Indonesian Journal of Computing, Engineering, and Design

Journal homepage: http://ojs.sampoernauniversity.ac.id/index.php/IJOCED

Hybridity In New Media: The Pre-Production Guideline

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ABSTRACT

'New' technologies have disrupted the creative process of arts and media production, but no common professional practice seems to have drastically changed. 'New' is only a trick, a temporary euphoria indicating that creative arts and media are on its way to the utopian future. Currently, creative arts and media practitioners are influenced by the dynamically developing technologies and the big issue is that they accepted every media technology innovation unknowingly, everything is normal, but every change lead to a new normal. The purpose of this paper is to discover the new creative production process that influenced by new technologies. In the process of discovery, this paper uses a Practice-based Research methodology by Estelle Barrett to acknowledge the capability of these media technologies by utilising creative practices. All findings in this research are discovered by experimenting on contemporary audio visual and interactive technologies. The result of this journal is a guideline for preparing new media production.

ARTICLE INFO

Article History:
Received 31 May 20189
Revised 19 Aug 2019
Accepted 28 Aug 2019
Available online 30 Sep 2019

Keywords:
Audio,
Design,
Hybridity,
Interactivity,
New media,
Visual

1. INTRODUCTION

1.1. Media Evolution

This paper will start by explaining each of graphic design technology's transformation for the past 15 years and why this is so important to understand before or when designers are dealing with new technology. At first, it was only the deliverables that were changed, but in the Internet of Things era, it changes everything.

It is apparent that the Graphic Design process has been affected by digital technologies since the dimensions of the design canvas were measured by pixels. Ever since visual production went through the digitization process, Graphic Design is softwarized. Point, line and plane, it has always been the building blocks of Graphic Design which inspire designers to create design elements such as images, icons, textures, patterns, diagrams, animations and typographic systems (Lupton and Phillips, 2008). The graphic design process has

always been based on visual codification. Sequentially, Graphic Design has evolved during the World Wide Web era, which generated new deliverables that combines hypertext language and user interactivity in a form of multimedia object called Website Design or Web Design. Although, in the production process of Web Design, Graphic Designer was introduced to specific computer languages or codes such as Hypertext Markup Language (HTML), Cascading Style Sheets (CSS) and Javascript, which create another designer species called Web Designer. Surprisingly, parts of Web Designer were code literate and the demand of Web Designer grew exponentially. Web Design has been a successful form of advertising and marketing communication since Sir Tim-Berners Lee invented the World Wide Web in 1989 (World Wide Web Foundation, 2008).

Continuously, Web Design developed further and explore the notion of experience in a form of user interactivity that was becoming an alternative communication form utilized by many businesses, which created a vast impact on the global economy. User-interactivity demand grew with the emergence of interactivity production software such as Macromedia Director and Flash. Suddenly, the evolution brought forth a new Graphic Designer category called Interaction Designer. Macromedia Director with its Lingo programming language arguably became the pioneer of offline interactivity stored in a medium, typically mounted inside an optical disc called Digital Versatile Disc (DVD).

On the other hand, Macromedia Flash was pioneered in web animation and interactivity based on ActionScript – a Java-based programming language – typically embedded on a web page but can be published as an independent format called Flash Projector, commonly today known as Flash Player. Unfortunately, these mentioned formats demanded high-speed internet connection or a well-maintained optical disc sensor to load the project completely in order to allow the user to fully interact. Therefore, it does not provide versatile engagement with the user. When data-storing technology evolved, DVD as a delivery medium became obsolete, Macromedia Director and Flash fade with the medium. For this reason, it is imperative that Designers should never stop discovering potential new media deliverables as technology continue to develop unpredictably.

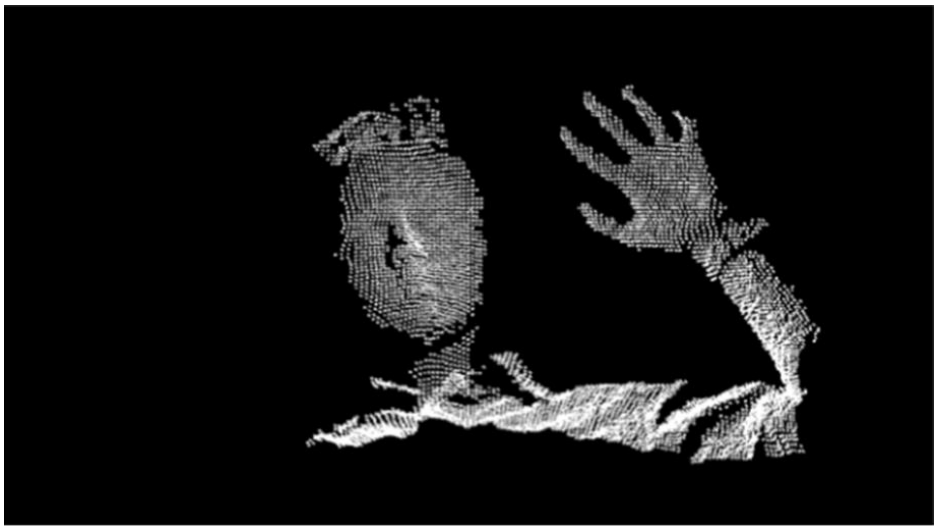

Figure 1. An example of Raw Depth Data collected by using the Kinect IR sensor and converted into visual points

As Negroponte recalled of an admiral in the mid-1970s who had one of the most advanced command-and-control systems. The admiral preferred interaction directly with a large wall map as seems the admiral was comfortable engaging with the map with his whole body. It was not an either/or interface, it was both/and (Negroponte, 1995). According to Manovich, as part of the Variability principle of New Media, this experience is categorized as Open Interactivity, providing users with the ability to create, manipulate and/or examine a network of information containing nodes interconnected by relational links (Manovich, 2002).

Just like the admiral as mentioned earlier, it seems some people prefer to openly interact with a large visual, normally it is three times larger than their body size. It is the commanding and controlling experience that makes Open Interactivity is deeply immersive. It seems the digital representation of the wall can be physically manipulated. These theories of interconnectivity of human body with a digital graphic system will be translated into technological connectivity later in the article. There are options on how it has been done. One way is by using a web camera, external or built-in, which the camera calculates RGB pixels it detects. A popular way is by using a Kinect sensor, a product initially produced exclusively for the Xbox gaming console made by Microsoft. Kinect has different cameras attached into it, specifically the infrared (IR) sensor camera that spread lights to space detected by it, and collecting the depth data back to the computer in color format (**Figure 1**).

1.2. New Media

Since the discovery of moving images and sound recording, audio and visual have coexisted. Audio and visual are media communications that derive modularity principle, as coined by Lev Manovich in his book, Language of New Media. Audio and visual have gone through many media evolutions that contribute to media communication in the form of creative innovation that inspires people in producing creative deliverables. Many shreds of evidence present audio and visual as one complete deliverable, for example, inaudible video is unacceptable, and it also eliminates parts of the message it is trying to present. Evidence is apparent through the creation of audio-reactive production where visuals and audio perform in an automated process.

It is a fact that visual has been interdependent to audio, vice versa. It starts from the creation of visual arts for musical composition, when music influenced the visual of its cover art, to the audio frequency analyzer where hertz frequencies are represented as parametric lines. Historically, audio-visual interdependency initially emerged in 1976, with the appearance of Atari Video Music. It is described as an interface unit for providing a visual color display of objects on an unaltered TV receiver which is directly associated with the music on an audio source. Audio energy is derived from separate channels of a stereo system. This audio information is presented on the screen in the form of objects in various arrangements. Objects may be solid, or rings or one may be "subtracted" one from the other (Brown, 1978). Music visualization continues to evolve through the 1997's such as Winamp visualization and particularly 2001’s Milkdrop visuals by Ryan Geiss (**Figure 2**).

The ubiquitous music visualization in the form of audio reactive visuals that becoming very apparent in many YouTube video posts of audio reactive visualization produced and rendered using Adobe After Effects. Progressively, the relationship between audio and visual has become more

apparent with the emergence of visual projection mapping. It is visuals projected onto physical space, embedded into the material, the visuals adapted to the physical concrete surfaces as it seems.

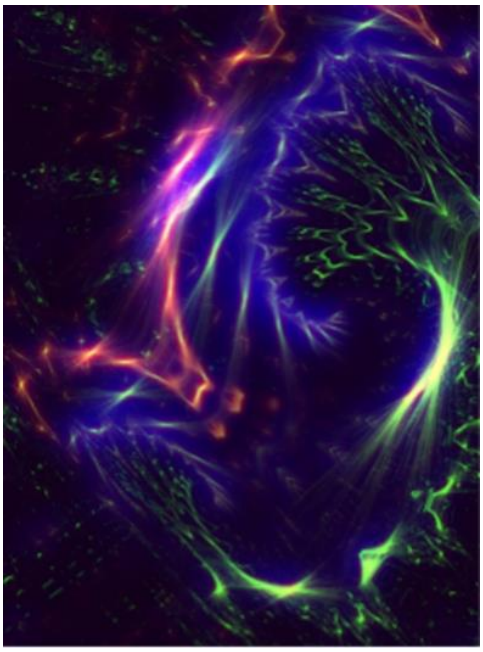

Figure 2. Milkdrop Visualization by Ryan Geiss (Geisswerks.com, 2001)

Visual projection mapping becomes the second important element in a modern live musical performance. Although it caught the attention of professionals from diverse areas of practice. Contemporarily, visual projection mappings are accentuated by captivating music compositions, e.g. a 2012 audiovisual installation piece by Romain Tardy & Thomas Vaquié called O (Omicron) as seen in **Figure 3**. Unconscious acceptance from the society becoming evident for the visual projection mapping, but none of Graphic Design categories fits its criteria. Finally, the term New Media surfaces.

What makes audio and visual collaboration categorized as New Media? New Media is a term that raises a question and somehow complicates the situation for the people who anxious to embrace the term itself rather than clarifying. Group of creative professionals considered New Media as a result of disruptive technological development in an audio-visual production. It was excited to the industry but in professional practice, these prospective technologies do not result in a seamless experience. In other words, it does not add significant value to the overall user experience. The usage of wearable technology before the engagement halt the user experience and it gives the gimmick-like appearance to the user. The technology dis-cussed was referring to hyper mediated interactivity such as Augmented and Virtual Reality as well as 360 Video and 360 Audio or Ambisonics.

Figure 3. Omnicron by AntiVJ (Vimeo, 2012)

There are three processes can be inspected through New Media analysis; new production, communication and distribution (Manovich, 2002). Based on Manovich's New Media analytical criteria, the article would like to argue that the aforementioned "alter- reality" technologies were new media distribution plat-forms, but the contents were not produced inside of it nor communicated by it, it was rather communicated by the user. Thus, the article will temporarily disregard these technologies before distributing the content by discovering new products and new communication methodologies applicable in the New Media field.

Arguably, if the technology rapidly and progressively advanced, the technology should be more automated, less noticeable and further embedded simultaneously. The essence of machine technology is restructuring the human work with its fragmentation technique. On the other hand, the essence of automation technology is the opposite, i.e. it is integral and decentralist in depth, it is as fragmentary, centralist, and superficial as machine in terms of patterning human relationships (McLuhan, 2011). Contemporary agile software and design thinking practices ensure the mediation of human and machine learning that human can adapt to the design limitations of the technological systems, and machine adapt to how human behaves. This interface design between perception and action, affordance and feedback that will emphasize interface design in human aspects which can be extended towards relationships that values intelligent systems as partners instead of only machine usability (Armstrong & Faste, 2016). Thus, the objective of this article is to focus on automation technology pre-production because this article believes that it will provide a fully seamless and integral experience to the user.

On the contrary, the article explores the notion of newness by establishing an interactive media project to further analyze interconnection between audio and visual as well as the code literacy influence caused by the digital technology's disruption in creative arts and media. As the design industry expanded, audio-visual and computer language collaboration resulted in a term called New Media, where composed visual elements such as text, shape, and color collaborated with sound effects and high-end audio mixing techniques.

2. METHODS

2.1. Medium Connectivity

This paper will be using Practice As Research method pointed out by Estelle Barrett which will results empirical observation and evidence of the media experimentation documented in the article. Although there are many methodologies to shape human behaviour such as investigative research, systemic thinking, creative prototyping and rapid iteration, but these methods do not allow chances to examine all possible future scenarios and estimate objective risk factors (Armstrong & Faste, 2016).

Documentation of evidence will include media connectivity between the hardware and the software (**Figure 4**). The practical project is established by using Processing JavaScript language to generate procedural and generative graphical elements as well as animation to collaborate in an interactive digital ecosystem and physical space. Although Negroponte once said in one of his TED presentations, specifically in 1995, that multimedia as a desktop experience will change to a small, bright, thin, high-resolution displays, which this project is not a desktop experience (TED, 2014).

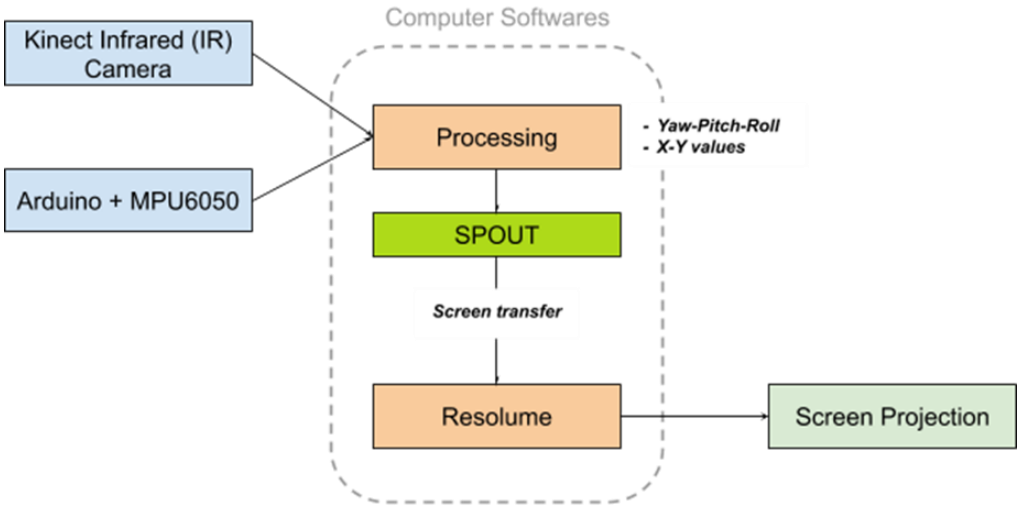

Figure 4. Medium Connectivity flowchart.

The nature of the graphical elements resembles the living beings that have been given audio-visual rules as autonomous agents, similar to the creation of artificial intelligence or intelligent graphics. The auditory experience discourse is a colossal part of this installation as well, which the graphical elements responses to the audio frequencies and volume level generated by the user. The user also generated algorithms triggered by an Arduino-based motion control sensor or accelerometer. The accelerometer is detecting the motion of Euclidean space, which is the position and rotation of X, Y and Z axes (Yaw-Pitch-Roll). The MPU6050 rotation signal will be caught by Processing by building a Serial Communication via USB COM port to generate visuals. The visual will then be transferred using a software called SPOUT – open source software dedicated to integrating screen output – to a Visual Jockey (VJ) software called Resolume Avenue to be projected to flat surfaces such as canvas screens (Figure 5). Once all of the elements are connected through the computer, they would start creating computational media hybrids, then we are in the next stage of media evolution; hybridization (Manovich, 2013).

2.2. Hybridity

To remind this article, that media hybrids in the New Media analytics means not only "new" production, also "new" in the means of communication. In realizing the connectivity of the physical and digital realm, the accelerometer has to be controlled by some form of movements that generates communication. In other words, cultural messages – in this instance, performance art such as dance act is chosen as a new communication method for this project. Thus, this article explores the new media concept emphasized and inspired by one of Indonesia's traditional dances called Tari Piring, literally translated as Plate Dance in English. Why incorporating traditional performance in digital interactivity? It is natural and imperative as a citizen of a cultured nation to protect their traditional cultural expressions as highlighted in a convention organized by United Nations of Education, Science and Culture Organization (UNESCO) called the Convention of Cultural Sanctuary Object (The Convention Of Protection Of Cultural Legacies). The Convention attempts to regulate such claims by explaining intangible cultural legacies. Intangible cultural legacies may include practices, representations, expressions,

bits of knowledge, and skills – also tools, objects, artifacts and cultural spaces – considered by communities, groups and/or in several cases, individuals, as their cultural legacies (Santyaningtyas and Mohd Noor, 2016).

One of the reasons this paper choose Tari Piring is, firstly, it is one of the most popular and familiar traditional dances in Indonesia. Secondly, as an integral part of the socio-cultural life of the people of Padang Magek, this dance has a specific function and purpose associated with an object and the performance such as emotional expression, aesthetic appreciation, symbolism, community integration and cultural continuity (Syahrial, 2013). In other words, Tari Piring is a cultural celebration through emotional expression, symbolic and aesthetic appreciation. Lastly, the article objective is to perform a modern dance act inspired by Tari Piring to preserve the culture and aims to adapt the traditional form of Tari Piring for a much contemporary and techno-centric community. Although, the complete installation aims to create 'new' dance movements, representing the legacy of traditional culture with no intention to interrupt its authenticity (**Figure 5**).

Considering how the project will maintain the balance of audio-visual elements combination, the article suggests the term 'hybridity' as a crucial discussion. The reason being that audio and visual are interdependent of each other. Hence the article explorese the undisclosed relationship between them. On the other hand, 'hybridity' in this article will also explore cultural integration of the traditional and digital, a new expression of one of the Indonesian legacies, Tari Piring. By media technology experimentation, we can translate practice as research output that enable new and powerful cultural messages to society.

3. RESULTS AND DISCUSSION

The result discussed are outcomes from a series of tests to materialize the connection between the physical and digital medium. As part of the new media preproduction process, experimentation is imperative for new media designer to be aware that the materialization needs to reach media hybridization stage before proceeding to the production stage. Once computers became a comfortable home for a large number of simulated and new media, they would start creating hybrids.

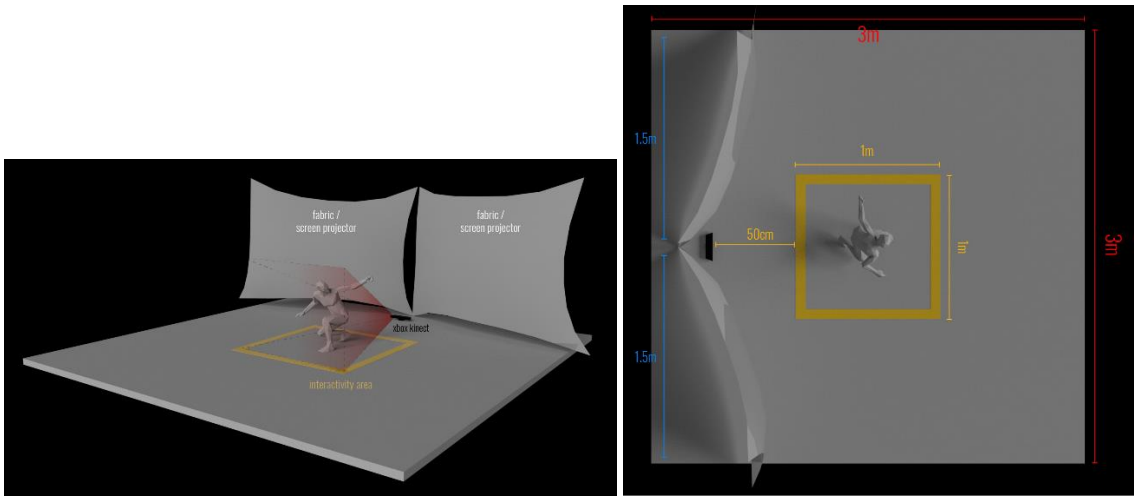

Figure 5. Project Floor Plan with Medium Connectivity visualized

3.1. Arduino + MPU6050

The article has conducted a series of tests with Arduino by using the MPU6050 module (**Figure 6**) to generate an accelerometer angular position. The sketch used in this test was coded and shared by Dejan from How to Mechatronics. **Figure 7** shows input values of MPU6050 consists of Yaw-Pitch-Roll (YPR), which can be assigned later in the Processing sketch as either X-Y-Z translation or rotation values, depending on the practical specificity and requirement. In this article, it acts as a control for global camera rotation.

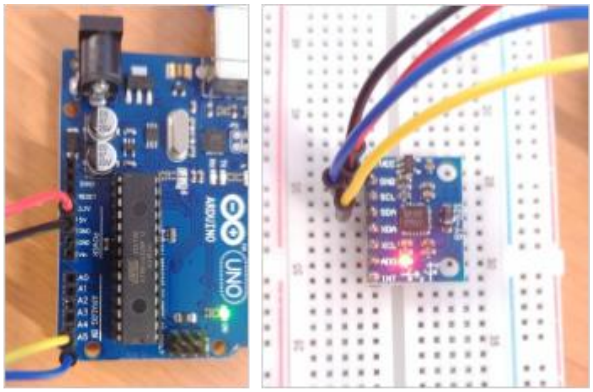

Figure 6. Arduino and MPU6050 connectivity.

3.2. Processing X + Y Value

In conjunction to Arduino YPR acquired from MPU6050, the practical attempts to obtain X-Y location of mouse and pmouse function in Processing enabling physical performance - captured by Kinect IR camera - to generate visuals on the screen (**Figure 8**).

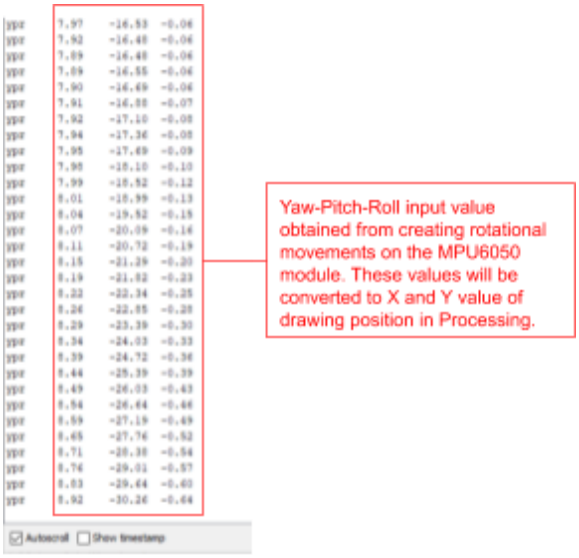

Figure 7. Yaw-Pitch-Roll input value.

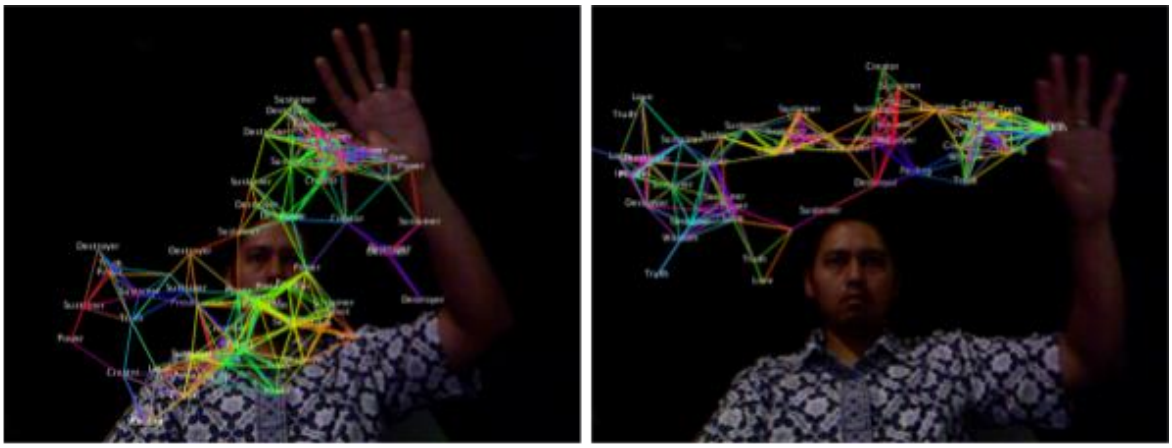

Figure 8. (Y coordinate – Left and X coordinate) example on Triunity, Sampoerna University students project by Roswita Arviana & Rina Angraeni

4. CONCLUSION

In conclusion, graphic design production have changed drastically, but it doe not mean that it creates a 'new' set of industry, but it is simply graphic design that can be adapted to many possible media deliverables. In order to accomplish the technological challenges, media explorations are required in pre-production prior to execute the design production. The purpose of it is that graphic designers need to understand how they can generate visual messages through these mediums. Thus, graphic designers become new media designer.

Finally, this article would like to recommend three main points that new media designer must inspect to achieve a successful new media production, they are:

- **Media Evolution**; Explore and investigate new media technologies and platform that are contemporarily available, which allows versatile concept on numerous Human-Computer Interaction possibilities.
- **Medium Connectivity**; Experimentation on the investigated new media technologies and apply media analysis as to what level does the medium interconnectivity can be extended.
- **Hybridity**; Allowing external media and cultural factors to influence and enhance the common practicality and authenticity.

It is imperative that before the production stage, new media designers must confidently prove that technology allows new communication to present the outcome. In the contemporary situation, designers who decided to practice new media approaches must consider technological features and support to be the highest priority before applying creativity into it. On the other hand, if designers believe that creative thinking is the priority, further research focusing thoroughly on creative technology possibilities must be conducted to aspire mechanical and computer engineers in manufacturing medium with such unique specificity.

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