



**GENERACIJE,**

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**DIGITALNA UPOTREBA**

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*AND COMPETENCES*

# UNDERSTANDING TECHNOLOGICAL SOCIALIZATION. A SOCIO-GENERATIONAL STUDY OF YOUNG ADULTS' TECHNO-BIOGRAPHICAL TRAJECTORIES IN THE REGION OF MADRID

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**ABSTRACT** *In this article the author takes a socio-generational perspective in order to reconstruct young adults' biographies of socialization in the use of Information and Communication Technologies (ICTs) in the region of Madrid, presenting a Bourdieuan approach which includes two entangled dimensions of this process: material domestication of ICTs in daily activity and distinctive digital literacies internalized as dispositions towards practice. From a sample of thirty in-depth interviews structured by gender, age, education and type of digital accessibility, the author's analysis results in a typology of four ideal techno-biographical trajectories ('T1-pro-technology users', 'T2-practical users', 'T3-mobile users', 'T4-professional users') which represent distinctive forms of appropriation of digital technologies into practice.*

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## KEYWORDS

YOUTH, INTERNET, DIGITAL DIVIDE, DIGITAL NATIVES, GENERATIONAL ANALYSIS

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## INTRODUCTION. GENERATIONAL RESEARCH ON DIGITAL NATIVES

During the last two decades, the association between technological innovation in the context of the emergence of information society and younger generations has been widely promoted – inside the academia, but also as a form of generational marketing among digital and cyber-cultural industries (Montgomery, 2009). The entanglement between technology and youth is not new, but in the information age, it results in a quite ambivalent conceptualization. (1) On the one hand, young people's capacity of agency in neoliberal informational capitalism and intuitive affinity with the emergent cyber-culture is glorified, thus giving rise to the emergence of concepts such as 'net generation' (Tapscott, 1998) or 'digital natives' (Prensky, 2001). A huge cultural difference is remarked between digital immigrants, who were socialized in the use of analogical technologies, and digital natives, who "are all native speakers of the digital language" (Prensky, 2001: 1) because of their early socialization with computers and the Internet. Although Marc Prensky did not clarify the exact chronological cleavage between these two age groups, in the USA, it is generally proposed that the time point in question can be traced back to the early 80s (Palfrey and Gasser, 2011; Kirschner and De Bruyckere, 2017), whilst in Europe this cut-point is sometimes delayed to the early 90s (Erstad, 2011). (2) On the other hand, this capacity of agency is denied when social discourses highlight the risks and drawbacks of information society, which also seem to particularly affect younger generations. In point of fact, 'addiction to technology' (Ryding and Kaye, 2018), 'cyberbullying' (Kowalski *et al.*, 2012), 'exposition to inappropriate content', 'insecurity or lack of privacy' (Blank *et al.*, 2014) are some of the problematic issues that allegedly affect youngsters the most. The confluence of these two trends results in an ideological narrative that, paradoxically, represents youth simultaneously as an omnipotent subject naturally able to get along in the changing digital environment and as a passive victim exposed to all of the risks and dangers of the information society.

In spite of the popularity of the digital youth model, many critical approaches have remarked its technological determinism (Buckingham, 2011; Thomas, 2011), criticized its lack of empirical evidence to support such daring assumptions about young affinity with ICTs (Bennet *et al.*, 2008; Kirschner and De Bruyckere, 2017) and highlighted its ideological affinity with the neoliberal vision of autocratic and autonomous individuals (Selwyn, 2009). Moreover, digital divide studies have gathered strong evidence in the last decades about the deepening digital inequalities (Van Dijk, 2005) inherently associated with the diversification and transformation of society's technological landscape in the last decades. Thus, the earliest digital divide approaches were concerned with material access to digital devices (Compaine, 2001; DiMaggio and Hargittai, 2001), whilst the following approaches have focused on the inequalities linked to digital use – the second digital divide (Hargittai, 2002; Van Deursen and Van Dijk, 2013), highlighting the importance of quality of access (Robinson, 2009), digital skills (Hargittai and Shaw, 2015) and motivational factors (Reisdorf and Groseelj, 2017) in understanding the specific practices associated with digital technologies. This is particularly significant in the case of youngsters, since digital divide studies have served to empirically dismantle the universal affinity and proficiency of this

collective towards digital media. Therefore, it has become possible to analyze the influence of socio-structural factors – such as social class, gender, cultural capital or ethnicity – in a variety of young digital practices (Robinson, 2009; Boonaert and Vettenburg, 2011; Correa, 2016; Thornham and Gómez Cruz, 2016), as well as the importance of developing digital competencies in order to improve life chances – the third digital divide, related to the social benefits and outcomes of digital practices (Ragnedda, 2017).

In the last few years, some research projects have been trying to recover the importance of the generational dimension in the analysis of digital practices without falling into the reductionism and universalization of the digital natives' model. At least three relevant trends can be identified: (i) studies of inter-generational uses of the Internet and ICTs, showing how youngsters can help older people to acquire digital competencies and interest in using technological devices, but also how older family members provide a technological environment to younger generations and pass on certain dispositions and attitudes towards technology (Correa, 2015; Lüders and Brandtzæg, 2017); (ii) the focus on the specific digital practices of adult and older generations, taking into account that Internet accessibility and digital technologies have become widely popular among population in the last years (Friemel, 2014; Van Deursen and Helsper, 2015; Schreurs *et al.*, 2017), and, finally, (iii) biographical analysis (Bolin, 2018; Taipale *et al.*, 2018), focusing on technological socialization processes and techno-biographical trajectories; that is, reconstructing subjects' distinctive digital practices during their life stages in particular socio-historical moments in which certain technologies are available. This last trend is the one that will be developed in this paper. Therefore, in the next section, the author presents the main theoretical tools that are used with the aim of understanding young adults' socialization in the use of technology.

## UNDERSTANDING TECHNOLOGICAL SOCIALIZATION: DOMESTICATION OF TECHNOLOGY AND DIGITAL LITERACY

In order to reconstruct people's techno-biographical trajectories, it is needed to understand how they are socialized in the use of digital technologies. My approximation to technological socialization (Merino Malillos, 2010; Calderón Gómez, 2018) is based on the Bourdieuan notion of 'habitus' (Bourdieu, 1979), which is simultaneously internalized in dispositions and externalized in social positions taken by subjects during their daily activity. Therefore, two intertwined sides of the same process, which is technological socialization, need to be considered: the material appropriation of technological devices – domestication of technology (Silverstone, 1993), and the phenomenological internalization of dispositions towards technology – digital literacy (Erstad, 2011).

In the first place, material accessibility to digital technologies is conditioned by the distinction between affordances and appropriations (Schäfer, 2011). Broadly, the term 'affordance', taken from James J. Gibson's theory of perception (1979), refers to the actionable properties and potentialities inscribed in digital media and devices by design (weight, size, operative system, connectivity, possible uses, *etc.*), whilst 'appropriation'

refers to the actual ways in which subjects incorporate such media and devices into their social practices. There is never a whole convergence of affordances and appropriations, since users might not take all the potentialities of a certain technological object – because of lack of awareness, competency or interest – and they could also deploy digital practices opposed to the conventions promoted by designers. Furthermore, the term ‘domestication’ (Silverstone, 1993) refers to the continuous process of appropriation of digital media that is developed by subjects during their lives, taking into account the variety of devices and forms of use developed in different life stages and social spaces in which subjects participate, such as school, university, work, leisure, social interaction, etc. Summing up, in order to reconstruct people’s techno-biographies, the following dimensions need to be considered:

- a) *Type of devices* used at different life stages, focusing particularly on the comparison between mobile phones and personal computers (see the Methodology chapter);
- b) *Precocity and intensity of use* of different devices, since incorporating them during early stages of life can shape digital experiences afterwards, motivating people to acquire more digital competencies and engender particular generational identities (Taipale *et al.*, 2018);
- c) *Forms of appropriation* of devices, which are in the base of the internalization of specific dispositions towards technology, engendering distinctive forms of digital literacy, as it is developed in the following paragraph.

In the second place, the acquisition of competencies and skills in the use of ICTs has led to the study of distinctive forms of digital literacy (Livingstone, 2008; Erstad, 2011; Jones, 2011) experienced by subjects. The term ‘digital skills’ was promoted by the authors like Eszter Hargittai (2002) or Alexander J. A. M. Van Deursen and Jan A. G. M. Van Dijk (2014) in order to analyze digital inequalities beyond material access. However, due to the sociological approach adopted, I prefer the term ‘disposition’ – in the Lahirian sense (Lahire, 2013), adapted to a post-Fordist unfixed society in which multiple socialization experiences coexist. Dispositions include competencies and digital skills, but also schemes for action, expectations, interests, motivations and previous experiences in the use of digital technologies which shape the distinctive way in which different types of users incorporate them into their practice. Therefore, digital capacitation is mainly unconscious, unintentionally internalized during daily digital practices, but it is also important to analyze both formal and social contexts – such as school, work or social interaction – in which subjects are encouraged to increase their level of digital skills in order to fulfill certain tasks. This is why, in order to categorize subjects’ techno-biographies, the following dimensions related to their particular digital literacy itineraries will be considered:

- (a) *Self-perceived level of digital competencies* in order to fulfill subject’s particular necessities of using ICTs,
- (b) *Motivation*, which can be split between *unconscious self-capacitation*, produced unintentionally during daily activities, and *conscious self-capacitation*, which is related to the motivated necessity of acquiring certain digital skills,

(c) *Formality*, which refers to the level of structuration of digital literacies. They can be split between the *informal form of literacy*, when competencies are just acquired during the use of digital devices, and the *formal form of literacy*, when digital skills that subjects acquired are clearly structured – like in specific courses, at school, at university or at work;

(d) *Sociality*, since most digital practices are not developed individually but in a social space of interaction. We can differentiate between *social practices*, which refer to digital activities developed in group – even if physical presence is not needed because of ICTs' affordances – and *social support*, which refers to the cases in which someone helps another one (or is helped by them) in order to fulfill a certain task. In this case, the role of donor (digital mediator) can be distinguished from the role of receptor (proxy user) of help.

## METHODOLOGY

In this paper, a qualitative methodology based on thirty in-depth interviews conducted with youngsters and young adults in the region of Madrid, Spain, is used. Data collection was completed in 2017 and 2018. The author's aim was to represent different districts of the city of Madrid and municipalities in its metropolitan area. Particularly, focus was placed on subjects born between 1982 and 1999 that use the Internet frequently in their daily life and who generationally belong to the contested category of the so-called digital natives, with the objective of understanding their digital asymmetries in terms of offline benefits (Ragnedda, 2017). The qualitative discourse analysis is based on the socio-hermeneutic approach developed by Alonso (1998), with a view to placing persons' narratives in their social context or production and reproduction, focusing on the pragmatic dimension of language. Also, a socio-biographical dimension has been adopted (Wengraf, 2001) in order to understand youngsters' distinctive itineraries of technological socialization, integrated by the material dimension of incorporating digital devices into particular activities during life (domestication) and the phenomenological internalization of competencies and dispositions (digital literacy). In addition, a qualitative structural sample design (Valles, 2014) based on the typological and theoretical representation of four relevant sociological variables was used. The foregoing is presented in Table 1 and discussed below.

Table 1. Qualitative sample. Main characteristics of respondents.

| ID | City (district)*  | Gender | Generation (birthdate)     | Educational level | Type of Access |
|----|-------------------|--------|----------------------------|-------------------|----------------|
| R1 | Rivas             | Woman  | Mobile Dig. Natives (1996) | Secondary         | Multiple       |
| R2 | Rivas             | Woman  | Pot. Dig. Natives (1994)   | Secondary         | Simple         |
| R3 | San Fernando      | Man    | Pot. Dig. Natives (1994)   | Secondary         | Multiple       |
| R4 | Rivas             | Man    | Pot. Dig. Natives (1988)   | Higher            | Simple         |
| R5 | Torrejón de Ardoz | Man    | Mobile Dig. Natives (1995) | Secondary         | Advanced       |
| R6 | Madrid (Centro)   | Man    | Pot. Dig. Natives (1988)   | Secondary         | Advanced       |



| ID  | City (district)*            | Gender | Generation (birthdate)     | Educational level | Type of Access |
|-----|-----------------------------|--------|----------------------------|-------------------|----------------|
| R7  | Boadilla                    | Man    | Mobile Dig. Natives (1998) | Secondary         | Simple         |
| R8  | Madrid (Retiro)             | Woman  | Dig. Immigrants (1987)     | Higher            | Simple         |
| R9  | Madrid (Salamanca)          | Man    | Pot. Dig. Natives (1993)   | Higher            | Advanced       |
| R10 | Madrid (Tetuán)             | Man    | Dig. Immigrants (1984)     | Higher            | Advanced       |
| R11 | Rivas                       | Man    | Pot. Dig. Natives (1992)   | Secondary         | Simple         |
| R12 | Leganés                     | Woman  | Pot. Dig. Natives (1988)   | Secondary         | Simple         |
| R13 | Madrid (Chamartín)          | Man    | Dig. Immigrants (1986)     | Higher            | Multiple       |
| R14 | Las Rozas                   | Man    | Dig. Immigrants (1985)     | Secondary         | Multiple       |
| R15 | Madrid (Arganzuela)         | Woman  | Pot. Dig. Natives (1993)   | Higher            | Advanced       |
| R16 | Madrid (Centro)             | Woman  | Dig. Immigrants (1982)     | Higher            | Simple         |
| R17 | Madrid (Ciudad Lineal)      | Woman  | Dig. Immigrants (1987)     | Higher            | Multiple       |
| R18 | Madrid (Moncloa-Aravaca)    | Woman  | Pot. Dig. Natives (1991)   | Higher            | Multiple       |
| R19 | Madrid (Arganzuela)         | Woman  | Pot. Dig. Natives (1990)   | Higher            | Advanced       |
| R20 | Madrid (Arganzuela)         | Woman  | Pot. Dig. Natives (1990)   | Higher            | Multiple       |
| R21 | Madrid (Villa de Vallecas)  | Woman  | Mobile Dig. Natives (1997) | Secondary         | Multiple       |
| R22 | Rivas                       | Man    | Pot. Dig. Natives (1994)   | Secondary         | Multiple       |
| R23 | Rivas                       | Woman  | Pot. Dig. Natives (1994)   | Secondary         | Multiple       |
| R24 | Rivas                       | Woman  | Mobile Dig. Natives (1996) | Secondary         | Simple         |
| R25 | Rivas                       | Man    | Pot. Dig. Natives (1994)   | Higher            | Simple         |
| R26 | Madrid (Vicálvaro)          | Man    | Pot. Dig. Natives (1994)   | Secondary         | Multiple       |
| R27 | Rivas                       | Woman  | Mobile Dig. Natives (1995) | Secondary         | Multiple       |
| R28 | Alcobendas                  | Man    | Pot. Dig. Natives (1994)   | Secondary         | Simple         |
| R29 | Madrid (Puente de Vallecas) | Woman  | Pot. Dig. Natives (1990)   | Higher            | Multiple       |
| R30 | Rivas                       | Woman  | Pot. Dig. Natives (1991)   | Higher            | Multiple       |

Source: The authors's own elaboration / \*The district is included only in the case of the city of Madrid

1. *Gender*. In terms of second-level digital divide – motivations, skills and uses –, gender plays an important role in understanding digital inequalities among young people (Antonio and Tuffley, 2014; Haight *et al.*, 2014), which are no longer confined to digital access but to specific ways in which men and women incorporate digital devices into their ordinary life. This is particularly important in the Spanish context, in which the gender digital divide has been one of the main concerns of digital divide research in the last decades (Castaño *et al.*, 2011). Therefore, the sample includes sixteen women and fourteen men.

2. *Generation*. The author's approximation is based on Mannheim's notion of generational location (1993), due to his view that incorporating digital technologies to life during childhood and adolescence could affect later life stages and engender

generational identities (Bolin, 2018). Nevertheless, it needs to be connected with other social, economic and cultural conditions. In this study's sample, three prototypical generational locations – related to the technological landscape present during subjects' primary socialization process – have been identified:

>*Forced Digital Immigrants (six interviews)*: born between 1982 and 1987; they have experienced the transition between analogical and digital technologies due to the fact that personal computers and Internet broadband connections were not present in their lives until late adolescence;

>*Potential Digital Immigrants (eighteen interviews)*: born between 1988 and 1994; they are characterized by intensive use of personal computers and the Internet during adolescence, but they have incorporated mobile devices and other forms of connectivity later in life;

>*Mobile Digital Natives (six interviews)*: born as of 1995; they have been socialized since childhood in a multiple mobile and diversified digital environment, in which access is enabled by means of various devices (computers, smartphones, tablets, consoles, TVs, etc.), no longer confined to physical plugged connection.

3. *Educational level*. Recent studies suggest that education and cultural capital (Haight *et al.*, 2014; Mariën and Prodnik, 2014; Dutton and Reisdorf, 2019) are the most important variables for understanding the second level digital divide, whilst economic condition is particularly related to material access. Therefore, our sample is composed of sixteen subjects with compulsory secondary education and fourteen subjects with higher education.

4. *Type of access*. Finally, access is still an important dimension of the digital divide, being no longer limited to physical connection to the Internet but with material access (Van Deursen and van Dijk, 2019), in which particular affordances (Schäfer, 2011) of different devices must be taken into consideration. We established three typical forms of accessibility:

>*Smartphone access (ten interviews)*: an almost exclusive use of smartphones to access the Internet;

>*Multiple access (fourteen interviews)*: a combination of frequent use of mobile phones and personal computers to access the Internet. Computers are usually needed for particular productive tasks, at home, university or work;

>*Advanced access (six interviews)*: a flexible and intense use of many different devices (smartphones, tablets, laptops, desktop computers, wearables, etc.), taking advantage of their particular affordances in order to get better proficiency.

## **TECHNO-BIOGRAPHICAL TRAJECTORIES AMONG YOUNG PEOPLE**

The author proposes the following typology of four techno-biographical trajectories that can be identified in youngsters' narratives: '(T1) pro-technology users', '(T2) practical users', '(T3) mobile users' and '(T4) professional users'. These four categories work as ideal

types, since in each of them, some of different dimensions of technological domestication and digital literacy stand out. The presence in these types of different socio-structural variables used to structure the sample has also been analyzed, which is presented in Table 2.

Table 2. Typology of techno-biographical trajectories

| TECHNO-BIOGRAHPIES             | T1. Pro-technology users                   | T2. Practical users                          | T3. Mobile users   | T4. Professional users                            |
|--------------------------------|--|--|--|---|
| Summary                        |  |  |  |   |
|                                | Early and intense use of personal computer | Adaptability and change of devices and tools | Early and intense use of mobile phones, scarce use of computer | Intensive use of computer in professional milieus |
| Technological Domestication    |  |  |  |   |
| Computer                       | Early / Intense                            | Early / Occasional                           | Early / Occasional   | Late / Intense                                    |
| Mobile phones                  | Late                                       | Intermediate                                 | Early  | Intermediate                                      |
| Digital Literacies             |  |  |  |   |
| Self-perceived level of skills | Advanced                                   | Intermediate                                 | Basic  | Intermediate                                      |
| Motivation                     | Motivated self-capacitation                | Unconscious self-capacitation                | Unconscious self-capacitation                                  | Motivated self-capacitation                       |
| Formality                      | Informal and formal                        | Informal                                     | Informal   | Formal  |
| Sociality                      | Digital mediators                          | Proxy users                                  | Proxy users  | Social practices                                  |
| Socio-Structural Variables     |  |  |  |   |
| Gender                         | + Men                                      | + Women                                      | Both   | Both  |
| Generation                     | Potential Digital Natives                  | Potential Digital Natives                    | Mobile Digital Natives   | Forced digital immigrants                         |
| Education                      | IT linked                                  | Secondary                                    | Secondary  | Superior  |

Source: The author's own elaboration

### T1. Pro-Technology users

*I use the smartphone just for making calls, or taking a picture, but generally I always use the computer. (...) I have always liked technology, in general, since childhood I have enjoyed working with computers. I study software engineering, and it is also about messing around with components and programs. I also like videogames, so many things that are not directly associated with technology are, somehow, linked with it. (...) Before starting this degree I studied a course of electronics; (...) I didn't like it too much, but I coursed two subjects about programming that I enjoyed a lot (R5, Man, 1995).*

The first trajectory is linked to a high level of motivation towards the use of personal computers, which have been part of daily life experience of youngsters since childhood. These users use a wide variety of digital devices – smartphones, tablets, video-games consoles. However, they feel particularly comfortable when using desktop personal computers, which are incorporated to many activities: gaming, communication, information-seeking, media consumption, etc. Regarding their technological domestication, their interest in computers is based on an early intense socialization with them since childhood, either because they were growing up in a family environment in which computers were present, or, in some cases, during adolescence. In the latter case, it is linked to digital friendship shared practices that engendered their interest in experiencing with digital technologies. Therefore, their lack of important physical constrains that limit access and their motivated interest in exploring with personal computers and other tech-devices lead to a pro-technology habitus in which youngsters' identity is extremely entangled with the digital world. They represent what David S. White and Alison Le Cornu (2011) call residents of the digital realm, since their digital activities are usually not oriented to solve practical necessities, but rather towards the pleasure of navigating, exploring new features and 'being' online: this is what Laura Robinson calls disinterested forms of use (Robinson, 2009, 2014), since digital practices are mostly a motivated interest and curiosity rather than resulting from actual practical needs.

As far as their digital literacy is concerned, it is mainly based on motivated self-capacitation processes in which users invest their higher level of digital skills and awareness of the potentialities of digital tools in order to further increase their competencies – their digital capital (Ragnedda, 2018). Phenomenologically, there is a strong familiarity with ICTs internalized in their habitus, whose dispositions are continuously deployed with the aim of acquiring new skills and competencies, since it is a pleasure for them to learn new features of the digital world. Besides, this kind of users act as digital mediators in their social circles, since they usually help friends, family members and other acquaintances to fulfill difficult digital tasks: for them, exploring with digital devices is more a challenge than a burden. Therefore, for many of those belonging to other types of users, it is important to have a pro-technology friends who could help them when they experience some difficulties in their digital practices, as we it will be seen within the descriptions of other types.

Also, regarding their sociodemographic profile, there is a wider presence of men, especially in the case of older respondents, since pro-technology dispositions have usually been associated with masculinity (Castaño *et al.*, 2011). As a consequence, especially during childhood and adolescence, this gender divide has led to a higher interest in learning about digital technologies among men. In terms of age, this trajectory is more frequent among potential digital natives and force digital immigrants, since they have lived during their adolescence in a technological landscape in which Internet accessibility was confined to personal computers and fixed broadband connections. In the case of mobile digital natives, they have incorporated smartphones during this life stage, so the probability of developing this type of habitus linked to the intensive use of computers is less frequent. Finally, in terms of educational level, there is an important presence of youngsters interested in superior or vocational studies related to information and

communication technologies – computer engineering, software design, programming, etc.. This is logical, because this interest in IT courses and degrees is usually a consequence of their previous pro-technological habitus engendered during adolescence.

## T2. Practical users

*Nowadays I don't own a computer, I have inherited my brother's one, but I have never thought of buying one on my own. At school I still didn't have at home, I remember going to my cousin's office after school and using hers. (...) I just used it to communicate with friends by Messenger from 1 to 3. (...) Frequently, at high school I used my sister's computer, but just for doing homework and things like that. (...) On the other hand, I had a mobile phone quite early, I used it to send SMSs and making some calls, not many since it was expensive. (...) Afterwards, with the arrival of smartphones, mostly the same, I was one of the last in my circle of friends to have one... I am not very interested in technology and I don't use anything if I can avoid it. It is the same with Instagram, I don't want to use it but there is a moment in which you are forced to have it (R22, Men 1994).*

The second trajectory is characterized by the constant migration between technological devices and digital tools following the transformations in subjects' practical necessities at each life stage and social field of interaction. In terms of accessibility, these youngsters are used to computers and mobile phones, but their use of computers is much more specific and sporadic than in the case of pro-technology users, since their technological socialization is linked to the practical tasks they need to deploy in different moments of their lives. Therefore, during adolescence they use mainly communicative tools, such as *Messenger* or the first social networks, SMS, voice calls, basic information-seeking activities linked with high school and leisure practices developed in consonance with the interests and motivations of their social circle. Unlike mobile users (T3), practical users feel quite comfortable using different digital devices – including computers or video-games consoles. However, they do not usually develop a deep interest in exploring the possibilities of such technologies. Their connectivity is much more punctual and instrumental, so they fit in the category of 'visitors' (White and Le Cornu, 2011) rather than 'residents' of the digital world: their digital appropriation is pragmatic, since they see technology as a means to an end, not an end in itself. They are, therefore, quite similar to practical users, as described by Robinson (2009) regarding computer domestication. Yet, the fact that the use of smartphones and mobile broadband systems has increased and changed significantly during the last decade has to be taken into account. Consequently, Robinson's typology needs to be adjusted to the current technological landscape in which youngsters interact.

Regarding digital literacy, among practical users the most common forms of literacy are unconscious self-capacitation processes linked to the practical appropriation of digital devices, as well as punctual dependence on social support in the case of advanced tasks. This is why, as the quote above remarks, this category of youngsters usually lags behind their social circle, adapting their technological performance to the necessities they perceive at any moment. As a consequence, these users are commonly in need of guidance and support from people around who are more interested in technology. Practical users do not feel the necessity of investing energy and time in acquiring new advanced skills if they are not connected with practical or concrete uses, so – like mobile users – they can be

described as 'proxy users': they depend on others' digital competencies in order to fulfill advance tasks. Therefore, the importance of social capital is extremely relevant among these youngsters, taking into account that they do not have motivation, confidence and interest to acquire new competencies on their own. This is why social digital literacy is ambivalent in terms of self-empowerment: practical users can mobilize their social capital in order to fulfill digital tasks, which they could not do on their own. However, this dependence on others can lead to self-exclusion processes, in which subjects do not feel the necessity of investing time and effort to acquire new digital skills that could help them in the future. Within the section dedicated to mobile users, this type of socially mediated literacy will be presented as well.

Finally, regarding their sociodemographic profile, among practical users, there is a wider representation of potential digital natives (born between 1988 and 1994) and women, since these social groups developed an intense use of personal computers during adolescence – for basic communicative and information tasks – but, afterwards, they commonly migrated to smartphones and tablets, which are perceived as devices better adapted for their own necessities. Nevertheless, the association between masculinity and digital competency, is much clearer among older respondents and less-educated people, since the gender usage divide has nuanced much more during recent years. Therefore, the different historical periods of socialization during childhood and adolescence – the 1990s and the early 2000s in comparison with the late 2000s and afterwards – are extremely relevant to the analysis of the influence of gender in technological appropriation. Among mobile digital natives, there are still gender differences, but they are becoming much less clear because the diversified digital environment is no longer dependent on the use of personal computers. Finally, among practical users there is a higher proportion of medium-educated youngsters, since many college students develop new digital dispositions linked to the necessity of increasing their competencies in the use of personal computers, as it will be seen within the section dedicated to the fourth techno-biographical trajectory.

### T3. Mobile users

*I mainly use the mobile phone unless I have to use Word, but I feel computer is much more uncomfortable to use. (...) My smartphone screen is quite big, it is easier to use it when I am in bed; I also have my phone charger at hand, so I don't need to lose a second to charge it. (...) And I can carry it out to the bathroom, for instance. And then is quality, I have an iPhone and the screen quality is much better than my computer, which is a 400€-computer. (...) I couldn't have a low range mobile phone, but I don't care too much about the computer, because I don't use it more than once a day, or even less. (...) My iPhone is better for everything: it has a camera, it is faster, easier to use, the quality of the battery, etc. (R24, Woman 1996).*

The third trajectory is quite similar to T2, but in this case the use of computer is even less common, since most of these users have been intensively socialized in the use of mobile phone since childhood, particularly as soon as smartphones started to be widely available for substituting computers in many daily practices related to the use of the Internet. This type of users rely on smartphones to fulfill all their digital necessities, since they did not incorporate computers to their practices during adolescence, so they are not familiar with them, and, consequently, they choose to spend more money on a top-range smartphone rather than on a better computer. Usually, they only have access at home to old-fashioned

family desktop computers that they have usually inherited, or low-range laptops used just on very specific occasions, when they need to do something that cannot be done with a mobile phone – such as, writing a document or using a specific program unavailable on other devices. Even in these cases, they feel uneasy and they depend on others for many advanced activities, even more than practical users. In terms of the distinction between disinterested and practical activities, they combine a strong familiarity and disinterested use of smartphones with a radically practical approach towards computers, which are seen as a burden they need to deal with on some occasions.

In terms of digital literacy, they rely on unconscious self-capacitation processes, but just with smartphones, since they do not have any familiarity with computers, so they use these devices with discomfort and even ‘fear’. Consequently, they try to reduce to a minimum the use of such devices, even though they are quite confident and experienced in the appropriation of mobile phones and even tablets. Neither are they particularly interested in technology as such, since they also conceptualize digital devices as means to an end, which usually is linked with communication, information seeking and leisure, but not with productive tasks. As in the case of practical users, they rely on their social capital in order to overcome their limitations in terms of digital competencies, but their lack of interest in developing new skills that could help them to fulfill such tasks on their own is even more evident than in T2. Therefore, even if they are not digitally excluded in terms of accessibility to ICTs, they show a lower level of motivation and interest in increasing their digital skills, since they do not perceive the necessity of it and, in many cases, they are not confident enough about their possibilities of getting along properly in the digital realm. This is why they also fit the role of proxy users, particularly with computers, whilst in the case of the use of smartphones they always try to learn the basic features that allow them to get along without deepening their knowledge of advanced possibilities or configurations of these devices.

Socio-demographically, in this biographical trajectory, there is a wider presence of mobile digital natives (born after 1995) and, in a few cases, also forced digital immigrants (born between 1982 and 1987), because it is more probable to develop this kind of trajectory among youngsters who did not have the necessity to intensively use computers during their childhood and adolescence. In the case of mobile natives, they had the alternative of the smartphone to fit communicative necessities, whilst in the case of older youngsters, computers were not as common during their adolescence as a few years later. Of course, there are members of these two generational groups that would fit another type, but the tendency is that many potential natives (1988-1995) fit better the category of practical users, since they (at least) had to use communicational tools such as *Messenger* during their adolescence. In terms of gender, there are differences as clear as in T1 and T2 – especially among younger respondents, whose use of mobile phones has been quite intense during life for both genders. Nevertheless, when it comes to the level of education, there is quite a clear link to this trajectory of people with basic and secondary studies, since the use of computers is needed in most of superior degrees. Therefore, university (and some job positions) can be viewed as an important way of acquiring computer literacy, as it will be developed in the next section.

#### T4. Professional users

*My use of the computer has radically changed, since I use it for every formal thing that I need to do, like writing a document. You are not in the world if you don't know how to use it. (...) Everything is digitalized and nowadays more and more activities require using a computer. (...) In my case, I have learnt a lot about it recently, forced by work, since my colleagues love Excel and I told myself: 'I have to learn how to use it'. (...) I looked up for some tutorial, I asked a colleague to teach me, 'do a chart', 'use that formula', 'do this', and step by step I am learning, because I don't want to be a burden. (...) For me it's difficult, there are a lot of codes and possibilities, but the benefits are incredible'*(R30, Woman 1990).

Finally, the fourth trajectory is associated with professional contexts of use of digital technologies, such as the academic environment and workspaces. In terms of technological appropriation, there can be recognized a pattern of youngsters who started to intensively use computers for professional matters after adolescence, when they entered university or when they obtained work positions that rely on ICTs. Therefore, in comparison with T1, the distinction between private and professional use is extremely relevant, since professional users start to acquire advanced digital competences only for fulfilling productive tasks, whilst pro-technology users already possess an earlier personal motivation towards digital culture. Consequently, this is an ideal type of biography in which scarce technological socialization during childhood and adolescence is compensated with an accelerated process of intensive domestication of computers after the age of eighteen, in a short period of time. Therefore, in this case, domestication works as a secondary socialization process in which subjects internalize new dispositions towards technology that compensate their previous lack of interest and competencies. This last group thus shows a higher level of digital skills – specifically those associated with productive tasks and computers – than practical and mobile users, but usually lower than pro-technology users, since they have not experienced a long-lasting process of progressive technological socialization.

Furthermore, regarding digital literacy, in this group formal aspects stand out in comparison with the more informal unconscious process of literacy. This means that their acquisition of competencies is closely interwoven with their professional activity. Thus, it is characterized by specialization in a series of advanced digital tasks, in comparison with pro-technology users, who also have internalized a more general dispositional motivation towards experimenting with digital devices as such. Nevertheless, apart from this salient productive task, this secondary socialization process also serves as a subjective process of internalization of experiences, dispositions and attitudes towards technologies used, which could afterwards be transferred into other forms of using ICTs. In other words, the importance of professional forms of literacy is less linked to specific digital skills acquired, but rather with general confidence and motivation internalized in the experience of using technology itself, as the quotation at the beginning of the section shows. Such experiences place professional users in a better position in terms of digital skills than practical and mobile users, so they become less dependent on social support and rely more on self-motivated learning processes. In fact, professional users actually rely on social support, but they can use social support to motivate themselves to acquire new skills rather than just delegate their activity to others.

In terms of a socio-demographic profile, having a professional techno-biography is closely linked with educational and cultural capital, since there are university and vocational students who can internalize more frequently this secondary technological socialization itinerary. Also, according to this research, the trajectory in question can be identified more frequently among digital immigrants and potential natives. It is worth noting that the mere reason for this is the fact that it was not possible to reconstruct mobile immigrants' biographies under the age of twenty – they were not old enough at the moment of interviewing them. The case of older youngster who become interested in technology when they need to adapt to a highly digitalized labor environment in which they were not been socialized early on is particularly relevant. Therefore, from the point of view of gender, even if this trajectory is quite common for both women and men, in the case of women its importance is crucial in order to compensate their previous lack of intensive digital literacy, particularly among older women who were socialized in a context in which gender bias regarding familiarity with ICTs was more evident. It is relevant that among highly educated women, self-perceived confidence about the use of digital technologies – in comparison to men – is much lower than among low-educated women, who are more commonly affected by the emotional digital divide (Huang *et al.*, 2015).

## CONCLUSION

In this paper, the author has developed a generational analysis of young adults' biographies of socialization in the use of ICTs, taking into account the material dimension of appropriation of digital devices – domestication (Silverstone, 1993) – and the subjective dimension of internalized dispositions – digital literacies (Erstad, 2011). During last two decades, digital divide studies have focused on different aspects of digital inequality – accessibility, motivation, competencies, differential uses of ICTs, *etc.*, pointing out that social inequalities are not just reproduced but intensified online (Ragnedda, 2017). In the case of youngsters, this skeptical approach to the emancipatory potential of information society has served to dismantle certain deterministic and universalistic approaches which conceptualize youngsters as the prototypical autocratic myth of neoliberal capitalism (Selwyn, 2009). Nevertheless, there is still little solid research about the specific processes of socialization and incorporation of digital technologies through lives, especially in a context of fast technological change in which the impact of such technologies could extremely vary from one generation to the next one in a short period of time.

This is why, in this paper, the author has reconstructed four ideal types of biographical trajectories of socialization in the use of ICTs among youngsters included in the group of supposed digital natives. By using a generational division in three generational groups (forced digital immigrants, potential digital natives and mobile digital natives) regarding the available technological landscape during childhood and adolescence, a variety of forms of technological appropriation and its relevance in people's current digitally mediated practices can be understood. On the one hand, pro-technology users and professional users stand out because of their interest in increasing their digital skills and

their wider array of digital practices, but the origin of their socialization is quite different: in the case of pro-technology users, their motivation is based on a long-term process of domestication of digital devices since childhood and adolescence, whilst in the case of professional users, it is driven by a secondary socialization process associated with work and university. Consequently, although pro-technology users show higher levels of digital competencies, professional users are generally interested in applying their recently internalized digital competencies in new private fields of activity that could improve their life chances. On the other hand, practical and mobile users have in common their lack of interest in learning new features of the digital world, since they are mainly visitors who develop a practical approach towards technology (Robinson, 2009; White and Le Cornu, 2011). Mobile users tend to depend exclusively on smartphones and mobile devices, whilst practical users are more used to changing tools and devices during different life stages, following the necessities of their social worlds. In terms of literacy, these trajectories are extremely dependent on social support (Courtois and Verdegem, 2016) – proxy uses. Therefore, they are in a worse position when it comes to taking advantage of the potential opportunities of the digital world.

In conclusion, digital accessibility is a necessary but not sufficient condition for understanding people's patterns of domestication of technology, which are closely interconnected with their social contexts and biographically developed experiences of use. Consequently, digital dispositions and familiarity with technological devices and tools seem more important than specific digital skills for engendering more flexible and diverse forms of appropriation, since some important barriers that prevent people from using the Internet are motivational (Reisdorf and Groselj, 2017) and emotional (Huang *et al.*, 2015). Hence, experiencing secondary technological socialization processes, such as professional users, is extremely important, since these subjects can transfer some of their competencies and dispositions acquired at work and university to new contexts of use, increasing people's confidence and familiarity in the use of digital device. The effect of social support, on the other hand, is ambivalent, since it empowers the subjects already motivated towards the acquisitions of new competencies, whilst already excluded subjects just delegate their digital practice to others, feeding a vicious circle of self-exclusion from the digital realm.

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# RAZUMIJEVANJE TEHNOLOŠKE SOCIJALIZACIJE: SOCIOGENERACIJSKO ISTRAŽIVANJE TEHNOBIOGRAFSKIH PUTOVA MLADIH U MADRIDSKOJ REGIJI

Daniel Calderón Gómez

**SAŽETAK** U ovom članku autor zauzima sociogeneracijsku perspektivu kako bi rekonstruirao biografije mladih u smislu socijalizacije za korištenje informacijskih i komunikacijskih tehnologija (IKT) u madridskoj regiji. Pri tome se oslanja na Bourdieuv pristup, koji uključuje dvije povezane dimenzije toga procesa: materijalnu domestikaciju IKT-a u svakodnevnim aktivnostima i distinktivnu digitalnu pismenost internaliziranu kao dispozicije prema praksi. Analiza je, na uzorku od trideset dubinskih (in-depth) intervjua strukturiranom po rodu, dobi, obrazovanju i načinu pristupa digitalnim sadržajima, utvrdila postojanje četiri idealna tehnobiografska puta (T1 – protehnoški korisnici, T2 – praktični korisnici, T3 – mobilni korisnici, T4 – profesionalni korisnici) koji predstavljaju distinktivne oblike usvajanja digitalnih tehnologija u praksi.

## KLJUČNE RIJEČI

MLADI, INTERNET, DIGITALNI JAZ, DIGITALNI UROĐENICI, GENERACIJSKA ANALIZA

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