Media Study: Motion Graphics

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Abstract –The article examines the interplay of design, technology and interactivity shaping the production of motion graphics. It combines the perspectives on media technology and systems with an awareness of the creative process, the audience and the trends shaping content. Motion graphics is used as a means of expression for millions of people, a fact which, with all its advantages and limitations compared to static design, ensures it a place in recent history as no other means of creative expression or communication has had. Such a change in the relationship user/audience–producer/designer will surely result in another great change in the structure of digital space. Using the interpretative method of media analysis, the paper explores the genre, narrative and technological features of motion graphics.

Keywords – *Motion Graphics, Graphic Design, Digital Space*

1. INTRODUCTION

Technological advance with its accelerating pace has brought changes in design because the demand for graphic design on television, the Internet, video games, interfaces for electronic devices, and posters on cheap LCD screens and interactive posters is more and more dominant [1]. All the enumerated applications represent a logical evolution of static design in a manner like the evolution of film after the invention of voice recordings, TV after the invention of color TV or the Internet after a dramatic increase in the number of users of broadband connection. Regarding the opportunities for using motion graphics in learning, there is evidence that instructional animation is superior to static pictures with respect to learning outcome [2]. Growing demand by the public coupled with a thirst for attention demanded by advertisers will result in ever more attractive and sophisticated creations.

2. PROBLEM STATEMENT

Motion graphics nearly always contains video, film, animation, photography, illustration, typography and music. The dividing lines of these forms are difficult to determine especially in multimedia works, but we are free to say that a video or film representing a mobile object, although it represents the object in movement and represents it graphically/visually, is not motion graphics unless it is integrated with elements of design like letters, shapes or lines, i.e. unless it uses elements of design in order to communicate a message [3]. Animation by itself is not motion graphics, but it becomes one when combined with a significant use of lettering or animated forms without a specific narrative element.

Therefore, it is necessary to determine the parameters, which define motion graphics by genre (distinct from similar forms of animation), explain the role of interactive motion graphics as a new medium, and the means and technology of its production.

3. REPRESENTATION PRINCIPLES

One of its first motion graphics productions was realized as an indirect experience, by a combination of pictures (illustrations) and text. In cognitive evaluation, the communication of an idea is maybe the most important component which motion graphics must fulfill; this is one of the criteria, which conditioned its creation. Although it is primarily the picture, which is the carrier of the idea, while on-screen text ensures the understanding of the transmitted content, typography also participates in design as shown in Figs. 1. and 2. The research has proven that in computer-based multimedia learning environments, which offer a potentially powerful venue for improving student understanding, the modality principle states that it is better to present words as auditory narration than as visual on-screen text [4].

Today, interactive, computer-vision based art installations are gaining popularity [5]. A good example of such a digital space is the interactive 7x15 ft. poster that reflects the creative license afforded by the new Adobe CS3 software package. Using Flash Video Encoder and Exporter, the system records the movements of passers-by by camera and simultaneously, according to an in-built software package, draws shapes and forms shown in Fig. 3.

Interactive media technologies have transformed the mass media communication model,

to a model where an artifact communicates to each viewer separately. This relationship is especially prominent in 3D simulations and virtual experiences. The process of virtual experience is frequently intertwined with involvement, presence and pleasure. Virtual experience is defined as an assembly of psychological, sensory, emotional and cognitive dimensions, which play a major role when public directly and indirectly interact with the artwork. Form, space, composition, color, texture and interactivity are the formal qualities that elicit reactions from public and are commonly named affordances.

3.1. Interactivity

Some design studios work with a variety of clients to invent and realize advanced online experiences, create experimental interactive spaces, and bring non-traditional methods to traditional media. The installation shown in Fig. 3. utilises an infrared camera based motion detection to allow people to chase, shoo, capture and taunt the motion graphics projected on the wall. It uses software developed in house to detect presence and motion - a light-weight alternative to processor intensive motion trackers. It is ideally suited to spontaneous interactions and can be quickly configured to work with different installation configurations and lighting conditions.

The idea for this interactive installation is probably inspired by action painting, a painting style that was widespread from the 1940s until the early 1960s. Action painting, sometimes called "gestural abstraction", is a style of painting in which paint is spontaneously dribbled, splashed or smeared onto the canvas, rather than being carefully applied. The resulting work often emphasizes the physical act of painting itself as an essential aspect of the finished work or concern of its artist. The term was coined by the American critic Harold Rosenberg in 1952 and signaled a major shift in the aesthetic perspective of New York School painters and critics. According to Rosenberg the canvas was "an arena in which to act". Rosenberg's redefinition of art as an act rather than an object, as a process rather than a product, was influential, and laid the foundation for a number of major art movements.

The Times Square installation, transforms pedestrians into artists trying to get exercise they wouldn't otherwise dream of, in the hopes of triggering one of Adobe's motion sensors. Using some fairly sophisticated programming and tracking hardware, peoples' movements are recorded and translated into an animated mixed-media mural. From left to right, the mural evolves from simplicity to complexity as more elements are introduced. The display grants the closest passerby control of a slider button on the bottom that manipulates what's

projected based on their walking speed and direction, producing different effects in the animation. It also reacts incidentally to the crowd around it, which should make the glorious pedestrian congestion in that area even more awesome. [6].

Fig. 1. Saul Bass, The Man With The Golden Arm, Otto Preminger, MGM, 1955
http://www.youtube.com/watch?v=eGnpJ_KdqZE
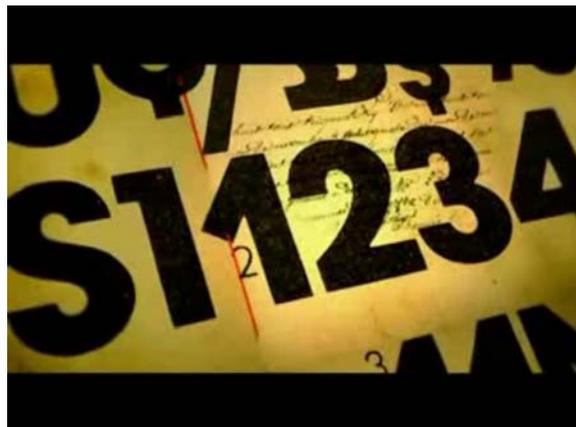
Fig. 2. Julien Vallee, Thèse sur la Typographie, Paris, France, 2006
http://www.jvallee.com/these_typo.html
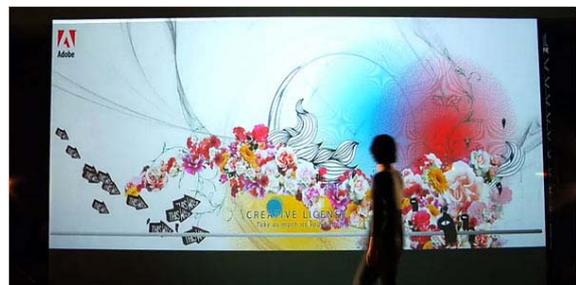
Fig. 3. Interactive wall, Brand New School for Goodby, Silverstein & Partners of San Francisco, Interactive Development: The Studio for Interactive Media, 2008
http://www.brandnewschool.com/project.php?id=41 0

While definitely slick, the implementation of the idea actually seems somewhat limited, and doesn't make full use of its potential - we can imagine a 20x20 ft. projection of Microsoft Surface that people could just walk up and draw on. If it recorded every stroke made over the display, it could turn into a really interesting mass art project.

3.2. Production methods

The production methods of motion graphic depend mostly on the time within it is created. Majority of designers are habituated to creating one single composition - a single and unique frame, and most of them find it difficult to produce a motion graphics where a single composition can be kept for only a short period of time and where all the parts in the end must function as a unified whole [7].

Just like in static design it does not help if only a part of the composition performs its function, so in motion graphics it does not help if only a part (or parts) is the carrier of the function, but the entire whole (just like the film) must function as a semantic whole. This requirement can run into problems due to the ever more sophisticated demands of contemporary public, saturated and bombarded by interactive communication from all sides.

Another problem which can be linked to the transition of motion graphics is the nature of the media which have their own restricting elements. So, for instance, a designer habituated to working with textured plates will encounter unique problems in the transition to digital space of mobile devices and digital communication. Namely, if he wishes to attain and keep the attention of the users he must ensure a rapid transmission of the message which means employing vector animation which is a far cry from the textured surfaces as offered for example by bitmap graphics.

It is no rarity that illustrators, after transiting to the field of motion graphics which is computer-generated, retain basic illustrational concepts and add hand-drawn elements to complete individual frames.

3.3. Production tools

Drawing, illustration and cartoon

The production of motion graphics depends mostly on the time within which it is created. No doubt, Saul Bass would have created the graphics for the *Man with the golden arm* on a computer and that he would need only several hours for the job instead of several days (the execution itself, not the germination of idea). In the second example we can certainly speak about motion graphics created by a computer.

Such a process, the process of production of motion graphics with dominant illustration is represented by the production of hand-drawn figures which are digitally transferred in one of the vector programmes where their contours are further cleaned up and vectored. After that, the drawings are individually transferred into a program which controls the time component of the composition and every element, like the background trolley, fire is being animated individually and inserted into a larger whole. After the finalization of the animation of figures and other visual elements, the camera is animated too. In this way we get the effect of moving through space [8].

Cartoon, as the predecessor of motion graphics created by illustration, is exactly what is described above; motion graphics with key frames chosen and presented so that the viewer can freely follow the sequence of action.

Photography

The logical sequence of using illustration as an element in motion graphics was the use of photography because at the elementary level there is no difference between the two except in the quantity of details. The interim period is seen in the use of rotoscopy, a technique of illustrating over photographic/film frames on the filmstrip itself. Video-based motion graphics are by definition photo-realistic, while computer-based graphics can have different grades of realism. Highly realistic pictures, like videos, might have a disadvantage of seductive details, which are usually included in highly realistic pictures, more so than less realistic computer-based graphics.

There are a number of methods by which motion graphics produced predominantly by photography are created, starting with stop-motion where motion graphics are generated by photography in the literal sense, by shooting every single movement (change) to the shooting by video camera and using video as a photographic element. We had to wait quite long to have this kind of motion graphics, because it required a large memory capacity and computing power.

Whether we are dealing with a line of photographic shots or a digital video, the entry into the computer remains the same, and after it is entered into the software which processes this type of material, it behaves like a film, video or animation. The process requires a large volume of working memory (frequently also the volume of patience on the part of the operator) of the computer because of the number of colors, resolution required for professional use and high-quality sound.

Typography

In motion graphics typography becomes a kinetic typography, an on-screen text which moves or undergoes transformation in time and space in

some way. In most cases a word does not look like the idea it implies. The word posses a sound (when spoken) and physical existence (when seen). When the word is read, a mental image is created.

Such typography brings with it elements of communication (emotions and expressions), which until now were the exclusive domain of film and video (primarily concerned with image reproduction). The capability of transmitting emotion, complex character features and the possibility of a better visual streamlining of attention adds to the innately powerful communicational features of the text. It is important in the context of typographical sequences of moving type to possess an understanding of how we interpret the words we read.

Software

Today it is almost impossible to enumerate all the tools, which designers can use to produce motion graphics, because their only limitation is their own creativity.

Physical tools necessary for motion graphics design are a sufficiently powerful computer equipped with multi core processors, a large volume of working memory and graphics cards (often two) also with increased working memory and a recent chipset. For a more pleasant working environment it is desirable to have several screens linked to one computer. The entry of data is done by linking peripheral devices like the digital video camera, scanner or photographic camera to the computer and transmission of data using one of the standards like USB or Firewire.

Possibly the most important tool is the set of software which has been developed exponentially over the last decade. Today the production of 3D figures and animations is done by Maya or 3D Studio Max, additional effects by Adobe After Effects or Apple Final Cut Pro, editing by Adobe Premiere, the production of vector animations by Adobe Flash, pre-production of bitmap graphics by Adobe Photoshop. These are just the examples of the most frequently used programmes. Their full number is much greater and grows by the day, especially with the strengthening of the open-source community.

4. CONCLUSION

The explosion of computing power enabled a new kind of graphics, graphics which contain picture and text, which change over time. The biggest change is seen in typography because by means of kinetic typography we alter the text with the features of a film. For example it is now possible to transmit the tone of voice, character features and emotional states by means of transforming the typographic features in time.

The advantages of motion graphics have been recognized for several decades, but it still lacks the rich history such as those of the typography and film. However, this lack of history will not stop the blending of this discipline into virtual and digital space (it already occupies a segment of it), television and film applications. The only factor which currently prevents a full takeover of digital space is the lack of a simple interface, which could enable the (current) audience to create the content according to their need. Once this is achieved, the general public will be able to design its e-mail messages by using typography that transmits emotion in a much fuller and more efficient way than the punctuation marks or emoticons used today.

Apart from having the possibility of transmitting a large quantity of information, motion graphics has provided something entirely new in the digital space. It offers to the public a different type of interaction than "ordinary", static graphics. In some cases the audience itself determines the looks and other features of motion graphics, thus switching the focus of attention and changing the means of communication.

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