

# Gamers never play alone: An interface-centred analysis of online video gaming

by Carlos A. Scolari, Fernanda Pires,  
and Maria-Jose Masanet

---

## Abstract

Online gaming involves a complex and multidimensional set of practices. This article proposes understanding online video gaming based on an interface-centred approach that goes beyond the classic study of the “graphic user interface”. In this theoretical and analytical framework, the interface is considered the place where human, institutional and technological actors relate to each other and different processes are carried out. The article draws the data from empirical research with teens carried out in eight countries. It analyses the teenagers’ online playing experience as an interface, understood as a ‘network of actors’ that goes beyond the single video gaming device (console, PC, etc.). This work also presents a map of actors, relationships and processes of the online video gaming interface, paying particular attention to the tensions and critical issues that arise, from a perspective that, in further studies, could be expanded to other practices.

## Contents

- [1. Introduction](#)
  - [2. Online video gaming and transmedia skills](#)
  - [3. The video game interface: Beyond the GUI](#)
  - [4. Methodology: An ethnography of teens’ media uses and practices](#)
  - [5. Analytical framework. Interface analysis: actors, relationships and processes](#)
  - [6. Analysis](#)
  - [7. Conclusions](#)
- 

## 1. Introduction

The relationships between teens, video games, social media, and collaborative cultures are very complex (Ito, *et al.*, 2010; Jenkins, *et al.*, 2006; Livingstone and Sefton-Green, 2016; Scolari, 2018b). Online video gaming is a multifaceted social activity that can be analysed from different perspectives and disciplines. This article proposes studying online video gaming with an interface-centred approach (Scolari, 2018a). The data are drawn from empirical research with teens carried out in eight countries. The objectives of this research were to determine what teens are doing with media, and how they learned to do it. For the first objective, the research team proposed a map of transmedia skills that includes a vast set of production, performance, management, technological, narrative, ethical and risk prevention skills that teens may apply in their everyday media life. The team also proposed a map of informal learning strategies, in which ‘imitation’ (*i.e.*, reproducing a sequence of steps mainly seen in YouTube videos) was one of the most relevant learning strategies (Scolari, 2018b). This is especially the case for videogames, where the connection with YouTube for learning purposes is essential (Masanet, *et al.*, 2019).

If online video gaming is a complex practice among teenagers, the challenge is to develop theoretically supported analytical categories to describe and understand how it functions. In this context, an interface-centred approach can be helpful for improving the understanding about an activity that involves a high number of subjects, institutions and technologies. Despite the classic, caricatured image of the video game player as an isolated individual connected to a machine, reality shows that these people ‘never play alone’.

The objectives of this article are: 1) To describe and analyse teenagers’ online playing experience as an interface, understood as a ‘network of actors’ that goes beyond the single video gaming device (console, PC, etc.); and 2) To delineate an initial map of actors, relationships and processes of the online video gaming interface. This paper starts with an introduction to transmedia skills and online video gaming practices and continues with a brief introduction to the expanded conception of the ‘interface’, an approach that goes beyond the classic ‘user graphic interface’. Then, it focuses on methodological aspects and analytical concepts used in this study. Later, the analysis section deals with different online gaming situations that emerged from the fieldwork. The last section presents conclusions and a series of open questions for future research.

---

## 2. Online video gaming and transmedia skills

One of most common media practices identified in teens in previous studies is online video gaming (Ito, *et al.*, 2010; boyd, 2014). During different phases of this research it became increasingly evident that many teens spend many hours playing videogames in online platforms. In the specific case of online video gaming, teens apply a rich set of abilities and skills, spanning from social management to performative skills (Checa-Romero, 2016; Scolari, 2018b).

In terms of social management skills, to coordinate a gaming session is just the first step in a series of activities during gameplay. There is quite a lot of literature related to online gaming and how duties and tasks are shared, what kind of communication channels are used and what kind of leadership qualities are required from an online gaming group leader (Taylor, 2006). The coordination of a team to carry out a mission requires both skills in managing human resources, and authority for getting others to do what you say (Kooskima, 2018).

In addition to social management skills, teenagers also develop skills related to self-management and content management. In fact, adolescents also have to cope with frustration and other negative feelings when playing. According to Masanet, *et al.* (2019), self-management of emotions and personal experiences is very important for teenager media experiences. Of particular interest is “their resilience when they face challenges in videogames, and their ability to cope with losing a game (*i.e.*, being good losers), which serve as potential training for navigating different situations and hardships in their adult lives” [1]. In relation to content management skills, adolescents search, select and download content related to video games on different Web sites, social networks and online forums. Some teens also create content (*i.e.*, gameplay videos), and therefore need to know how to use different applications and platforms.

Performative skills are the abilities necessary to carry out different in-game actions, for example flexible adaptation to unstable environments with changing and evolving rules, strategic thinking, creative thinking and complex time management (Pérez and Contreras, 2018). Other skills that teens may apply during an online video game experience are narrative skills (*i.e.*, evaluating and reflecting on the narrative world constructed by the videogame based on their own explorations), ideological skills (*i.e.*, detecting and describing gender stereotypes present in a videogame), technological skills (*i.e.*, being able to reflect on the technological qualities and characteristics of a console), risk prevention skills (*i.e.*, not sharing personal data with unknown players that they meet while playing), and productive skills (*i.e.*, creating a tutorial or gameplay) (Scolari, 2018b).

Online video gaming is a highly complex experience that requires users to develop and apply a broad set of skills. At the same time, players may take on different roles during a given game session (player, group leader, etc.) and apply different strategies that also imply developing different skills. Last but not least, players deal with different devices and communication processes during the online video game session. As an example, Thorne, *et al.* (2012) analysed the use of Web sites by *World of Warcraft (WoW)* players in the U.S. and the Netherlands. According to Thorne, *et al.*, multiplayer online games form complex “semiotic ecologies” that include game-generated text, player-to-player communication and collaboration, and associated Web sites that support in-game play. They detected an intensive use of external Web sites before, during and after gaming sessions. In this context, they concluded that “external websites function as keystone species within *WoW*’s broader semiotic ecology” [2]. Beyond Web sites, a dense setup of devices, platforms and applications are part of interface gaming sessions. This network of human and technological actors is at the centre of this article.

---

### 3. The video game interface: Beyond the GUI

When someone says ‘interface’ the audience immediately thinks of an interactive screen, a keyboard or joystick. This is the ‘user interface’ or ‘graphic user interface’ (GUI), the place where humans interact with digital devices (Norman, 1990; Shneiderman, *et al.*, 2017). In this article the concept of ‘interface’ is understood from a broader perspective. The idea is precisely to take the concept of ‘interface’ beyond the ‘user interface’ and use it to explore different kinds of techno-social processes.

The concept of ‘interface’ allows for different definitions (Scolari, 2004; Grudin, 2017). The interface has been considered as a membrane that separates two liquids (Bottomley, 1882) or a surface that conveys information (*affordances*) (Anceschi, 1993). Computer engineers have always considered the interface as an input-output device (*i.e.*, USB interface), but with the spread of graphical user interfaces in the 1980s it began to be considered as a tool that disappears (if it is well designed) (Norman, 1990; Bonsiepe, 1995). In the context of this research, the ‘interface’ is understood as a *place of interaction*, that is, *a place where human and technological actors relate to each other and different processes are carried out*. Human actors can be individual (user, designer, manager) or institutional (a regulation, corporation, protocol, the State, an organization of consumers). The ‘interface as a place’ is possibly the best metaphor, the one that reveals the most pertinent traits of interaction. The distance between a tool and a place should be clear to the reader: a tool is used while a place is lived in. Video gamers spend much of their lives in the interface.

---

### 4. Methodology: An ethnography of teens’ media uses and practices

An ethnographic approach was implemented in this study. Ethnography has been proven to be a reliable and well-established methodology for analysing youth and digital and new media (*e.g.*, Ito, *et al.*, 2010; Livingstone and Sefton-Green, 2016; Valdivia Barrios, *et al.*, 2015) and it has also been proven to be effective for video game studies (*e.g.*, Beavis, *et al.*, 2015).

As already indicated, this article is an outcome of an international research project that analysed teens, media and collaborative cultures in Australia, Colombia, Finland, Italy, Portugal, Spain, the United Kingdom and Uruguay. Participants were aged from 12 to 18 years old and different school profiles were selected in each country in order to carry out the fieldwork (private/public, urban/suburban, high-tech/low-tech schools, etc.). Therefore, the study followed strict ethical and data management protocols, which included informed consents to work with minors.

The methodology was designed and tested in Barcelona (Spain) in early 2015. The fieldwork was implemented in different countries participating in the project during 2016–17 and the data were processed and analysed during 2017–20. The data collection process included 1,633 questionnaires, 58 participatory culture and videogame workshops, 311 interviews, and the exploration of eight online communities. An interdisciplinary team of 50 junior and senior researchers, with expertise in fields such as media literacy, transmedia storytelling, participatory cultures, ethnography and pedagogy, applied quantitative and qualitative data collection techniques to determine what teens are doing with media, and how they learned to do those things (Scolari, *et al.*, 2020; Pink and Ardèvol, 2018).

The entire research team used the software NVivo 11 Pro for teams to perform an inductive and interpretative data analysis. The data used in this work was further analysed in NVivo 11 by the authors. This article mainly focuses on the outcomes of participatory workshops and the in-depth interviews.

Throughout the research it was observed that gender roles and stereotypes persist in media uses, consumption and production habits of adolescents (Masanet, *et al.*, 2021). The data show there is a sphere of male media use and another sphere of female media use. In relation to video games, we found that it is still a predominantly male environment, as recent research has also indicated (*e.g.*, Cote, 2018). As discussed below, the online video gaming interface is a masculinized space where the presence of girls is irregular and exceptional. This alerts us to the need to continue exploring these gender differences of the interface in future research.

---

### 5. Analytical framework. Interface analysis: actors, relationships and processes

In this article we apply an interface-centred analysis for examining the teens’ online gaming experiences. If the interface is a network of human and technological actors that interact with each other (Scolari, 2018a), to

analyse it the researcher must identify its components: actors, relationships and processes. According to the *Oxford Advanced Learner's Dictionary (OALD, Lea and Bradbery, 2020)*, an actor is “a participant in an action or process”. An example may be useful for visualizing this analytical category. The classroom could be considered as an interface, a network of human and technological actors. In a classroom there are many technologies (technological actors), from ‘old’ devices (blackboard, chalk, maps, chairs, desks) to ‘new’ ones (projectors, computers, electronic whiteboards). Regarding individual human actors, the classroom-interface includes students, teachers and administrative staff; school authorities also fall into this category. Finally, among the institutional actors should be included internal, local, state or even international procedures and laws that regulate teaching-learning processes, obtaining of diplomas and recognition of these titles. In addition, ministries of education, curricula and institutions where teachers are trained are part of the educational interface.

This taxonomy of actors (human, technological, individual, institutional, etc.) seems to go in the opposite direction of some theoretical approaches, such as actor-network theory (ANT), diluting the differences between different actors (Law, 1999; Latour, 2005, 1999a, 1999b). One of the key points of ANT is to provide a ‘symmetrical’ perspective where human and non-human actors are equally treated. Even if the interface-centred approach supports this breakdown of human-non-human binarism, and even expands it to other classic oppositions like *private* and *public* (spaces) or *formal* and *informal* (learning) (Scolari, 2018a, 2018b), for descriptive and analytical reasons it considers convenient to keep the differences between different actors, at least in the first phase of this research.

Once the different actors that converge in an interface have been identified, the next step is to determine *relationships* that link these actors. In the interface actors are never isolated but always connected with other actors. Different types of relationships can exist in an interface: unidirectional, bidirectional or multidirectional; domination or equality; cooperation or competition. Also, mathematics offers an interesting typology of relationships — for example, equivalence, inclusion, exclusion, union, intersection, complementarity — that could be reused in an interface-centred analytical approach. Finally, the formalist, semiotic and structuralist traditions (Barthes, 1968; Levine, 2015) put relations at the centre of their analytical models and could be a good source of connection typologies. However, the interface-centred approach, contrary to other approaches such as ‘sociology through relation’ that propose a top-down perspective [3], is based on a bottom-up analytical frame focused on the identification of *emerging relationships*. In this context, the interface is understood as *emergent phenomena*, that is, as a “subset of the vast (and still expanding) universe of cooperative interactions that produce synergistic effects of various kinds, both in nature and in human societies” [4].

The last analytical category concerns *processes*, understood as sequences of operations or events that unfold over time. Human-computer interaction (HCI) has a long tradition analysing sequences of actions to detect usability problems in user interfaces (*i.e.*, Shneiderman, *et al.*, 2017). The same approach can be applied to other interfaces. The best way to identify processes is to follow the flow of data, signs, goods or capitals and to analyse actors’ practices. The following is an initial list of processes that may occur in an interface: *signification, interpretation, donation, exchange, production, circulation, consumption, convergence, divergence, coevolution*. In other words, the interface-centred approach uses HCI as a take-off platform for analysing other social processes and institutions, challenging the traditional instrumental conceptions that reduce the interface to a simple tool. Considering a museum, a school, a neighbourhood, or an online gaming session as an (extended) interface facilitates the identification of critical issues and demonstrates their limitations (Scolari, 2020a, 2020b, 2018b).

---

## 6. Analysis

In this section, we apply the interface-centred approach presented earlier to understand teens’ online video gaming experiences. This analysis starts with presenting different actors, followed by relationships, and culminates in explaining processes that emerge while teens play video games.

### *Actors*

We identified three main actors: 1) technological actors; 2) institutional actors; and 3) human actors. All of them are interconnected in the processes of online gaming. [Figure 1](#) presents a list of the most important actors identified during this research, further explained in this section.

Actors		
Technological	Hardware	<ul style="list-style-type: none"> <li>• Console, PC, portable device, input/output devices,</li> <li>• Connectivity (Wi-Fi, routers)</li> </ul>
	Software	<ul style="list-style-type: none"> <li>• Games</li> <li>• Glitches</li> <li>• Production software: <i>RPG Maker, Photoshop, Action, Camtasia</i></li> </ul>
	Downloading platforms	<ul style="list-style-type: none"> <li>• <i>Google Play, App Store</i></li> </ul>
	Gaming platforms	<ul style="list-style-type: none"> <li>• <i>Steam</i></li> </ul>
	Communication platforms	<ul style="list-style-type: none"> <li>• <i>Skype, WhatsApp</i></li> </ul>
	Social media	<ul style="list-style-type: none"> <li>• <i>YouTube, Spotify, Facebook, Instagram</i></li> </ul>
	Webpages	<ul style="list-style-type: none"> <li>• Corporative webs, forums, Wikipedia, Wikia</li> </ul>
Institutional	Organizations	<ul style="list-style-type: none"> <li>• Corporations (Microsoft, Sony, Nintendo), International Game Developers Association</li> </ul>
	Protocols	<ul style="list-style-type: none"> <li>• Formal rules of each game</li> <li>• Informal playing rituals</li> </ul>
	Juridical	<ul style="list-style-type: none"> <li>• Specifics laws that regulate the market</li> </ul>
	Subscription system	<ul style="list-style-type: none"> <li>• PlayStation Plus</li> </ul>
Human	Producers	<ul style="list-style-type: none"> <li>• Graphic designers, experts in narrative, interaction designers, CGI, musicians</li> </ul>
	Users	<ul style="list-style-type: none"> <li>• Players (own team, other teams)</li> </ul>
	Others	<ul style="list-style-type: none"> <li>• Family members, expert gamers, youtubers</li> </ul>

**Figure 1:** Main actors of online gaming interfaces.

### *Technological actors*

The basic technological actor of an online video game interface is the console, personal computer or any other device that allows a player to play a game and enter its world. During this research teens that were most active in video game playing explained their relationships with these devices and the evolution of those relationships, from their first device (usually a portable console or a smartphone) to high-performance consoles like the PlayStation. One of the almost critical issues that emerged during fieldwork was related to the PlayStation 4 (PS4) and PlayStation Plus online subscription system. To play online, users must pay a network subscription that provides them with access to premium features, including early access to upcoming games, beta trials, discounts, system software updates and game patches. Even if PS4 online multiplayer requires a subscription to PlayStation Plus, some games, like *Fortnite*, are openly accessible. Subscription fees were not welcome by many of the young participants in this research, so they decided to continue using PS3 because they could keep playing online, but only with those peers who had the same version. Therefore, during workshops in Spain, the research team could observe that this issue meant that some teenagers from the same class stopped playing together because they did not have the same devices or access to the same games and features, because of subscription costs.

Consoles are not alone. Input-output devices, from joysticks to microphones and audio boxes, are also part of this network of actors. Another key technological actor is the game itself. The most cited games during the fieldwork were *Minecraft*, *Counter-Strike*, *League of Legends*, *Grand Theft Auto V*, *Call of Duty*, *FIFA*, and *Clash Royale*. Connectivity is another critical actor. If the Internet connection is not strong, this affects a player's performance and the entire interface, as explained by Abdul, a 13-years-old boy from Spain. He noted that while co-playing with his friends the Wi-Fi connection dropped and consequently the team lost the game, as his team fell into a weaker position with fewer players.

The online video game interface requires a series of collateral technological actors, such as Skype or WhatsApp, that make it possible for human actors to communicate before and during a given game. Video

game analysis usually focuses on consoles, games and players. Other actors that are also fundamental to gameplay are usually not explored: “We use Skype when we play online, but we call each other before with WhatsApp to set-up the time to play. We have a group just for that. When everybody can play, we connect on Skype, talk, and have lots of fun while we’re playing.” (Cristòfol, boy, 13 years old, Spain).

Video call applications are key actors that come into action at different moments of an online session. Not all games include inter-player communication systems, apps like Skype and WhatsApp, that support the organization of human actors participating in a given game session. Alex, a Spanish 13-year-old boy, explains that if they didn’t have these apps, he and his friends would not be able to talk and socialize while they play: “We are connected during the entire game, we organize ourselves and if we need help in one part, we tell them [the ones who are not connected] to come and connect quickly and that’s it” (Alex, boy, 13 years old, Spain).

Although some games include chat channels for players, like *Clash of Clans*, this feature does not stop players communicating on other platforms. Usually, the group of friends keep Skype or WhatsApp for communication and use the game’s internal channel for basic exchanges with unknown players: “We [he and his peers] do not talk there [in the game’s chat] with people we don’t know because sometimes they want to do something in the game that we’re not interested in. Sometimes we use it just to ask a player we don’t know to leave us because we’ve already planned our strategy in the game” (Alex, boy, 13 years old, Spain).

Finally, a series of platforms and social media are also part of the online video game interface. YouTube, for example, is a key actor in the gamesphere (Masanet, *et al.*, 2019). Teens use YouTube to solve problems because, for them, it works as a search engine with audiovisual output (Pires, *et al.*, 2021). As an example, Zack, an Australian boy, 16 years old, explains that he searches on YouTube when he “needs more details” to solve his gaming problems and usually “selects the first result” that comes up. YouTube is also useful for identifying glitches (software errors) and exploiting them to achieve specific tasks. This practice sometimes gives players an unfair advantage in a game:

“There are people that watch YouTube to find glitches. They usually say that by doing this they can learn how to do tricks in the game and win more points online. This happened a lot in *GTA5* [*Grand Theft Auto V*] until almost all the glitches were fixed” (Matías, boy, 13 years old, Uruguay).

It is important to highlight that YouTube includes YouTubers, human actors linked to the YouTube technological/institutional actor. Other platforms, like Spotify, are also involved in the gaming interface. Félix (boy, 16 years old, Portugal) explained that he prefers “to concentrate” while playing, so instead of talking to other players he turns to Spotify to listen to his songs during a gaming session.

Players also consult the official Web pages of companies, especially confirming new releases and upgrades that they have seen on YouTube or other social media.

Other platforms mentioned by gamers are Wikipedia, Wikia and Facebook. Wikipedia is usually used when teens want to read a quick summary of a game and do not want to search for video tutorials. Wikia attracts teens’ attention because of its transmedia expansions, as they can “find the explanation about the characters’ origins, the characters’ skills and also their main mission, as well as other information” (Pedro, boy, 16 years old, Colombia). Even if Facebook is not the most popular social media among teens, it is also a useful information source because they can find official pages of videogames there, which usually announce “an update of the game and you can become updated quickly, like on the *Minecraft* Facebook page” (José, boy, 14 years old, Spain).

The world of video gamers does not stop at online gaming sessions. In some cases, players produce content. One of the teens explained that he was interested in creating simple games and started using apps like *RPG Maker*, which make it possible to program games with simple scripts: “I’ve never done programming before, but I downloaded *RPG Maker* and I followed the steps of a video that I found before when I was curious to know how to create a video game” (José, boy, 14 years old, Spain). For the creation of mods (alterations of the game made by players that can range from small changes to complete overhauls) sometimes *Photoshop* participates in the interface as a technological actor. And for video productions (*i.e.*, YouTube game plays), teens download a set of apps to capture and edit images, like *Action* and *Camtasia* respectively.

The research team’s observations revealed that any list of the technological actors involved in the online video gaming interface should also include online gaming platforms (*i.e.*, Steam) and downloading platforms (*i.e.*, *Google Play*, *App Store*) among others. These technological actors have a relationship that is intertwined with human actors and will be described in the following section.

*Human and institutional actors*

The fundamental actors of any video game interface are the players and designers of a given game. Following the textual semiotic tradition (Eco, 1979) and interface analysis (Scolari, 2018b, 2009; Cosenza, 2014), the real designer is present during the interaction process as a 'designer's strategy' inside the video game. Both designers and players meet inside the graphic user interface, the place where the designer's strategy confronts 'user's strategy'. It is important to highlight that the creation and development of a video game (where the designer's strategy has a place) is a collective process in which many individual actors (*i.e.*, experts in narrative, interaction designers, CGI, musicians) and institutional actors participate, which includes a broad series of corporations, public organizations and communities (*i.e.*, video game companies, International Game Developers Association, laws that regulate the circulation of products and labour relations inside companies).

Many human actors take part in the online video gaming interface. There are individual players and teams of players who face each other in a game. The configuration of these teams is an example of how human and technological actors interact within the interface: "I don't have only one team to play with, I have lots of groups that I can contact to do video calls while we play. If one group is not connected, I just go and play with the one that has people connected" (Gorka, boy, 14 years old, Spain). This example shows that the network of players varies and depends on the presence of communication channels like Skype and WhatsApp. Nonetheless, this can also vary depending on the game, platform (PC, console) and people available. It could be said that the players create communities of gamers that include people they know well (*i.e.*, from the same school or family) and sometimes also people they don't know.

Family members also participate in the online video gaming interface, for example, by teaching teens how to play a video game or explaining how to hack a console. As an example, Joan (boy, 13 years old, Spain) was helped by his mother to hack his PlayStation. He explained that his mother watches YouTubers to help him with games. The presence of relatives is a very important aspect in the learning process of online gaming. Like Joan, other teens also affirmed that they had learned a lot about how to play online by playing with parents, siblings and relatives.

Other key individual human actors of the video gaming interface are YouTubers and expert gamers. They "have become an important source of information, entertainment, learning, and identification for many teenagers around the world" (Masanet, *et al.*, 2020). In the case of gaming practices, expert gamers are also ideal or aspirational models to follow (Márquez and Ardèvol, 2018). They share know-how and information that before could generally only be found in specialized stores, which implied spending money. As well saving money, Joan points out that he also follows YouTubers to save time as they can help fix a problem in a game or when "the console gets blocked" instead of going to a store.

The interrelations of YouTube, YouTubers and gamers demonstrate the complex relationships between human, institutional and technological actors in the process of learning and finding information about video gaming. During fieldwork it was detected that teens also use YouTube as a search engine: "I always like to do research before starting to play a game. I don't like to not know things before I start to play. I always like to know the rules in advance." (Félix, boy, 16 years old, Portugal).

Regarding institutional actors, game rules should also be considered as an institutional actor: they represent conventions that any player must accept before playing. However, video gamers, like in any other activity, can break rules. In this case, the researcher is dealing with the relationships between actors, which is the next step in interface analysis.

### ***Relationships***

In the previous description of the actors many of the interconnections that made up the interface had already emerged, like the relationships between individual players, between players and technological devices or institutions, or between players and external interlocutors (*i.e.*, YouTubers, professional gamers). To avoid an endless description of the connections and exchanges between human, technological and institutional actors (a map that would be impossible to cover in a single article), this section focuses on the main relationships and on a series of specific situations that show critical aspects of the relationships detected in the online video gaming interface.

The relationships between players include a broad set of connections: the cooperative relationship between members of the same team is very different from their competitive relationship with their adversaries. At the same time, these human-human relationships can be interpersonal or dialogic (communication from one single player to another) or multi-personal (inside the team). The relationships between human and technological actors can be unidirectional (watching the screen), bidirectional (in many games the controller vibrates when the player gets closer to a critical point) or multidirectional (the video gamers relate with different devices or platforms at the same time, *i.e.*, console + controller + Skype/WhatsApp + headphones).

Another key set of connections and exchanges of the online video gaming interface between human actors is given by the relationships between players and institutional actors. These relationships can adopt different

forms, from the bidirectional contract between the producer of the hardware device (console, PC) or software that it includes, for example, a warranty, to the player's agreement to follow the rules of the game. There are, therefore, mainly relationships of cooperation and agreement between them. However, in specific situations, gamers do not respect the 'interaction contract' of the game (Scolari, 2009, 2004), for example when teens do not respect the game rules or cheat obviously during a session. This would be the case of Rathelos, an Australian boy, 15 years old: "(I use tricks) to go faster in the game. For example, in *Minecraft* there is an instruction called 'command block'. Type it and it gives you something that is very good, for example a sword that can't be broken".

Rules are one of the central institutional actors in any gaming interface. They usually indicate each player's goals and their rights and responsibilities. The rules work as a 'contract', a bidirectional relationship between human and institutional actors. As already indicated, breaking game rules is a particular form of relationship between player(s) and an institutional actor and may have consequences. When a researcher asked Joan (boy, 13 years old, Spain) whether it is possible to cheat when playing, he answered, "Yes, you can. The problem is that, if they catch you, they take away your account".

It is important to highlight that the relationships between players may also be subjected to contract breaks. But the rules are still determined by institutional actors, who are also the ones who manage the monitoring of the rules (with the players help). In these cases, some gaming platforms also include reporting processes to isolate the players that do not respect the rules. Manuel (boy, aged 16, Spain), explains these reporting dynamics in a game he usually plays (*League of Legends*), "When you finish a game there is an option that qualifies you as 'friendly' if you did well or as a 'reportable' if you did something wrong or left the game and they also put a punishment called 'Leaver Buster' or they don't let you use the chat".

In addition, the relationships between human and technological actors can be breached (*i.e.*, when a subject employs a knife instead of screwdriver to open a computer case). In this situation, the subject is breaking the 'interaction contract' between the human and technological actor. Although not many cases of this kind of breach were found during fieldwork, researchers must pay attention to them as this is one of the key components of technological evolution (Scolari, 2013; Scolari and Rapa, 2019). However, during research some cases of 'redesign by use' of technological actors were detected, for example the already noted use of Skype, an application designed for video calls, to support the performance of teams during playing sessions. There are multiple relationships between technological actors. A relationship of complementarity is the one established between hardware (the console) and software (the game); the Internet connection is also another actor that usually maintains a complementary relationship, but it can also be a relationship of exclusion. For example, if hardware does not accept software updates, this can lead to obsolescence and therefore a need for replacement by a new device. Regarding the relationships between technological and institutional actors, the competence between platforms (*i.e.*, *Steam*, *Google Stadia*, *Rainway*, *Remotr*) or consoles (*i.e.*, PlayStation, Xbox, Nintendo) is a key element of the dynamics of the online video gaming interface that directly affects the decisions of human actors.

Figure 2 presents the most important relationships identified during research; it includes a few examples for each category.



Relationships		
<b>Human - Technology</b>	Player-Console	<ul style="list-style-type: none"> <li>• Unidirectional (watching the screen)</li> <li>• Bidirectional (in many games the controller vibrates when the player gets closer to a critical point)</li> <li>• Multidirectional (the video gamers maintain relationships with different devices or platforms at the same time, i.e. console + controller + Skype /WhatsApp + headphones).</li> </ul>
<b>Human-Human</b>	Players-Players	<ul style="list-style-type: none"> <li>• Relationship of cooperation within the same team</li> <li>• Relationship of competition between teams</li> <li>• Interpersonal or dialogic (one to one) relationships</li> <li>• Multi-personal relationships (many to many)</li> </ul>
<b>Technology - Technology</b>	Hardware – Software	<ul style="list-style-type: none"> <li>• Relationship of complementarity between specific consoles and games</li> </ul>
	Hardware – Hardware	<ul style="list-style-type: none"> <li>• Relationship of competition between different consoles and devices.</li> </ul>
	Software – Software	<ul style="list-style-type: none"> <li>• Relationship of competition between different games</li> <li>• Relationship of complementarity between specific games and operative systems</li> </ul>
<b>Technology - Institutional</b>	Hardware – Corporations	<ul style="list-style-type: none"> <li>• Relationship of competency between specific companies to impose their hardware (i.e. consoles)</li> </ul>
<b>Human - Institutional</b>	Player-Rules	<ul style="list-style-type: none"> <li>• Interaction contract: the player must respect the rules of the game. If not, she/he may be penalized</li> </ul>
<b>Institutional- Institutional</b>	Corporation- corporation	<ul style="list-style-type: none"> <li>• Competence between companies to impose a format or device</li> </ul>

**Figure 2:** Main relationships of online gaming interfaces.

For instance, the relationships between human and institutional actors are represented by connections between player-game rules, that is, the agreement that each player must respect if they do not want to be penalized.

### *Processes*

During research different kinds of processes were identified. The article only focuses on three of these: economic, meaning production and interpretation, and teaching and learning processes.

#### *Economic processes*

Beyond the basic commercial transactions that support the gaming experience (users must pay for a console or hardware device, games (if they are not free) and Internet connectivity) the research team identified a series of economic processes that involve human actors (individual and institutional) during gaming sessions. As already indicated, to access the online multi-play feature of the PS4, users must pay a subscription fee. Many young players, especially in families with limited economic resources, prefer to continue using an older model (PS3) for free online gaming. However, the videogame business is not limited to a subscription model because there is a very active market of characters and features, like skins (textures and patterns for weapons or the appearance of characters). Gorka (boy, aged 14, Spain) explains that in *Counter-Strike* there are “only green weapons, but of course then there are skins, that is, camouflages, but they are expensive. They [weapons] maybe cost 50 euros in real life [outside of the game], and in the game one costs five hundred because of the camouflage”. Although it is not a common practice, in some cases, players pay other users to secure a better rank in a game. Victor, a boy, 16 years old, from Spain, explained that there are people who offer their “gold accounts” in exchange for money, so the teen who does not play well can obtain better results.

Like other sectors of the cultural industry, the online video gaming interface is crossed by different kinds of economic processes. As the objective of this article is just to introduce an interface-centred analysis of online video gaming experiences, it will not go deeper into the political economy of video games (e.g., Dyer-Witford and de Peuter, 2009; Nieborg, 2014).

### *Meaning production and interpretation processes*

Meaning production and interpretation processes fall into the field of semiotics (Scolari, 2004; Pérez, 2015, 2012). In the first place, the basic level of interaction between the user and video game system is itself a complex semiotic process that involves strategies by game creators and tactics by multiple users. This dialogue within the interface moves from a perceptual level (to recognize an icon or object inside the game) to a meaning production/interpretation process of the full regime (to understand the ‘interaction grammar’ of that particular game) (Scolari, 2009, 2004).

To participate in an online gaming experience players should not only know ‘how to play the game’, but they should also dominate a broad set of communication skills. Learning how to play (that is, to understand the particular ‘grammar’ of each game) is a long process that involves searching for information, watching game play videos on YouTube, learning by doing and playing with peers. At the same time, before, during and after the online game session there is a dense linguistic exchange between team members and other players. These exchanges include many speech acts (Austin, 1962), which means they must take on responsibilities and respect agreements during a gaming session.

During fieldwork the research team confirmed the existence of a complex set of protocols and actions that take place during different phases of a multiplayer gaming session that must be accepted by players, from previous contacts and arrangements (day, hour, platform, game, partners) to the division of labour inside the team. These agreements are the outcome of a series of previous exchanges and negotiations. As it implies the repetition of a sequence of actions in a specific social setting, online gaming should be considered as a highly ritualized process. As Gorka, a 14-year-old Spanish boy, explained to the interviewer, he prepares himself to play by arranging his room: “I play in my room, yes ... Well, now that it’s hotter I usually open the window. I prepare a carpet for resting moments. It’s more comfortable. I change my pants and put on shorts to be more comfortable in my house and all that”. By doing this, Gorka can play better online with his peers. This example is also useful for visualizing the continuity between online and off-line environments.

The meaning production and interpretation processes are also present when the gaming session ends and team members analyse the performance. During fieldwork, it was possible to observe that teens from different countries talk about games and their matches during school breaks. It could be said that online gaming is a highly conversational practice that includes a broad spectrum of meaning and interpretation processes. If semiotics is understood as a discipline of sense production and interpretation (and not just as the ‘science of signs’), its contribution to an analysis of interfaces goes far beyond the study of interactive signs on a screen.

### *Teaching and learning processes*

Teaching and learning processes are critical in video gaming. Thus, it is not surprising that during fieldwork two informal learning strategies emerged as the most relevant: peer-to-peer learning and imitation (Scolari, 2018a). The typical case of peer-to-peer learning is the exchange of tips and tricks between two or more players in an online forum, like *3Djuegos* (<https://www.3djuegos.com/foros/>) or *NeoGAF* (<https://www.neogaf.com/>). In this case, the exchange by human actors is mediated by a technological actor (a platform) that follows certain rules (institutional actor), for example protocols that regulate exchanges in online forums. Imitation is one of the most popular informal learning strategies that emerged in research, and YouTube is the main informal ‘school’. In this case the learning process is based on copying the performances of skilled players, usually YouTubers with a high number of followers. Therefore, it was not surprising that during fieldwork YouTube emerged as one of the most popular informal learning spaces (Pires, *et al.*, 2021). Amurael, a young gamer from Australia (14 years old) expressed this attitude in a very clear way: “If I want to learn about a game in general, I most probably use a YouTube video. I watch YouTube videos because they’re easier to understand”.

Although teens also use other platforms to teach and learn about gaming, YouTube was the most recurrent one. A teen from Spain gave one of the most clarifying explanations about why YouTube (and YouTubers) are a key component of their media diet: “YouTubers are a mix of entertainment and learning” (Alex, boy, 13 years old). Beyond the emergence of new audiovisual actors that created a business model of edutainment, it is important to remember the complexity of these informal teaching and learning processes. These processes are very flexible, and subjects may obtain knowledge by interacting alternatively with peers and platforms:

“I look at videos on YouTube if I want to find out how to do something in the game, or I’ll ask my brother because usually he’ll know anyway, because most of the games that I have he’s

had at one point. But sometimes I like to learn it on my own and find a way to do it myself” (Rosie, girl, 17 years old, U.K.).

Teaching and learning processes, like economic processes or meaning production and interpretation processes, make it possible to see how different human, technological and institutional actors materialize their interactions inside the interface and express their relationships. The identification of different processes is part of the analytical research path because, from the perspective of the players and other human actors, they are intertwined (for example, a learning process is always a meaning production and interpretation process and may include an economic transaction).

As the interaction processes between human and technological actors become naturalized and the user interface “disappears” (Norman, 1990), a breakdown is the best moment to analyse how human actors become aware of being part of a network of actors. The following experience is a good example of this awareness:

“We once played *League of Legends* without Skype. I don’t know what happened to it, something broke, and it was very complicated because we had to write all the time, for example ‘you go to this part and do whatever’, and it was very difficult to be writing and stopping, maybe while you were writing they had already killed you” (Manuel, boy, 16 years old, Spain).

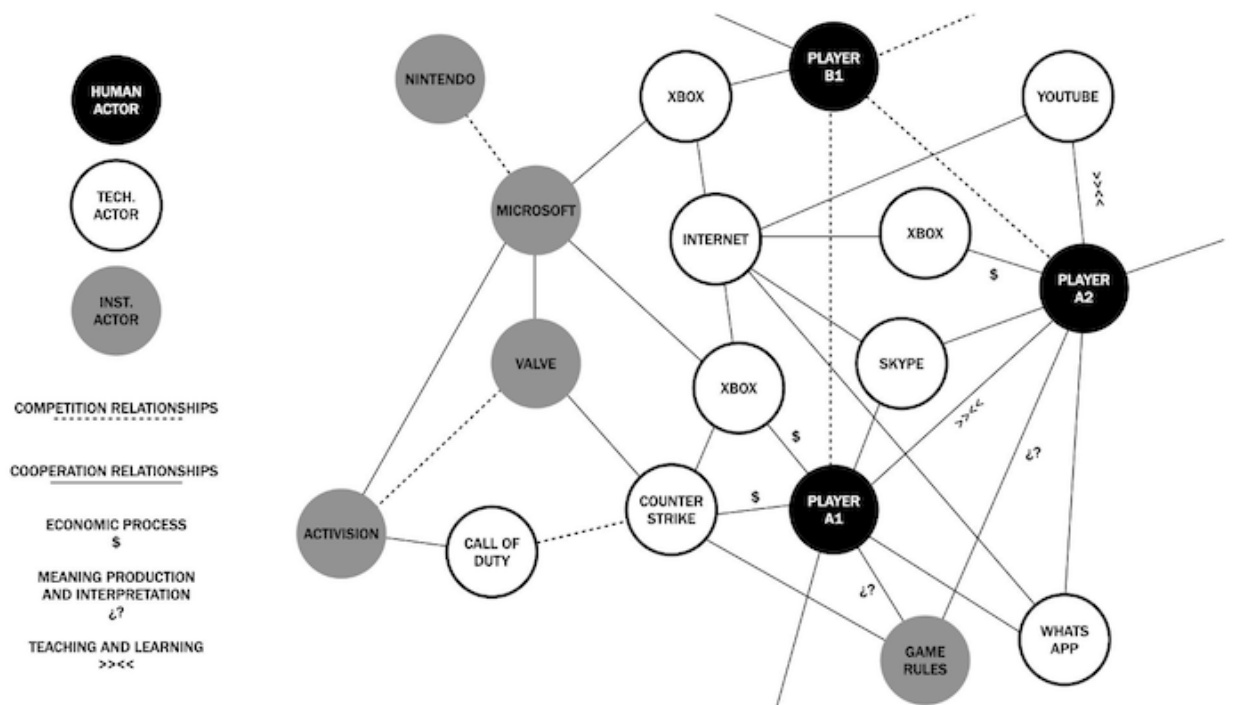
Researchers must develop their perceptions in order to detect breakdowns of the interface and, during fieldwork, even promote them to ‘open the box’ and make evident the false ‘transparency’ of the processes. Generating a breakdown is also useful for making human actors aware of other actors, relationships and processes around them.

■ 

---

 **7. Conclusions**

This article describes and analyses teenagers’ online playing experience as an interface, that is, a network of human, institutional and technological actors. This extended conception of the interface goes beyond the classic ‘user interface’ and presents itself as a useful analytical framework for understanding the functioning of socio-technological practices. At the same time, the article delineates a map of actors, relationships and processes of the online video gaming interface. [Figure 3](#) provides an illustration of the online gaming interface. As it is impossible to represent in a single image all of the actors, relationships and processes identified during research, the figure only describes the most recurrent ones.




**Figure 3:** Partial map of actors, relationships and processes of online gaming interfaces.

Figure 3 is just a snapshot of a complex network of interactions. For this representation, three players were selected; two from the same team (A1 and A2) and another from the opposite team (B1). As it can be seen, these actors are connected by relationships of competition and cooperation. Beyond using the video gaming platform as a communication channel, A1 and A2 established a secondary channel only for their team via Skype. This use of secondary communication channels is not only present in video gaming sessions. In online educational sessions (e.g., on Zoom, Google Meet or Collaborate), users — namely students — also create a parallel communication space for interpersonal comments (e.g., WhatsApp). A deeper analysis of these parallel networks of human and technological actors for interpersonal communication is a pending task that could be approached from an interface-centred perspective. Regarding the processes, Figure 3 just shows the main ones (economic, meaning production/interpretation and teaching/learning). Some of the tensions and critical points that emerged during the analysis were located in the processes (i.e., interpretive problems regarding game rules, misunderstandings among players of the same team) or in relationships between technological actors (i.e., low quality of an Internet connection). The creation of these maps should be considered one of the basic operative tools for an interface researcher; these maps could also be integrated, for example by asking human actors to create their own maps or to discuss maps created by a research team.

Data gathered during fieldwork confirmed that most of the time teens do not play on a single device: as indicated in the analysis, they participate in a dense setup of human, institutional and technological actors that generate different levels of interaction and communication. From an interface-centred perspective, online video gaming is based on a network of actors that, like any other interface, maintain different kinds of relationships while a series of processes take place. However, the identification of actors, relationships and processes is just an analytical protocol: during the online video gaming session they are interwoven by humans as a single integrated experience.

To conclude, it could be said that the interface-centred approach goes beyond the classic graphic user interface (GUI) and proposes a scalable and fractal model that could be applied to different ‘levels’ of gaming — a single online gaming session is an interface, an online video game championship is an interface, the whole eSports system is an interface — or even to any other social activities — education as an interface, politics as an interface, gastronomy as an interface — or spaces — museums as interfaces, cities as interfaces, schools as interfaces (Scolari, 2018a).

Regarding future research, it is necessary to explore the online video gaming interface paying particular attention to possible differences and oppressions that take place within it. It is important to approach human actors and their relationships from an intersectional perspective (Crenshaw, 1991), which can help to understand categories of difference and oppression (gender, race, ethnicity, social class) that can occur within the interface.

In the specific case of interface-centred research, this analytical framework can only be improved through its continuous application to different experiences. As already indicated, only a handful of relationships and processes were analysed in this paper. Aspects like the relationship of competition between gaming platforms or processes like the human-technology coevolution should be present in a future agenda of interface-centred online gaming research. 

### About the authors

**Carlos A. Scolari** is full professor at Universitat Pompeu Fabra-Barcelona.  
E-mail: carlosalberto [dot] scolari [at] upf [dot] edu

**Fernanda Pires** is Serra Hünter Fellow at Universitat Autònoma de Barcelona.  
E-mail: fernanda [dot] pires [at] uab [dot] cat

**Maria-Jose Masanet** is Serra Hünter Fellow at Universitat de Barcelona.  
E-mail: mjose [dot] masanet [at] ub [dot] edu

### Notes

1. Masanet, *et al.*, 2019, p. 407.
2. Thorne, *et al.*, 2012, p. 296.
3. Paopolloud, 2018, p. 2.
4. Corning, 2002, p. 22.

## References

- G. Anceschi, 1993. *Il progetto delle interfacce: Oggetti colloquiali e protesi virtuali*. Milano: Domus Academy.
- J.L. Austin, 1962. *How to do things with words*. Oxford: Clarendon Press.
- R. Barthes, 1968. *Elements of semiology*. Translated by A. Lavers and C. Smith. New York: Hill and Wang.
- C. Beavis, S. Muspratt and R. Thompson, 2015. “‘Computer games can get your brain working’: Student experience and perceptions of digital games in the classroom,” *Learning Media and Technology*, volume 40, number 1, pp. 21–42.  
doi: <https://doi.org/10.1080/17439884.2014.904339>, accessed 30 December 2021.
- G. Bonsiepe, 1995. *Dall'oggetto all'interfaccia: Mutazioni del design*. Milano: Feltrinelli.
- J.T. Bottomley, 1882. *Hydrostatics; or, theoretical mechanics part II*. London: William Collins.
- d. boyd, 2014. *It's complicated: The social lives of networked teens*. New Haven, Conn.: Yale University Press.
- M. Checa-Romero, 2016. “Developing skills in digital contexts: Video games and films as learning tools at primary school,” *Games and Culture*, volume 11, number 5, pp. 463–488.  
doi: <https://doi.org/10.1177/1555412015569248>, accessed 30 December 2021.
- P.A. Corning, 2002. “The re-emergence of ‘emergence’: A venerable concept in search of a theory,” *Complexity*, volume 7, number 6, pp. 18–30.  
doi: <https://doi.org/10.1002/cplx.10043>, accessed 30 December 2021.
- G. Cosenza, 2014. *Introduzione alla semiotica dei nuovi media*. Roma: GLF editori Laterza, Bari.
- A.C. Cote, 2018. “Writing ‘gamers’: The gendered construction of gamer identity in *Nintendo Power* (1994–1999),” *Games and Culture*, volume 13, number 5, pp. 479–503.  
doi: <https://doi.org/10.1177/1555412015624742>, accessed 30 December 2021.
- K. Crenshaw, 1991. “Mapping the margins: Intersectionality, identity politics, and violence against women of color,” *Stanford Law Review*, volume 43, number 6, pp. 1,241–1,299.
- N. Dyer-Witford and G. de Peuter, 2009. *Games of empire: Global capitalism and video games*. Minneapolis: University of Minnesota Press.
- U. Eco, 1979. *Lector in fabula: La cooperazione interpretativa nei testi narrativi*. Milan: Bompiani.
- J. Grudin, 2017. *From tool to partner: The evolution of human-computer interaction*. San Rafael, Calif.: Morgan & Claypool.
- M. Ito, S. Baumer, M. Bittanti, d. boyd, R. Cody, B. Herr Stephenson, H.A. Horst, P.G. Lange, D. Mahendran, K.Z. Martinez, C.J. Pascoe, D. Perkel, L. Robinson, C. Sims, and L. Tripp, 2010. *Hanging out, messing around, and geeking out: Kids living and learning with new media*. Cambridge, Mass.: MIT Press.  
doi: <https://doi.org/10.7551/mitpress/8402.001.0001>, accessed 30 December 2021.
- H. Jenkins, K. Clinton, R. Purushotma, A.J. Robison, and M. Weigel, 2006. “Confronting the challenges of participatory culture: Media education for the 21st Century,” *MacArthur Foundation*, at [https://www.macfound.org/media/article\\_pdfs/jenkins\\_white\\_paper.pdf](https://www.macfound.org/media/article_pdfs/jenkins_white_paper.pdf), accessed 30 December 2021.
- R. Kooskima, 2018. “Management skills,” In: C.A. Scolari (editor). *Teens, media and collaborative cultures. Exploiting teens’ transmedia skills in the classroom*. Barcelona: TRANSLITERACY, pp. 33–43.
- B. Latour, 2005. *Reassembling the social: An introduction to actor-network-theory*. Oxford: Oxford University Press.

- B. Latour, 1999a. "On recalling ANT,," *Sociological Review*. volume 47, supplement 1, pp. 15–25. doi: <https://doi.org/10.1111/j.1467-954X.1999.tb03480.x>, accessed 30 December 2021.
- B. Latour, 1999b. *Pandora's hope: Essays on the reality of science studies*. Cambridge, Mass.: Harvard University Press.
- J. Law, 1999. "After ANT: Complexity, naming and technology," *Sociological Review*. volume 47, supplement 1, pp. 1–14. doi: <https://doi.org/10.1111/j.1467-954X.1999.tb03479.x>, accessed 30 December 2021.
- D. Lea and J. Bradbery (editors), 2020. *Oxford Advanced Learner's Dictionary (OALD)*. Tenth edition. Oxford: Oxford University Press.
- C. Levine, 2015. *Forms: Whole, rhythm, hierarchy, network*. Princeton, N.J.: Princeton University Press.
- S. Livingstone and J. Sefton-Green, 2016. *The class: Living and learning in the digital age*. New York: New York University Press.
- I. Márquez and E. Ardèvol, 2018. "Hegemonía y contrahegemonía en el fenómeno YouTuber," *Desacatos*, number 56, pp. 34–49.
- M.-J. Masanet, F. Pires and L. Gómez-Puertas, 2021. "Los riesgos de la brecha digital de género entre los y las adolescentes," *El Profesional de la Información*, volume 30, number 1. doi: <https://doi.org/10.3145/epi.2021.ene.12>, accessed 30 December 2021.
- M.-J. Masanet, M. Guerrero-Pico and M.-J. Establés, 2019. "From digital native to digital apprentice. A case study of the transmedia skills and informal learning strategies of adolescents in Spain," *Learning, Media and Technology*, volume 44, number 4, pp. 403–413. doi: <https://doi.org/10.1080/17439884.2019.1641513>, accessed 30 December 2021.
- M.-J. Masanet, I. Márquez, F. Pires and D. Lanzeni, 2020. "Self-exposure in social media: Teenagers' transmedia practices and skills for the construction of a personal brand," In: L. Mas-Manchón (editor). *Innovation in branding and advertising communication*. New York: Routledge, pp. 136–153. doi: <https://doi.org/10.4324/9781003009276>, accessed 30 December 2021.
- D.B. Nieborg, 2014. "Prolonging the magic: The political economy of the 7th generation console game," *Eludamos*, volume 8, number 1, pp. 47–63, and at <https://www.eludamos.org/index.php/eludamos/article/view/vol8no1-4/8-1-4-4.html>, accessed 30 December 2021.
- D.A. Norman, 1990. *The design of everyday things*. New York: Doubleday.
- C. Papilloud, 2018. *Sociology through relation: Theoretical assessments from the French tradition*. New York: Palgrave. doi: <https://doi.org/10.1007/978-3-319-65073-9>, accessed 30 December 2021.
- Ó. Pérez, 2015. *El arte del entretenimiento: Un ensayo sobre el diseño de experiencias en narrativa, videojuegos y redes sociales*. Barcelona: Laertes.
- Ó. Pérez, 2012. *El lenguaje videolúdico: Análisis de la significación del videojuego*. Barcelona: Laertes.
- Ó. Pérez and R. Contreras 2018. "Performative skills," In: C.A. Scolari (editor). *Teens, media and collaborative cultures. Exploiting teens' transmedia skills in the classroom*. Barcelona: TRANSLITERACY, pp. 44–51.
- S. Pink and E. Ardèvol, 2018. "Ethnographic strategies for revealing teens' transmedia skills and practices," In: C.A. Scolari (editor). *Teens, media and collaborative cultures. Exploiting teens' transmedia skills in the classroom*. Barcelona: TRANSLITERACY, pp. 108–117.
- F. Pires, M.-J. Masanet and C.A. Scolari, 2021. "What are teens doing with YouTube? Practices, uses and metaphors of the most popular audio-visual platform," *Information, Communication & Society*, volume 24, number 9, pp. 1,175–1,191. doi: <https://doi.org/10.1080/1369118X.2019.1672766>, accessed 30 December 2021.
- C.A. Scolari, 2020a. "The obsolescence of interfaces," *CCCBLab* (14 July), at <https://lab.cccb.org/en/the-obsolescence-of-interfaces/>, accessed 30 December 2021.

C.A. Scolari, 2020b. “New interfaces for a post-pandemic world” (25 August), at <https://cscolari.medium.com/new-interfaces-of-a-post-pandemic-world-6d0fec29bc28>, accessed 30 December 2021.

C.A. Scolari, 2018a. *Las leyes de la interfaz: Diseño, ecología, evolución, tecnología*. Barcelona: Editorial Gedisa.

C.A. Scolari (editor), 2018b. *Teens, media and collaborative cultures. Exploiting teens’ transmedia skills in the classroom*. Barcelona: TRANSLITERACY, and at [http://transmedialiteracy.upf.edu/sites/default/files/files/TL\\_Teens\\_en.pdf](http://transmedialiteracy.upf.edu/sites/default/files/files/TL_Teens_en.pdf), accessed 30 December 2021.

C.A. Scolari, 2009. “The sense of the interface: Applying semiotics to HCI research,” *Semiotica*, number 177, pp. 1–27.  
doi: <https://doi.org/10.1515/semi.2009.067>, accessed 30 December 2021.

C.A. Scolari, 2004. *Hacer clic: Hacia una sociosemiótica de las interacciones digitales*. Barcelona: Editorial Gedisa.

C.A. Scolari, E. Ardèvol, Ó. Pérez-Latorre, M.-J. Masanet and N. Lugo Rodríguez, 2020. “What are teens doing with media? An ethnographic approach for identifying transmedia skills and informal learning strategies,” *Digital Education Review*, number 37, pp. 269–287.  
doi: <https://doi.org/10.1344/der.2020.37.269-287>, accessed 30 December 2021.

B. Shneiderman, C. Plaisant, M. Cohen, S.M. Jacobs and N. Elmqvist, 2017. *Designing the user interface: Strategies for effective human-computer interaction*. Sixth edition. Boston: Pearson.

T.L. Taylor, 2006. *Play between worlds: Exploring online game culture*. Cambridge, Mass.: MIT Press.  
doi: <https://doi.org/10.7551/mitpress/5418.001.0001>, accessed 30 December 2021.

S.L. Thorne, I. Fischer and X. Lu, 2012. “The semiotic ecology and linguistic complexity of an online game world,” *ReCALL*, volume 24, number 3, pp. 279–301.  
doi: <https://doi.org/10.1017/S0958344012000158>, accessed 30 December 2021.

A. Valdivia Barrios, M. Herrera and M. Guerrero, 2015. “Aprendizaje y producción mediática digital en la escuela: Un abordaje etnográfico del aprendizaje como práctica cultural en Artes Visuales,” *Estudios Pedagógicos*, volume 41, pp. 231–251.  
doi: <http://dx.doi.org/10.4067/S0718-07052015000300015>, accessed 30 December 2021.

---

## Editorial history

Received 17 March 2021; revised 2 August 2021; accepted 13 October 2021.



This paper is licensed under a [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nc-nd/4.0/).

Gamers never play alone: An interface-centred analysis of online video gaming  
by Carlos A. Scolari, Fernanda Pires, and Maria-Jose Masanet.

*First Monday*, Volume 27, Number 1 - 3 January 2022

<https://firstmonday.org/ojs/index.php/fm/article/download/11623/10590>

doi: <https://dx.doi.org/10.5210/fm.v27i1.11623>