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MULTIMEDIA INFOGRAPHICS AS JOURNALISTIC NARRATIVES AND THE POSSIBILITIES OF HTML5

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ABSTRACT - The article is a comparative study of multimedia infographic elaborated by the Clarín.com (Argentina) and Folha.com, (Brazil) websites. The objective is to verify and analyze how the two important Latin American mediums of online communication have utilized HTML5 technology and its interactive possibilities in journalistic narrating. The analysis will examine multimedia infographics which have gone through substantial technological changes, altering the format and content of news. In order to understand the narrative possibilities of Flash and HTLM5 technologies for the production of interactive infographics this study will deal with the infographics section related to Folha.com and Especiales Multimedia from Clarin.com. The study, both quantitative and qualitative, verified which narrative and informative resources, tools and Internet programming language technologies were utilized by the two mediums of communication based on the analysis model proposed by Albert Cairo in the book Infografia 2.0.
Key Words: Interactivity, infographics, multimedia, HTML5.

A INFOGRAFIA MULTIMÍDIA COMO NARRATIVA JORNALÍSTICA E AS POSSIBILIDADES DO HTML5

RESUMO - O artigo propõe o estudo comparativo dos infográficos multimídia produzidos pelos sites Clarín.com, da Argentina e Folha.com, do Brasil. A pesquisa tem como objetivo verificar e analisar como esses dois importantes veículos de comunicação online da América Latina têm utilizado a tecnologia HTML5 e suas possibilidades interativas na narrativa jornalística. Para tanto, a análise vai se ater à infografia multimídia, que tem passado por profundas mudanças tecnológicas, alterando o formato e o conteúdo da notícia. Para abordar as possibilidades narrativas das tecnologias Flash e HTLM5 na produção de infográficos interativos, o trabalho compara as seções *Infográficos*, veiculada pela Folha.com, e *Especiales Multimedia*, do Clarín.com. O estudo, quantitativo e qualitativo, verificou quais recursos narrativos e informativos, ferramentas e tecnologias de linguagem de programação para Internet foram utilizados pelos dois meios de comunicação, com base no modelo de análise proposto por Alberto Cairo no livro *Infografia 2.0*.
Palavras-chave: Interatividade; infografia multimídia; HTML5

LA INFOGRÁFIA MULTIMEDIA COMO NARRATIVA PERIODÍSTICA Y LAS POSIBILIDADES DEL HTML5

RESUMEN - El artículo propone un estudio comparativo de la infografía multimedia producidos por sitios Clarín.com, de Argentina y Folha.com, de Brasil. La investigación tiene como meta verificar y analizar cómo estos dos medios de comunicación en línea mas importantes de América Latina han utilizado la tecnología HTML5 y sus posibilidades interactivas en la narrativa periodística. Por lo tanto, el análisis se apegará a la infográfia multimedia, que ha sido objeto de profundos cambios tecnológicos, cambiando el formato y el contenido de la noticia. Para hacer frente a las posibilidades narrativas de las tecnologías Flash y HTLM5 en la producción de infografías interactivas, el trabajo compara las secciones de Infografía, transmitidos por Folha.com y Multimedia Especiales, del Clarín.com. El estudio, cuantitativa y cualitativamente, descubrió los recursos empleados en la narrativa y la información, herramientas y tecnologías del lenguaje de programación de Internet fueron utilizados por los dos medios de comunicación, basado en el modelo de análisis propuesto por Alberto Cairo en su libro Infografía 2.0.
Palabras clave: Interacción; infografía multimedia; HTML5

INTRODUCTION

One of the main challenges to current journalism is the adaptation of journalistic content to a technological panorama which is in a constant state of innovation. The challenge is based in two fields: form and content. In terms of format, what would be the best way to design news for multiplatform communication mediums that are accessed not only by computers, but also by mobile devices such as tablets and smartphones? What would be the most appropriate journalistic content for this new context which targets a new type of user? A user who not only receives the news, but also produces it, modifies it, introduces data and then shares it across online social networks, the Internet, and diverse communication tools available on the web.

These two broad inquiries are the basis for discussing the possibilities of HTML5; the most recent version of the pragmatic languages of HTML applied to new journalistic narratives, in particular multimedia infographics. There are already experiences utilizing this programming language that brought new multimedia resources and interactivity to journalism characteristic of the online environment.

In this article, we present a comparative analysis between the multimedia infographics of specific sections of two mediums

of Latin American communication: the "Infographic"[1] section taken from Folha.com (online version of the Brazilian newspaper Folha de São Paulo) and the section "Especiales Multimedia"[2] taken from Clarin.com (online version of the Argentinean newspaper Clarin). The comparative analysis will be based on the model proposed by Alberto Cairo (2008, p. 93-94) in his book "*Infografia 2.0 – visualización interactiva de información en prensa*".

The objective is to verify and analyze how these two important mediums of online communication in Latin America have utilized HTML5 technology in order to advance the interactive possibilities of journalism. As such, the comparative analysis will be based on multimedia infographics that have gone through substantial technological changes, altering the format and content of news.

Before this, however, we briefly present the concept of multimedia infographics and the importance of HTML5 technology towards the development of multimedia infographics as a narrative of interactive journalism.

The definition for the term *multimedia infographics* adopted in this study is presented by the manual of style for the Clarin Argentinean newspaper, an object in this study. Published in 1997, the manual defines multimedia infographics as:

> [...] a combination of visual elements that provide a graphic presentation of information and clarify its fundamental utilization in order to offer complex information that, via a graphic presentation, can synthesize, clarify and make its reading more attractive. Ultimately, it combines drawings and illustrations and journalism together (OCHOA, 2009, p.5, our translation.)[3]

As Valero Sancho (2001) holds, in order for infographics to be recognized as digital or audiovisual, it should be composed of graphic elements (photos, designs and texts) and sound (music, noises and narrations). Beyond this, it should rely on navigation, interactive and hypertext resources.

Lima Junior (2004) agrees with the arguments of Valero Sancho (2001), but prefers the term multimedia infography. He further adds a new element to the composition of multimedia infographics.

> Different from what happens in printed press, many times an infographic is used to give a "lighter" feel to the page, utilizing it as if it were an illustration, while multimedia infography incorporates other elements of digital technology like the recovery of information, addition of video, audio, non-linear navigation and interaction (Lima Junior, 2004, p.7).

In relation to its suitability for producing online journalism, Lima Junior (2004) clarifies that "in the digital field, multimedia infographics is used to describe complex situations happening simultaneously in different locations. This journalistic tactic burst on the scene for coverage of the collapse of the Two World Trade Center Towers in 2001" (LIMA JUNIOR, 2004, p.5).

Cairo (2008) points out that using interactive resources for infographics was only possible due to the revolution in visual information design where the infographic "is no longer a static presentation of data and is transformed into a tool that the readers can use to analyze them" (CAIRO, 2008, p. 68, our translation)[4].

Outside of the innovations in esthetics and function, Valero Sancho (2001) adds the programming languages of Javascript and HTML to the list of elements that made online infographics more interactive and dynamic. Both languages were designed with the Internet in mind and greatly influenced the construction and format of current infographics. For example, Javascript was added to the list mainly for its functions like button creation and the development of simple mathematic calculations. Both static and dynamic HTML pages were also included for their ability to create animated objects that respond to pre-defined commands, show images, sounds, and dynamic graphics.

Valero Sancho (2001) states that there are other programs that create multimedia infographics besides Javascript and HTML. He highlights Flash software from Adobe Systems as being one of the most complete ones in the market for developing graphic digital pieces.

According to Longhi (2009), when considering new communicative possibilities for the web, multimedia narrative is so far the best that has been developed for online journalism, mainly due to its ability to integrate languages and the capacity to make use of the main features of online media.

For Ribas (2004), multimedia infographics sum up the features that make it one of the best-suited narrative models for the esthetics of online journalism. While infographics are essentially graphic and visual information originating from the communication between a design or painting and a complementary text,

> multimedia infography maintains the essential characteristics of published infographics, but since it is realized through other technological procedures, it adds to the power of the mediums and is presented in other supports; extending its function, altering logic, and incorporating new cultural forms (RIBAS, 2004, p. 2).

Through combining advanced resources of language programming such as Flash and HTML5, multimedia infographics can reach good levels of interaction with the user, providing simple and lucid understanding of an issue presented in a report. In order to explain the interactive possibilities of multimedia infographics, Cairo (2008) divides multimedia infographics into three levels of interaction: instruction, manipulation, and exploration.

Instruction is the most common level of interaction in multimedia infographics. In this type of interaction the user indicates, in the majority of cases by pressing buttons, the actions that are to be executed in the infographic. More elaborate than instructive infographics, infographics of manipulation are based on user experience and elements of the real world. In this type of interactive infographic, the user can change the position, color and size of objects and the physical characteristics of virtual persons through moving and clicking. Interactive infographics of exploration offer the illusion of unrestricted freedom for readers as they can move the graphic virtually, being able to manipulate the informative content. We use the word illusion because the freedom to visualize information does not go beyond what the developer of the infographic has programmed. He decides what, how and when the reader can see or manipulate the content. Cairo (2008) points out that there are few infographic resources that utilize interaction by exploration.

According to Flatschart (2011), the utilization of languages such as HTML (Hypertext Markup Language) opens a variety of possibilities for online communication, especially for multimedia infographic because "other languages can also be included with HMTL in the web document such as Javascript and PHP that offer the user more interaction and access to data bank information" (FLATSCHART, 2011, p. 9). The advantage of Javascript is that it can be directly incorporated into HTML pages, making the site content more interactive through elements such as menus, buttons and windows that respond to commands via a mouse.

It is important to point out that the first version of HTML came on the scene with the onset of the World Wide Web in the middle of the 90's. The result of Tim Berners-Lee research, the Web made searches and graphic and textual viewing of Internet content much easier through the combined use of browsers (navigator), and the HTTP protocol and HTML language. This technological advance helped to increase the popularity of the world web of computers and to push forward the development of the first journalism sites.

Since its creation, HTML has gone through various modifications that have resulted in new versions of the language. Today, version 4.0 continues to be the most utilized. However, when version 5.0 was announced by W3C[5], expectations for the new possibilities of the language grew. The major difference between previous versions of HTML and version 5 is in the integration of the layers. "being able to manipulate CSS and Javascript elements via APIs in HTML5 makes layering, presentation and behaviors closer and more integrated" (FLATSCHART, 2011, p. 15). This is possible because "one of the main objectives of HTML5 is to facilitate the manipulation of elements allowing for the developer to non-intrusively modify the features of objects and transparent to the final user" (FERREIRA; EIS, 2011, p. 10).

But the greatest technological innovation when comparing it to earlier versions is the fact that HTML5 permits the incorporation of APIs[6] and therefore strengthen the layers of language and user experience with the page content through "applications that permit geo-localization, audio and video control, dragging components, designing bitmaps, creating offline applications and realizing actions that used to require further technology" (FLATSCHART, 2011, p. 15). In other words, HTML5 opens a new world of possibilities for program developers, users and journalists alike who also utilize this new technology to produce informative content without the necessity of auxiliary plug-ins[7] while maintaining high levels of interactivity, something that is still not common in Latin American online mediums.

We believe that the new specifications introduced by HTML5 should contribute to the production of multimedia infographics and news games, which also depend on program techniques and online languages. Therefore, the interaction the multimedia infographic offers can be experienced on higher levels of interaction, manipulation and exploration via the HMTL5 language. This idea is based on the reception the utilization of this language received in other areas, mainly entertainment (music and cinema) and visual arts, as will be presented in the next topic.

FLASH AND HTML5: RESOURCES AND POSSIBILITIES

Serra (2011) traces an analysis between Flash and HTML5 technologies, showing the strong and weak points of each one and helping us understand the resources and the possibilities each one

has. According to the Serra, Flash is consolidated in the market; approximately 99% of personal computers use it. It is compatible with the majority of platforms and operational systems with the exception of iOS systems from Apple. It possesses a high level of interactivity but in order to utilize it you need to install a plug-in. Also, the loading time in Flash is slow.

On the other hand, HTML5, even while still in its development stages, already has many followers and supporters such as Apple, Google and Microsoft. One of the advantages HTML5 offers is that it is an open platform; it does not need auxiliary software to function and uses the navigator directly which contributes to overall improved performance, reducing loading time. Besides that, it is also compatible with the iOS system and does not have any development costs for the programmer.

The main disadvantage of HTML5 is the fact that it is still in its development phase and has generated some compatibility issues with a few navigators and platforms, ultimately limiting the quantity of resources and tools available. It is important to point out that even with the advent of a certain technology the other one cannot be eliminated as it continues to be utilized for web content.

As Serra (2011) illustrates, the two technologies have favorable and not-so-favorable points in their use. While Flash is a tool that is already consolidated on the web and present in almost all microcomputers, HTML5 arrives bringing a new concept towards navigating; a more dynamic, fast and adaptive one. Choosing the right technology means taking into consideration the needs of the site, application or platform.

In the field of communication Flash is still frequently utilized to produce animated and interactive infographics for online journalism sites. However, the narrative possibilities of HTML5 offer a new perspective for multimedia infographics. For example, resources such as the graphic canvas element[8], playing video and audio directly in the navigator, and the geo-localization tools can increase the potential of the current content in multimedia infographics as well as increasing the number of functions that can be utilized to construct interactive journalistic narratives in the infographic.

As previously mentioned, another highly relevant advantage of online communication is that, different from the material produced in Flash, the multimedia infographics of the HTML5 language do not require previous installation of plug-ins in order to use it. This is a

positive point for journalism sites that do not need to provide journalist content in different languages or run the risk of multimedia infographics that do not open in some navigators and mobile devices like tablets and smartphones.

Next, we will highlight some examples of the potential of HTML5 language which is already being realized in the field of entertainment, and particularly interesting initiatives from the universe of music, comic books and education. The initiatives in Latin American online journalism, especially in multimedia infographics, will be presented in the comparative analysis in the next topic.

We will start by showing the HQ[9] "Soul Reaper[10]", a digital comic developed by Saizen Media. These kind of digital comics are gaining more and more fans, and many artists and editors are getting on board with this trend of creating interactive works. HTML5 technology was used for the experimental comic Soul Reaper to promote interaction between the reader and the comic as it advanced through the scenes. The project gives graphic novels a new feel. Moving the roller ball makes static images and the story feel like their alive; movements like opening the eyes of a character or making a new object appear on the scene, outside of the audio narrative.

Another interesting example utilizing HTML5 is the Canadian environmental project "Heart of the Arctic[11]". The project's site uses an expedition in the Artic through four distinct environments intended to show users what needs to be done in order to restore the climactic balance in the Artic. This example shows how HTML5 can be used to create fun and educational sites, utilizing interactive resources to promote controlling and exploring of interactive graphic elements which, in turn, promotes the manipulation and exploration of the graphic elements of the virtual environment intended to reproduce the necessary climate conditions for life in the Arctic.

Many bands use elements conceived from the traditional concept of a video clip. This is where HTML5 technology is gaining more space every day. The Canadian band Arcade Fire frequently invests producing interactive clips. One of the group's latest advances in this environment was the music clip "We used to wait[12]", from the album "The suburbs".

Totally interactive, the video clip uses resources from Google Map and Street View to provide the user with their own personalized version of the video which requires you to type in an address to watch the clip. The clip uses images from scenes that were pre-

recorded and meshes them with images generated in real time using Google's geolocation tools. Various windows show a man running and it feels as if he is running in the place the viewer had suggested. The clip also uses an interactive design tool. Due to questions of compatibility with HTML5, the interactive multimedia clip can only be viewed on computers and devices using Chrome navigator.

The creative band from Chicago, OK GO, is also known for always using innovations in their video clips. For the song "All is not lost[13]" the group produced a totally interactive clip in HTML5 available only online. The purpose of the video clip that can only be viewed using Google navigator is that the user, once opening the site, can write any message they want in the specified field. As the clip goes on, there are dancers who do the dance movements the user had suggested in the message.

For the last example of HTML5 we present the work produced by the group Rome, made up of musicians Danger Mouse, Norah Jones and Daniele Lupe. Entitled "3 Dreams of Black"[14], the video clip abused the exploring interaction by giving the user control of the direction the clip should follow during a journey through an imaginary world. The production, developed entirely in HTML5 technology, also allows the user to construct their own scenario and afterward, include it in the video clip via their computer or any other device that supports HTML5 language.

There are dozens of interactive clips circulating on the web. However, the majority of them are produced in Flash. Nonetheless, in spite of providing a decent level of interaction, whether instruction or manipulation, they do not offer the same level of dynamics that HTML5 does. HTML5 does not need any plug-ins in order to use it and plays media straight from the navigator as well as incorporating design tools, search, and geographic location.

Next we will see how online journalism has incorporated Flash and HTML5 technologies in multimedia infographics developed by the Clarion.com and Folha.com websites.

COMPARATIVE ANALYSIS OF MULTIMEDIA INFOGRAPHICS FROM FOLHA.COM AND CLARIN.COM

Here we present a summary of a broader study on multimedia infographics of the two selected communication mediums. The original analysis presented six categories, but

for this article, which deals specifically with HTML5 possibilities, we will work with narrative and informative resources, tools and technologies used in infographics.

Folha.com and Clarin.com's choice is based on two motives: Clarin was the pioneer newspaper in Latin America and Folha (Brazil) was a pioneer for using multimedia infographics in journalism. That was the first motive. The second motive was due to the different technologies that they use in multimedia infographics. The infographics used for "Especiales Multimedia" by Clarion.com are mainly in Flash while the infographics used by Folha.com are mainly in HTML5.

We verify that Clarin.com only started using the HTML5 language in November of 2014 after a complete overhaul of its site. At this time, Clarin.com went from being exclusively linked to "Especiales Multimeda", and became linked to the new section "Clarin Data" which used other formats such as data journalism. Based on these changes, the special reports produced by the Argentinian site began to explore more elaborate iconographic multimedia through HTML5 technology.

As for Folha.com, it was in 2011, after finally entering the universe of mobile devices that the Brazilian site adopted HTML5 technology. Material published in Folha.com at this time justified the launch of a new application in HTML5 for tablets and smartphones so that all of Folha's content could be viewed on Apple devices as they run on the iOS operational system, and are not Flash compatible. "HTML5 language represents an evolution in traditional HTML which originated on the web. Global publications work with HTML5 applications in order to present their mobile content. Folha is a pioneer amongst the large Brazilian newspapers"[15], as stated by the executive editor of Folha, Sergio Davila, in the material previously mentioned. From then on, infographics at Folha.com were produced almost entirely with the same technology.

In this sense, the objective of the comparative analysis is to show how the two pioneer infographic mediums in Latin America are currently working with this new line of journalism, paying special attention to the technologies they use, the narrative possibilities they offer, and the levels of interaction they provide for the internet user. The main comparison is between the Flash and HTML5 infographics that can show major differences in narrative possibilities, especially interaction. Nonetheless, as the analysis will

show, while HTLM5 language is being used in the infographics for Folha.com it is not necessarily more interactive nor does it bring differentiated narrative possibilities.

The initial period of data collection was between June and October of 2014, when 109 infographics were collected from Folha.com. Nonetheless, since the number of multimedia infographics produced by the "Especiales Multimedia" section is less than the "Infographics" section of Folha.com, the possibility of a comparative analysis is significantly reduced, so we decided to collect all the multimedia infographics published in the section "Especiales Multimedia" on the Argentinian site, a total of 42. It is important to remember that in the "Infographics" section of Folha.com, infographics at times are an integrated part of the larger reporting, at other times they are the focus. The specials were not analyzed as a whole, only as multimedia infographics.

The comparative analysis is an adaptation of the proposal by Alberto Cairo (2008, p. 93-94) in his book *Infografia 2.0 – visualización interactiva de información en prensa*. It is important to point out that the complete analysis model developed by the author is more complex than the one presented in this article. For this study, only two of the six analysis categories proposed in Cairo's model (2008) are used as resources and types of interaction. In addition, a new category of analysis was added: program language for the web. We demonstrate the analysis based on the following three categories:

1. Resources: tools utilized for codifying information.

2. Types of interaction: the types of interaction in each graphic are detected – instruction, manipulation and exploration.

3. Program language: we classify which multimedia infographic uses Flash, HTML or HTML5 languages for production. We would like to point out that in spite of the infographic being in HTML5, it does not use the language possibilities and is presented as an infographic made in HTML. Verification of the programming language was realized by analyzing the font code for the infographic page.

We start the analysis with the multimedia infographics of Folha.com. The narrative and informative resources used in the infographics studied for this report were predominantly texts, photos, graphics and maps. Informative text is present in 80 of the 109 graphics analyzed. In second place is statistical graphics, used in 54 infographics. Photos and maps were used in practically the

same number of graphics, 42 and 39, respectively. The explanatory design resource (called this in order to differentiate it from statistical graphics) was employed in 8 infographics. External databases were also included in 8 infographics, mainly in infographics formatted for maps and statistical graphs. Audio and video resources were utilized in only 5 infographics. Digital animations and documents appear in 2 infographics. Only one infographic possessed newsgame.

Taking into consideration the number of narrative and informative resources used in each infographic, the majority of infographics analyzed did not use more than three media resources. There were 48 infographics with three resources, 34 with two, 13 with four and 12 with only one type of narrative resource. No infographic analyzed used five or six types of multimedia resources together.

This data demonstrates that the journalistic infographics produced by Folha.com utilize the least number of narrative possibilities the digital environment provides, mainly multimedia. This evidence is even clearer when we analyze the levels of interaction in each multimedia infographic proposed by Cairo (2008). Of the 109 infographics analyzed, 29 are instructive; the most common level of interaction. Here the user indicates, usually by clicking a button, the action to be performed in the infographic.

Cairo (2008) affirms that an iconographic multimedia can contain more than one type of interaction, if necessary. Beyond this, the levels of interaction can be inter-related within one infographic. Therefore, we find 8 infographics with two levels of interaction. In these cases, outside of instruction, the infographic makes it possible for objects to interact by means of mobile and clickable elements.

There were no exploratory infographics found during the test period which allow the readers to freely move within the graphic, able to manipulate the informative content. But what attracted the most attention was the 68 infographics that did not have any type of interaction. This number reflects a characteristic of Folha.com: the infographics produced by the press version are frequently reused for the online version, adding new narrative or informative resources.

With regard to the language utilized, Folha.com specifies at the beginning of the infographic page that it uses Flash and HTML5 technologies. Of the 109 infographics analyzed, only three were produced using Flash which required installing plug-ins that were slow to load. We detected that only 38 of the 103 infographics

published with HTML5 language really presented an improvement in online interaction and the inclusion of new communication resources. As such, they valued user experience for page content. Therefore, we can consider only 38 of these graphics to have interactive multimedia infographics. The remaining 68, also programmed in HTML5, do not utilize any type of interactive resource. In truth, the majority of these infographics were digital versions of the printed journal; static and lacking interactive resources.

In this perspective, it is evident that Folha.com, already utilizing HTML5 language on its site, explores the possibilities and functions that the language offers. We point to two facts for this phenomenon: compatibility issues between HTML5 and some navigators, devices and platforms; and the reduced number of professionals and teams in the newsrooms of main online newspapers that produce multimedia infographics, mainly using HTML5.

The utilization of HTML5 in Folha.com does not mean, however, that the multimedia infographics reach higher levels of interaction with web users. This is because the site did not fully explore the possibilities of HTML5. The material has an inferior level of interaction when compared to the infographics produced in Flash by Clarin.com, as we will see.

Up until November 2014 – when the section Clarin Data was created – Clarin.com had published its multimedia infographic in "Especiales Multimedia"; a special section on the site. Nonetheless, the multimedia infographics are produced much less frequently than those at Folha.com. For this reason, as previously explained in the beginning of this article, the 42 infographics published from the creation of the section until the last multimedia will be analyzed.

In relation to narrative and informative resources, the multimedia infographics of Clarin.com utilize more resources than Folha.com. The majority of infographics analyzed utilize between three and five narrative resources, while the infographics at Folha.com use between one to three resources. Video was the media most used in the infographics of Clarn.com, appearing in 38 infographics. Videos, texts, photos and audio were utilized together in 22 multimedia infographics. Maps were used in 19 infographics. Graphics, statistics, explanatory designs and digital documents appear in 5 infographics. Only one infographic used animated graphic resources. None of the 42 infographics analyzed utilized newsgames.

Regarding the interaction level of the multimedia infographic at Clarin.com, we showed that all of the infographics analyzed possessed some type of interaction. The instruction level is what appears the most: there are 33 instruction infographics, principally with interactive resources such as buttons to advance and retreat, and vertical menus. Besides this, 6 infographics had levels of manipulation, offering the user the possibility to change colors, sizes and forms of the objects in the infographic.

Interactive infographics of the exploratory type were found for the first time in the comparative analysis. Clarin.com produced 3 multimedia infographics with this level of interactivity, while Folha.com did not produce any in the research period.

Based on the results of the analysis, the multimedia infographics at Clarin.com are proportionally more interactive and rich in narrative resources, even though some had been produced more than ten years ago. Even still, the majority of infographics do not utilize HTML5 language. Considered to be more advanced, Clarin.com managed to produce substantial multimedia reports, utilizing both diverse graphic and visual elements through Flash.

Folha.com continues to opt for the reproducing infographics produced by the printed version of the newspaper, without adding any new narrative and interactive resources. This can be proven based on 68 infographics at Folha.com that do not possess any type of interaction, not even the most basic type of instruction. It is therefore clear that that Clarin.com holds the distinction of producing multimedia infographics, even without using available resources and possibilities through technologies such as HTML5. The fact that Flash technology continues to dominate the multimedia infographic at Clarin.com (present in 38 of the 42 infographics produced) does not mean the online newspaper's infography is out of date when compared to other mediums that have been using HTML5 for several years such as Folha.com.

Concluding the analysis of the Argentinian journal, it is important to point out that Clarin.com already possesses some multimedia infographics developed using HTML5 language. 4 infographics with this technology were found during the analysis period.

Below is a comparative chart analyzing the two mediums of communication researched. The chart shows the narrative and informative resources, the types of interaction and the programming languages utilized in the analyzed multimedia infographics over the analysis period.

NARRATIVE AND INFORMATIVE RESOURCES		
	Folha.com	**Clarín.com**
Map	39	19
Graphic	54	5
Text	80	32
Audio	5	24
Vídeo	5	38
Explanatory Design	8	5
Photo	42	28
Digital Document	2	5
Newsgame	1	0
Animation	2	1
Data	8	0

INTERACTION TYPES		
	Folha.com	**Clarín.com**
Instruction	29	33
Manipulation	0	0
Exploration	0	0
None	68	0
Instruction and Manipulation	8	6
Instruction, Manipulation and Exploration	0	3

PROGRAM LANGUAGES FOR THE WEB		
	Folha.com	**Clarín.com**
Flash	3	38
HTML	0	0
HTML5	106	4
TOTAL	109	42

In order to better use the resources that are already available in HTML5 language, Folha.com could have used interactive elements like videos and audio in the 68 static infographics. Furthermore, productions such as "Metro 40 years"[16] could have utilized exploratory interaction resources, making it possible for the reader to take a virtual journey ride on the metro lines of the Paulista capital. Another possibility that was not employed by Folha.com was the option to interact by means of manipulating elements in the infographic. The resource could have been utilized in some of the 27 multimedia infographics produced on

the World Cup[17]. With the addition of this type of interactive resource, it would have been possible for the internet user to put together their own tactics for the Brazilian team, as well as choose their players and placing them on a virtual football field.

In the Tourism publishing space, as in the case of the infographic "Biblical Trails"[18], it would have been possible to integrate resources such as Google Street View to offer the user the possibility of visiting and getting to know the places presented in the infographic. Another infographic that could have received new resources is the "Reports of the water problem in São Paulo"[19]. In order to fly over the principle water reservoirs in greater São Paulo, the infographic could have had an exploratory resource that Folha.com had already used in the special report "Everything about Belo Monte"[20], which did not fall within the analysis period. In this special on the construction of a hydroelectric facility in Belo Monte you can fly over the work like a user-controlled helicopter called "Folhacopter". This same interaction resource could have been added to the multimedia infographic about the water crisis, in the format of a newsgame where the user would guide the helicopter and explore the reservoirs of the capital of São Paulo.

News games would be an interesting resource to be utilized in the infographic "Neymar's 40 goals for the Brazilian selection"[21]. In this case, the web could be the goalkeeper and try to defend the shots on goal from the Brazilian team. Not only would it be fun, it would be possible to learn a little more about the other teams Brazil faced. Each defense would have access to new information about their opponent.

Seeing as how almost all the multimedia infographics at Clarin.com that were analyzed were produced using Flash, our observations will be directed to the 3 most recent infographics, developed in HTML5

The infographic "Orient Express: an extreme fight for a Europe in crisis"[22], seeing as how it dealt with tourism, could have incorporated Google Street View in order to help the reader visualize and explore streets, avenues and tourist spots in the cities. One of the best explorative multimedia infographics was found in "Cromañón – 10 years"[23], about the ten years after the Cromañón club fire in Buenos Aires that caused the death of 194 people and left 1432 wounded. Multimedia infographic shows the position of various people who were at the club and how they dealt with the tragedy, but HTML5 technology would make it possible to include

video clips of testimonies from those involved like family members, policemen and firefighters.

"La muerte del fiscal Nisman"[24] was the infographic developed in HTML5 that used the minimal amount of resources the technology offers. Only a chronological order of videos and photos were used with a level of instruction and interaction that only allowed the user to go forward and back in the time line. In these terms, it would be interesting to utilize the elements of exploration, as the previous infographic that took the reader to the scene of the crime, showing details, as it were a police investigation videogame.

CONCLUSION

Journalism is behind the times when it comes to using new languages to improve traditional journalistic narratives, as is the case of narratives that involve news games, multimedia infographics and transmitted narratives that would truly represent a new format for current journalism in the technological context.

Based on the analysis of the multimedia infographic, both Folha.com and Clarin.com have proven that technological relapse repeats itself once again in online communication when using resources offered by HTML5.

It appears that one of the greatest barriers limiting the integration of new technologies in journalism lies in the difficulty of encountering multidisciplinary teams in journalism and technology that work together yet physically apart. It is necessary and vital that they work together, following one of the main trends in the technology and information market: multidisciplinary.

In this new digital era of instant information and constant transformation of technological languages in communicative processes, HTML5 is a strong choice among large companies such as Apple, Microsoft and Google. This proves it is a language that cannot be ignored, and is not a trend, but something that is well consolidated.

Therefore, HTML5 does not appear as simply the distinguished language version of most hypertexts on the Internet. The great advantage of HTML5 in relation to previous versions and competing technologies is its interaction with the web in real time. It is exactly this advantage that is not being exploited by multimedia infographic that utilize HTML5, but that is already present in diverse multimedia

products in the entertainment industry, as mentioned previously. The utilization of HTML5 in online journalism brings new interaction possibilities based on the integrated use of narrative resources in the navigator. This functionality can create new experiences for the user in terms of journalistic content, altering current journalistic standards in the online universe that need to be addressed in order to attend to a growing digital public. Based on this perspective, the first alterations should be to substitute linear content with non-linear content. Beyond offering the freedom to access and consume online content as desired, non-linearity is an important element in interaction, allowing for the user to choose what they want to see and interact with the selected product.

The fact that Folha.com already utilizes HTML5 for its site does not put the Brazilian online newspaper ahead of the Argentinean one in terms of interaction and technological innovation. Though the Argentinean online newspaper has utilized Flash technology in the majority of its published multimedia infographics, the result from the comparative analysis shows that the infographics at Clarin.com have higher levels of interaction than the multimedia infographics at Folha.com which are developed in HTML5.

The supremacy of Clarin.com can be justified by the fact that Flash is already a consolidated technology which is widely used to produce interactive content for the web. Nonetheless, we believe that there is another motive. Different from Flash, HTML5 is still in the development phase and many navigators, devices and platforms are still not compatible. Perhaps this is why Folha.com has not integrated graphic resources (canvas) and multimedia in its current infographic. That said, we can understand the position of Folha.com as a precautionary one, they don't want to lose the readers who use navigators like Internet Explorer that still do not support HTML5. However, we cannot lessen the importance that journalism needs to follow the evolution of information and communication technology in order to not become an outdated and obsolete product in the Information Society.

*This paper was revised by Lee Sharp.

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NOTES

1 Available at: <http://www1.folha.uol.com.br/infograficos>. Accessed on: Oct. 31, 2014.

2 Available at: <http://www.clarin.com/especiales.html>. Accessed on: Oct. 31, 2014.

3 [...] una combinación de elementos visuales que aportan un despliegue gráfico a la información y aclara que se utiliza fundamentalmente para brindar información compleja que mediante una representación gráfica puede sintetizarse, esclarecerse o hacer más atractiva su lectura. Al final agrega que combina el diseño, la ilustración y el periodismo. [texto original]

4 [...] deja de ser una presentación estática de datos y se transforma en una herramienta que los lectores pueden usar para analizarlos. [texto original]

5 The World Wide Web Consortium (W3C) is the main regulatory organization for the World Wide Web. It consists of an international consortium with almost 400 members including companies, government bodies, and independent organizations with the goal of establishing standards for the creation and interpretation of content for the Web. Available at: < http://pt.wikipedia.org/wiki/W3C>. Access on: December 14, 2014.

6 API (Application Programming Interface) is an interface that facilitates interaction between software similar to an interface that acts as a communication aid between users and the various devices of our day-to-day lives. (FLATSCHART, 2011, p. 15).

7 The function of plug-ins is to work together with a navigator, executing specific tasks and making interaction, animation and programming possible in order to overcome the limitations of HTML4. Such tools add more functionality to Web applications and became known as Rich Internet Application; Adobe Flash and Microsoft Silverlight are main examples (VARASCHIN et al, 2013, p. 114).

8 Canvas is an element of HTML5 destined to delimitate an area for rendering the dynamics of graphics. All the creation and animation work is performed though dynamic program languages (usually Javascript). The element can be defined as a bitmap screen of

dependent resolution used to render graphics, games, or other images in real time. Available at: <http://pt.wikipedia.org/wiki/Canvas (HTML5)#cite_note-1>. Access on: January 12. 2015.

9 It is an art form that joins text and images together in order to narrate stories of various types and styles. They are, in general, published as magazines, books or in spaces that are published in magazines and newspapers. Available at: < http://pt.wikipedia.org/wiki/Banda_desenhada> Access on: January 8. 2015.

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12 Available at: <http://www.thewildernessdowntown.com/> Access on: January 10. 2015.

13 Available at: <http://www.allisnotlo.st/index_en.html> Access on: December 10, 2014.

14 Available at: <http://www.ro.me/> Access on December 10, 2014.

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RECEIVED ON: 28/02/2015 | APPROVED ON: 26/08/2015