fhwa.dot.gov/JPODOCS/BRIEFIN G/7423.pdf* [04.02.2019].

Couldry, Nick (2014). The myth of 'us': digital networks, political change and the production of collectivity. *Information, Communication and Society*, 18 (6), 608-626.

Della Porta, Donatella and Mario Diani (2006): *Social Movements: An Introduction. Second Edition*. London: Blackwell Publishing.

Della Porta, Donatella et al. (2006): *Globalization from Below: Transnational Actors and Protest Networks*. Minnesota: University of Minnesota Press.

Diani, Mario and Doug McAdam (eds.) (2003): *Social Movements and Networks: Relational Approaches to Collective Action*. Oxford: Oxford University Press.

Erickson, Thomas (1995): Working with Metaphors. *Human-Computer Interaction*, 147-151.

Franzen, Jonathan (2001): *The Corrections*. New York: Farrar, Straus and Giroux.

Fuster Morell, M. (2011). The Unethics of Sharing: Wikiwashing. *International Review of Information Ethics.* http://acawiki.org/The_Unethics_of_Sharing:_Wikiwashing [13.02.2013].

Gellman, Barton and Ashkan Solatni (2013): NSA infiltrates links to Yahoo, Google data centers worldwide, Snowden documents say. In: *The Washington Post*. https://www.washingtonpost.com/world/national-security/nsa-infiltrates-links-to-yahoo-google-data-centers-worldwide-snowden-documents-say/2013/10/30/e51d661e-4166-11e3-8b74-d89d714ca4dd_story.html?utm_term=.13e4c3c76701 [04.02.2019].

Gerbaudo, Paolo (2019): *The Digital Party: Political Organization and Online Democracy*. London: Pluto Press.

Gerbaudo, Paolo (2012): *Tweets and the Streets. Social Media and Contemporary Activism.* London: Pluto Press.

Ghosh, Shona (2018): "Peeing in trash cans, constant surveillance, and asthma attacks on the job: Amazon workers tell us their warehouse horror stories". *Business Insider*. https://www.businessinsider.de/amazon-warehouse-workers-share-their-horror-stories-2018-4?r=US&IR=T [04.02.2019].

Goldsmith, Jack and Tim Wu (2006): *Who Controls the Internet? Illusions of a Borderless World*. Oxford: Oxford University Press.

Greenstein, Shane (2009): *How the Internet became Commercial? Innovation, Privatization and the birth of a new network*. Princeton and Oxford: Oxford University Press.

Hardt, Michael and Antonio Negri (2005): *Multitude: War and Democracy in the Age of Empire*. New York: Penguin Books.

Heukelman, D. and S. E. Obono (2009). Exploring the African village metaphor for computer user interface icons. *Proceedings of the 2009 Annual Research Conference of the South African Institute of Computer Scientists and Information Technologists*, 132–140.

Klinger, U. and J. Svensson (2018). The end of media logics. On algorithms and Agency. *New Media and Society*, 1-18.

Know Your Meme (2018): *"Series of Tubes"*. https://knowyourmeme.com/memes/series-of-tubes [04.02.2019].

Lakoff, George and Mark Johnson (1993). *Metaphors we live by*. Chicago: University of Chicago Press.

Latour, Bruno (2007): *Reassembling the Social: An introduction to Actor-Network Theory*. Oxford: Oxford University Press.

Lee, In (2009). *Handbook of Research on Telecommunications Planning and Management for Business*. Hershey, PA: Information Science Reference.

Leiner, Barry, Vincent Cerf et al. (2012): *Brief History of the Internet*.

http://www.internetsociety.org/sites/default/files/Brief_History_of_the_Internet.pdf

[04.02.2019].

Lovink, Geert and Rasch, Miriam, eds. (2013): *Unlike Us Reader: Social Media Monopolies and Their Alternatives*. Amsterdam: Institute of Network Cultures, 2013.

Lovink, Geert (2016): *Social Media Abyss, Critical Internet Cultures and the Force of Negation*. Cambridge and Malden: Polity.

Markham, Annette (2003): Metaphors Reflecting and Shaping the Reality of the Internet: Tool, Place, Way of Being. Paper presented at the conference of the International Association of Internet Researchers in Toronto, Canada, October 2003. http://markham.internetinquiry.org/writing/MarkhamTPW.pdf [04.02.2019].

Maeyer, Dirk De (1997): Internet's Information Highway Potential. *Internet Research*, 7:4, 287-300.

Morozov, Evegeny (2015): Silicon Valley likes to promise 'digital socialism' – but it is selling a fairytale. *The Guardian*. https://www.theguardian.com/commentisfree/2015/mar/01/silicon-valley-promises-digital-socialism-but-is-selling-a-fairy-tale [04.02.2019].

Morozov, Evgeny (2014): *To Save Everything Click Here: The Folly of Technological Solutionism*. United States: Public Affairs.

Morozov, Evgeny (2012): *The Net Delusion: The Dark Side of Internet Freedom*. New York: Perseus Book Group.

Mosca, Lorenzo, Cristian Vaccari and Augusto Valeriani (2015): An Internet-Fuelled Party? The Movimento 5 Stelle and the Web? In: *Beppe Grillo's Five Star Movement: Organization, Communication and Ideology*. Surrey: Ashgate.

Mosco, Vincent (2004): *The Digital Sublime: Myth, Power, and Cyberspace*, Cambridge, MA: MIT Press.

Netflix *(2014): NetFlix comments to FCC, page 17, Sept 16th 2014.* https://ecfsapi.fcc.gov/file/7522785302.pdf [04.02.2019].

Obar, Jonathan A.; Wildman, Steve (2015). Social media definition and the governance challenge: An introduction to the special issue. *Telecommunications Policy*. 39 (9): 745–750.

Osenga, Kristen (2013): The Internet is Not a Super Highway: Using Metaphors to Communicate Information and Communications Policy*, Journal of Information Policy, 3,* 30-54.

Paton, Ray & Robert R. Hoffman (1998): Metaphor on the World Wide Web, In: *Metaphor and Symbol*, 13:4, 293-297.

Lee, In (2009): *Telecommunications Planning and Management for Business*. New York: Hershey.

Popova, Milena (2013): Los aspectos semánticos y pragmáticos de las categorías sintácticas en el español contemporáneo (en comparación con el ruso y el inglés). In: *Colindancias: Revista de la Red de Hispanistas de Europa Central*, 4, 363-369.

Ratzan, Lee (2000): Making Sense of the Web: a Metaphorical Approach. Information Research: 6:1, http://InformationR.net/ir/6-1/paper85.html [04.02.2019].

Ravenelle, Alexandrea J. (2017): Sharing economy workers: selling, not sharing, *Cambridge Journal of Regions, Economy and Society*, 10: 2, 281–295.

Raymond, Eric S. (1999): *The Cathedral and the Bazaar: Musings on Linux and Open Source by an Accidental Revolutionary.* O'Reilly Media.

Richards, Stephen et al. (1994): The Use of Metaphors in Iconic Interface Design, *Intelligent Tutoring Media*, 5:2, 73-80.

Rosenblat, Alex (2018): When your Boss is an Algorithm. *The New York Times*. Retrieved from: https://www.nytimes.com/2018/10/12/opinion/sunday/uber-driver-life.html [04.02.2019].

Singel, Ryan and Poulsen, Kevin (2006): *"Your Own Personal Internet"*. Threat Level. In: *Wired.* https://www.wired.com/2006/06/your-own-person/ [04.02.2019].

Solon, Olivia (2018): Amazon patents wristband that tracks warehouse workers' movements. *The Guardian* https://www.theguardian.com/technology/2018/jan/31/amazon-warehouse-wristband-tracking [04.02.2019].

Stallman, Richard (2015): Did you say "intellectual property". It's a seductive Mirage.<http://www.gnu.org/philosophy/not-ipr.html> [04.02.2019].

Stylianidis, Alexandros (2015): *Metaphors in User interface Design*. https://www.semanticscholar.org/paper/Metaphors-in-User-Interfaces-Design-Alexandros/fe8067cde778efd8e8406e3a3fa24b0afb766979 [04.02.2019].

Techopedia Internet (2018): *What is the Internet?* https://www.techopedia.com/definition/2419/internet [04.02.2019].

Techopedia Web 2.0 (2018): *What is Web 2.0?* https://www.techopedia.com/definition/4922/web-20 [04.02.2019].

Treré, Emiliano (2016): The Dark Side of Digital Politics: Understanding the Algorithmic Manufacturing of Consent and the Hindering of Online Dissidence. In: *IDS Bulletin*, 47:1, 127-138.

Treré, Emiliano and Veronica Barassi (2015): Net-authoritarianism? How web ideologies reinforce political hierarchies in the Italian 5 Star Movement. *Journal of Italian Cinema & Media Studies*, 3: 3, 287–304.

Wiggins Richard (2000): Al Gore and the Creation of the Internet. *First Monday*, volume 5:10 (October 2000), http://firstmonday.org/issues/issue5_10/wiggins/index.html

Wyatt, S. (2004): Danger! Metaphors at work in economies, geophysiology, and the Internet. *Science, Technology, and Human Values*, volume 29, number 2 (Spring), pp. 242–261.