Creating, Publishing, And Reading in Digital: The Case of Comics

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Abstract

The advancement of technology has brought new perspectives in artistic expression from the initial creation to the ultimate reception. Graphic narrations, traditionally created and developed on paper, are now challenged by new technological possibilities. Digital screens connect the producer-artist with the consumer-reader, while social network platforms give artists the opportunity to self-publish and self-distribute, bypassing publishers. Publishing houses, like DC Comics, and Marvel, have transitioned to digital as well. This paper provides an outlook of the constantly and rapidly changing digital landscape where comics are produced, published, and consumed. The following questions are discussed: - What are the digital forms of comics, the kinds of digital screens for their reading, and distribution platforms, and how have their creation and publication been affected? - What challenges does a comics reader face in encountering the various digital media and methods? As technological achievements expand and the skills of creators increase, new forms of digital comics will continue to emerge, and thus create new demands for digitally efficient readers of comics.

Keywords: Comics, Digital Screens, Creation, Production, Reading.

1. Introduction

As computing becomes part of everyday life, the way content is created, distributed, and read changes. Comics are one of the media that responded to the rapid and radical digitalization of the world. Their digitalization started in the mid-80's, when the technology matured enough to elaborate computer generated imagery (McCloud, 2000: 139-140). Digitalization occurs at all stages, from the production of a digital or digitalized comic book to its digital publication and distribution, up to final reading on digital devices, such as laptops, smartphones, or even Head-Mounted Displays (HMD). Many efforts have been made to taxonomize the several forms of digital comics that have transcended the boundaries from paper to screen, from "analogue and material" to "digital and immaterial" (Schulz, 2021: 133) and the new forms of storytelling (Dittmar, 2012).

Comics are considered part of the creative industry (de Vries, 2021). Their integration into the digital realm is related to various artistic, social, economic, and other factors, therefore underlining their importance. Digital comics are currently seen as having almost equal economic worth to print publications (Turrin, 2021). It is interesting to note that the European Union connects the spread of digital comics with its socioeconomic policies. An example is the European digital comic project, *EUDICOM* (https://eudicom.eu), which aims to enhance the reading of comics through various electronic devices, including smartphones and tablets.

Readers now have easier access to stories from all around the globe since comics can be downloaded from the web and read at one's convenience. This paper wishes to contribute to existing literature on comics by presenting an overview of the problems and opportunities that arise during their transition from paper to screen, in terms of production, publishing and consumption, and the way the three phases are connected between them. The research hypothesis is that the digitalization of comics has opened up new prospects for the medium. More specifically, we will examine the following questions:

- What are the digital forms of comics, the kinds of digital reading screens and distribution platforms, and how have their creation and publication been affected by the technological possibilities?
- What challenges does a comics reader face in encountering the various digital media and methods?

To answer these questions, we explored current studies on comics and their digital forms. The focus is set on comics' main features, that have allowed them to survive and flourish in the digital era, the many channels via which they are published and consumed, and the effects of digitalization on the creative and reading process.

2. Background

In recent years, much ink has been spilt over on comics as an artefact worth to be examined for itself and its various manifestations. Furthermore, there are many scholarship discussions and analyses on digital comics. McCloud (2000) wrote one of the first major books on digital comics exploring the effect of computers on the medium, the interaction with different technologies, and the possible future. He coined the concept of "infinite canvas" to describe the theoretically endless length of a digital comics page in contrast to the limitation of the conventional page sizes (McCloud, 2000: 200-224). The webcomic *Click and Drag* by Randall Munroe (2012) is one intriguing example of this infinite canvas. The image depicts a sprawling landscape and viewers are encouraged to "click and drag" to explore it in its entirety.

After the work of McCloud, other researchers investigated digital comics in various ways. Dittmar (2012) covered the consequences of digital publishing on comics' narrative aspects, such as the storytelling techniques. Goodbrey (2013) debates the screen's potential to accommodate new crossovers and features from other screen-based media. He reflects on how comical space and time adjust when the medium transitions from print to screen. Also, the author assesses how time's representation passes in the spatial medium of traditional comics. He studies the restriction of the animation in the panel and its movement. Wilde (2015) argues whether digital comics constitute a different medium than print. In his discourse about the "mediality" of digital comics, Wilde has shown it "can and should be understood also as a changing cultural conceptualization of what to expect on "comicness". He points out that the common feature to kind of digital comics is the "flexibility to choose their forms and limitations". Szabó (2016) focused on the reading process within digital literacy and questioned whether digital reading is similar to comic reading, concluding that the non-linear kind of reading digital texts can be similar to reading comics. Finally, Aggleton (2018) explored digital comics from a sociocultural point of view and defined the demarcation line between digital and print comic forms, having noticed the lack of consensus despite many comics' definitions.

Although defining comics has been an ongoing topic of debate in scholarship (Morgan, 2003; Cohn, 2005), what is widely accepted is the presence of sequential images that form a

story (McCloud, 1994: 9; Duncan & Smith, 2009: 3). As for Groensteen, he defines comics as a "system", by emphasizing the structural characteristics of the medium. He also introduces the concept of "iconic solidarity", referring to the way that individual images in a comic work together to form a larger sequence or narrative (1999: 21). In general, comics transmit messages via visual or/ and written channels, to narrate a fictive or non-fictive story, or to convey various information. They were initially developed on print media such as newspapers, magazines and books (Inge, 1990: xi-xxi). The vocabulary of comics includes a range of terms and concepts that are specific to the medium of comics (McCloud, 1994; Carrier, 2000). In their traditional form, the fragmented pieces of a page form the panels, whose size, form and layout contribute to narrative pacing. Various conventions and techniques are used to render linguistic, visual, aural, spatial, temporal, and gestural modes. For example, the illusion of speech is presented through dialogue balloons, the illusion of sound is provided through onomatopoeias, the illusion of motion through various lines and the illusion of time through the transition of panels.

During the transition from analogue to digital, elements of the traditional printed comics are maintained or transformed, while new digital ones are added. Incorporating new digital elements can widen the range of comic artists' tools, but it can also create new forms that expand comics beyond their traditional ones and even contrast with their default features. In any case, readers must decide on their reading path. They can start with a panoramic view of the page or a linear panel reading; they can first see the image or the text. Finally, they must combine panels in various ways; to build the narration, they must weave relationships not only between juxtaposed panels but also between distant ones.

Besides print support, comics can be projected on various screen types, which offer diverse possibilities for their user. Usually, each type of screen is intended to be used in a specific context; this is not without implications for comics' categories. There are screens for use within a fixed workspace, such as the desktop screen, a moving workspace like laptops, or screens that focus on the user's mobility, including the smartphone screen and the immersive monitors, such as HMDs. The influence of the screen on the medium of comics is so significant that Presser, Braviano & Côrte-Real (2019: 7) suggest the emergence of a "changing media" concept. They regard "Comics for Small Screen" as a potential emerging subcategory within the realm of comics. Moreover, the orientation of the screen and cultural reading habits can influence the act of reading (Deng, Kahn, Unnava, & Lee, 2016). For instance, East Asian languages have a vertical reading tradition, while Western languages are read horizontally.

3. Production

The umbrella term "e-comics" is used for all forms of digital comics. Under this term, two main categories arise, with the main distinction in how they were initially produced: digital or paper-born comics. To start with, digital-born comics, called digital comics, are not involved with print or paper at any stage or process. Everything is digital, from creation to final reading. Furthermore, besides images and words, digital comics can incorporate sound, motion, video, and user participation (Kirchoff, 2017: 117). On this note, webcomics are a sub-category of digital comics, originally published on the Internet. Initially produced for websites, blogs and other social media, they are mostly read online (Wilde, 2015: 2). They can be everything, from

comic strips to graphic novels, created by an independent artist or a team of artists and characterized by the lack of "corporate sponsorship" (Fenty, Houp, & Taylor, 2004).

The second category includes paper-born comics, called digitized comics and sometimes referred to as digital print comics. The initial production was done on paper and then scanned (Wright, 2008). This technique is often applied to older successful comic books or comic strips, archived online and available in digital format (Walters, 2009). While the original creation was made to be read on print support, the new form is read digitally. Furthermore, printed versions do not exclude the artist's use of computers or other digital media during the creation, as they can be processed by digital media, including colouring and lettering through some software. During the revision or reissue stage, digital formats have the potential to be enhanced by incorporating elements like sound, colour, motion, video, and interactive features for the reader-user. These additions have the potential to impact the categorization of e-comics. For instance, a digital print comic could be converted into a webcomic. In any case, knowing whether the intended form is print or digital when designing a comic is essential.

4. Printed Page and Digital Screen
When reading in a print format, the reader's view is constrained to a maximum of two paper sheets simultaneously, and page transitions can only be made by turning the page. However, on a digital screen, the creator has multiple options at his/ her disposal. For instance, the screen changing by clicking or tapping on the screen and horizontal or vertical scrolling, the number of panels to include on a digital page, zooming in or out to see a smaller or bigger portion of the page. Another critical choice is the limitation of the total pages that constitutes a print comic book, in contrast to the potentially spatial freedom of the virtually "infinite canvas" (McCloud, 2000: 200) that can be developed on a digital screen, where the page is not bounded by any border, due to the facility to scroll and zoom. These choices can have an important impact on how a digital comics is viewed, making the reading experience more immersive and personalized.

Moreover, the orientation of the screen plays an important role in reading. A printed page can have different shapes and sizes without restrictions, while the shape and size of the book often support the narration and create specific effects. For example, horizontal oblong picture books or comics are used to develop extended splash frames and thus better suit for stories with action and pursuit. While the orientation of the print format is permanently determined by its creator, the digital format orientation depends on the type of the electronic device. Usually, fixed or laptop computer screens have a horizontal orientation, while the screens of mobile devices, such as smartphones and tablets, have a vertical orientation, although they can function horizontally too. Therefore, the differentiating element of the digital format is that the reader can read in two orientations within the dimensions of the screen set by the device; this limits the artist to create the comics' board on specific dimensions. However, it has been also observed that the reader reads more comfortably on the horizontal than on the vertical screen (Deng et al., 2016).

5. Distribution Platform
Daniels (2016) underlines that "a digital comic should be designed for its intended platform" and that "a digital comic should never take temporal control from the reader". Therefore, two points must be considered: the distribution platform and the reader's interaction capacities. The creator then must make decisions and the first choice is the comic's panels that will be

arranged and displayed on the digital screen. The second one is the features and tools of the digital media that will be chosen for the reader to use in such a way to deliver the story better.

At the production stage, digital programming enhances interaction by adding new media to comics' traditional forms, such as sound, movement, volumetric pictures/video, and 3D content. Furthermore, there are several advanced features of everyday consumer devices, such as smartphones; it has several sensors, such as cameras, microphones, gyroscopes, and accelerometers that personalize the content with which the reader will interact. However, creators do not always take advantage of all the interactions offered by digital formats, nor do readers always have the appropriate digital reading skills.

The production phase gives way to physical and digital distribution spaces. Physical spaces are those where printed material is distributed. For example, in bookstores when it comes to a standalone book or magazine, or in areas where the press is distributed, such as kiosks, when comics are part of a newspaper or magazine. All electronic forms pass to the web, forming digital spaces. The main distribution channels could be online bookstores, electronic platforms, and free web and mobile applications. Online bookstores offer printed comic versions and digitized print-born comics for purchase and reading only from the screen. Electronic platforms are web-based platforms, and they offer services for reading. These platforms sell the service, and the experience. For example, Comixology is Amazon's best-known digital comic library. The main idea is that the content is archived on the company's cloud and provided as a service to the registered customers. Since they are services, one pays to gain access. Contrary to the last category, the open web offers free of charge open access websites to both creators and readers.

Additionally, the Web 2.0, referring to the shift from static web pages to user-generated content and social media, offers the possibility for various forms of communication and interaction between the creator and the reader or among readers. Some of the key features of Web 2.0 include user-generated content, social networking, blogging, wikis, and other collaborative tools. Examples of Web 2.0 sites include social networking platforms like Facebook and Twitter. The forms of communication constitute a spectrum from simple text chats to VR chats, from a simple webpage to Web XR, where the user interacts with 3D objects, allowing artists to receive feedback from the readers and reshape the final product. This affects the author-reader relationship (Romaguera, 2015). Web 2.0 enables the inclusion of reader feedback that can potentially impact the creation of a webcomic. Through leaving comments on works in progress, webcomics readers can demonstrate their support and involvement with the creator. Additionally, Web 2.0 simplifies the process of publishing a story for an average internet user, allowing for non-professional self-publishing and serial publication options.

On a publishing level, distribution platforms allow for faster diffusion of works, many of which are free, while it allows autonomy for the artists to channel their creations to a much broader global scale of readers without passing from a publishing house. The distribution and reading of comics on mobile devices, such as smartphones and tablets, has surpassed the use of computers and laptops. The specific features of mobile devices contribute to creation of additional digital comics' sub-categories. For example, webtoons, which are a type of digital comic that originated in South Korea, are typically intended to be read not only on computers but also on smartphones. Another example is Augmented Reality Comics, a mobile application

where an Augmented Reality viewer can open standard digital comic book files and display them in the readers' physical space.

6. Reader's Interaction

The availability of tools offered to the reader by digital technology makes the interaction with the reader a crucial element. When switching from the print page to the digital screen, the way of navigating the comic's grid changes (Priego & Wilkins, 2018: 9). Various ways of navigating or viewing the content on the digital screen are possible. Due to the different interface designs and viewing systems between print and digital technology, such as VR, AR or simple screens, the "informal contract" between the creator and the reader is ultimately affected (Priego & Wilkins, 2018: 15). The readers' capacity to interact with the content relates to their control over the reading flow. The readers choose their reading strategies depending on whether they want, or not, to interact with the story, and at what level. However, there is a limit to interaction set during the creation of the work in line with the technology affordability. The readers' quantity and quality of interaction with the digital display may affect their reception of the story.

Digital devices offer a greater variety of interactions for the reader with the content of the comics, through the introduction of interactive elements, as every part of the screen can be a spot for the reader to activate parts of the story. The reading is then customized by adjusting the image size to focus on details using zooming tools or other sensors, such as a camera, microphone, and gyroscope. The interaction itself is subject to the readers' choice. They can maximize or minimize the interaction, intentionally remove any interaction, or choose how to browse and switch frames. Thus, the reader can interact with the content the reading medium allows, either in print or in digital. Reader interactions can be classified into different types: no interaction, occurring when the entire story is displayed on a print or digital page; browsing on several pages, whether in printed or digital form; scroll down, where all the content is spread out in the vertical layout of a web page; and immersive, when navigation and browsing are supported by sensors.

Furthermore, the way of reading is related to the distribution, that is, how a comic book reaches the hands of a reader. The primary forms of reading could be summarized as follows: reading from print; reading on an offline screen, such as digital format without internet connection; and reading online. The difference between offline and online reading lies in the ability to interact with other readers or the creator. This difference can lead to the formation of digital communities. For example, the community of scanlation refers to "the scanning, translation and distribution of comics (mainly manga) carried out by transnational groups of fans who collaborate on the Internet" (Valero-Porras & Cassany, 2015).

Moreover, serialized storytelling has been a hallmark of mainstream comics since their inception. Many classic comic book characters, such as Superman, Batman, and Spider-Man, were introduced in serialized stories that were published in monthly or weekly issues. This serial nature is also found in webcomics, where readers feel connected to the characters and their exploits. However, webcomics provide a greater degree of accessibility that traditional comics usually do not. As per Johnston (2017), ComiXology has played a significant role in making digital comics more accessible and popular, especially among younger readers who are accustomed to consuming media on digital platforms. The platform has also allowed for

greater diversity in the types of comics available, with smaller independent publishers now able to reach a wider audience (Johnston, 2017).

As webcomics are now accessible to all internet users, there is a constant growth of online comics communities on sites like Webtoon, Tapas, and Comic Rocket. Moreover, many webcomic artists use blogs, social media, and other platforms to interact with readers. Readers, with their support and feedback, influence the creation as their comments and ideas are often incorporated into the creators' work. This collaborative interaction between the creator and the fans builds a solid sense of community and reinforces a stronger community driven culture.

7. Discussion

The term "digital comics" is used indistinctively as an umbrella to cover both digitized versions of print and original digital titles. This term must be seen from three main points of view: the creator's/ artist, the publisher's/ distributor and the reader's/ consumer. Digital technology offers a variety of tools at production, distribution and reading levels. At the production level, the comics medium is traditionally a field that incorporates individuals, such as colourists, letterers, cartoonists and painters. However, many hardware and software facilities can enhance new elements, such as sound, motion, and 3D elements. Thus, by going digital, comics broadens to other disciplines and art forms, such as soundtracks, animation, video clip, and video games.

Publishers must cope not only with the digital forms of the content, but with the digital forms of distribution too. The publisher acts as an intermediate/ facilitator between the creator and the reader, with a varying role each time. On one edge, this role can be diminished when the creators self-publish their work, with the convenience and immediacy of channelling it globally. On the other edge, the publisher may take complete control, as with big publishers, like Amazon and Marvel.

In terms of creating and reading, digitalization allows the viewing of content in multiple ways. By going digital, obviously comics require the artist and the reader to adapt their skills accordingly to the digital environment. Firstly, technological skills will enhance the best use of the available devices for both artists and readers. Readers will be able to best manipulate the interactive technological elements, in order to enjoy the content, the most, according to their reading preferences. Artists will better know what the possibilities of going offer them, during the creation process. Then, the skill of choice making will support the readers to be able to select from the tremendous quantity of comics offered online, to know where to look and how to choose stories based on their needs and preferences. As far as the artists are concerned, choice making skill will enable them to choose the right digital tools to build a story and the right channel to make their work visible and spread the most possible.

New forms of comics are emerging and will continue to emerge, as with any other art form. Future digital forms of comics could incorporate innovations, such as Mixed Reality, where the real/physical and the virtual/digital co-exist and interact in real time. Then digital superheroes could walk into the readers' physical space, climb onto their table, sit on their actual chair, and hide behind a piece of furniture; this will challenge the reader's notion in terms of someone who decodes a written or visual system (Morgan, 2003: 52). Could we then use the term "reader", or shall we replace it with something else? The term "player" has already been introduced by interactive comics as a substitute for the traditional "reader",

allowing individuals to have an impact on their own narrative experience (Andrews, Baber, Efremov, & Komarov 2012).

Hence, the question that can be asked is: when a comic stops being a comic? Comics should use digital technology to their advantage. As impressive the effects of technology are and the possibilities it offers, when comics tells a story, technology has to contribute substantially to how the narratives unfold. Comics must remain faithful to what they originally were: sequential art, embracing all the old forms and the new to come.

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