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Simulated worlds, Television Spaces: An Analysis of Virtual Sets in Talk Shows on *GH One* TV

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Abstract

Virtual sets in television production spaces present an illusion of reality and suspends disbelief among audience. This technology, since its emergence has altered the way in which sets are designed or created for television programmes in many television studios globally. Typically, its employment in most television programmes affects the viewer's experience and perceptions. This paper delves into the analysis of virtual set designs in two selected talk shows on GH One TV, an entertainment television channel based in Accra, Ghana, in 2019. In doing so, the paper adopts a visual content analysis method of purposefully selected virtual sets in the television talk shows. In this paper, semiotic theoretical framework is engaged. The paper argues that the creation of virtual set design in every television programme must have some added form of realism with a three-dimensional look on screen. The paper therefore concludes that virtual sets created for television programmes should be believable in the audiences' eyes and make meaning.

Keywords illusion, realism, semiotics, simulated worlds, talk show, virtual set design

Background

Virtual simulations and computer-generated imagery have become increasingly popular in the theatre, film, television, and gaming industries over the past few decades. Such simulations include virtual reality, augmented reality, virtual studio and virtual set design. Virtual reality serves as a precursor to virtual sets since its "history can be traced back to the days of panoramic paintings in the nineteenth century" ("History of virtual reality"). It preceded down with other scientific experiments and continued through filmmaking with films like *The Lawnmower Man* (1992) and *The Matrix* (1999). However, the field of television broadcasting has taken the use of virtual reality, augmented reality, virtual studios and virtual sets into another angle to enhance information and content

produced due to the demand by viewers. As mentioned by Gutiérrez, Vexo and Thalmann, "virtual reality involves the use of computers to create three-dimensional imaginary worlds which allows human beings to navigate and interconnect with using their eyes and ears" (1). Usually, the three-dimensional worlds are graphics created in real-time to produce the delusion, and a tracking system that involves the heads and hands. In the process, three-dimensional glasses are used in such interactions to experience the entire imagination. Additionally, augmented reality is explained as a combination of computer-generated worlds and the real world through "live" means and experienced by a viewer to create an illusion of reality (Wood). In addition, Millerson and Owens explains "virtual sets as three-dimensional backgrounds created with Computer-Aided Design (CAD) software that are keyed into traditional chroma key behind a presenter or physical objects in real time" (219). Sometimes, in the process, modern tracking computer software are used to monitor movements of cameras as they zoom, tilt, and pan in the process, so that the background moves in the same other.

In my opinion, they present a comprehensive explanation of the entire virtual set technology since it is basically computer-generated in execution. Further, Wright opines that virtual set technology is linked to digital compositing of images from different sources joined together. The two images must have similar lighting conditions shot from similar camera equipment (30). Wright contends that the digital compositing has now become faster and cheaper due to emerging technologies. As presented earlier on, the entire virtual set technology is based on traditional chroma key technique which involves the use of a background colour such as blue or green to enable the keying into another image. One major reason for using virtual sets in television programmes is to create an illusion of realistically pleasing sets that aids better visual communication. Besides, the technology is less expensive as compared to the traditional physical hard wall sets and provides countless creative opportunities to the designer in execution. Due to the economic recession globally, most television stations are forced to cut down production costs that have recalled the use of virtual sets" (Beacham). There is also a reduction in the cost of computer hardware and software used in the execution of virtual sets in television broadcasting. Simultaneously, it is noted that the high taste for more realism by audience have increased due to the employment of virtual simulations such as virtual sets. On other hand, virtual environs used in television broadcasting reduces costs in production and generates interesting design viewpoints (Wojdala).

In a personal communication with Baba Haruna, a Television Production Lecturer, at the Institute of Film and Television (IFT) of University of Media, Arts and Communication (UniMAC), on December 5, 2020, mentioned that some virtual sets executed on the Ghanaian television screens lack realism and believability in the *look*. In addition, the researcher has observed that some virtual sets used on our screens lack visual appeal.

This paper argues that virtual sets executed on screen must be believable and have some form of realism in the *look*. It focuses on virtual sets of two television

talk shows on *GH One* television, an entertainment-based channel in Accra, Ghana. The shows are dubbed ***Cheers Sports Show*** and ***Tales from the Powder Room*** which were produced and aired in 2019. Thus, the paper does a visual content analysis of the virtual sets in the above mentioned television talk shows. In doing this, the analysis is based on the criteria of elements of good virtual set design with the three-dimensional design elements and a well-executed chroma key as presented by Foust, Fink, and Gross (10). Purposefully, *GH One* television channel is chosen among other channels because virtual sets are employed as backgrounds in most of her programmes. Besides, the selected television programmes are among the top ranked viewing shows and their virtual sets have concerns that are worth analyzing. This paper is relevant because it intends to fill the lacuna on the dearth of scholarship in the area of virtual set designs employed in television programmes on the Ghanaian screen.

Virtual set design as a concept

Pentak and Lauer posit that every design involves "the organisation of selected elements and principles in a unified form" (4). Cudworth, confirms this notion when she mentions that in designing of virtual worlds or environs, designers need to follow the "six fundamental design elements such as line, space, shape, form, colour and texture" (39). Historically, these elements are rooted in art, and are used in the design of every object. They enable the designer to create believable three-dimensional virtual backgrounds. They combine with the principles of composition such as balance, contrast, proportion, repetition, rhythm, variety and movement which serves as components to create images in art, and has come to be well adopted in virtual sets. Benedetto, echoes that when an audience views a show or performance, they pay attention to the visual components forming the building blocks of the set design as derived from the elements and principles of design (48). An example of the aforementioned elements of design can be combined with selected principles of design in the likes of repetition, gradation, harmony, contrast and unity. Some of these visual elements add to the meaning and theme of a show. Therefore, the success of every production depends on how a designer artistically combines these elements and principles of design. They also play a role in the set designer's concept in any production. In order to add meaning, some of these elements of design form part of the components. Horizontal lines for example may suggest stability and tranquillity. In contrast, vertical lines may communicate spirituality (Benedetto 49).

The main challenge in the execution of virtual set is to create an illusion showing the actors or performers engrossed in the virtual space. This can be achieved by providing appropriate lighting conditions, camera matching and good actor orientation and interaction of the virtual world (Wojdala). Apart from considering the selection of elements and principles of design to create the virtual set, there are other key factors such as the chroma key technique which plays a vital role in execution.

Chroma key: An anchorage of virtual sets in television production

An underlying element in executing every virtual set through digital means is the use of chroma key technique (Peters). Largely, chroma key involves using blue or green backgrounds and digitally placing virtual worlds or backgrounds behind your subject as mentioned earlier on the writing. In fundamental terms, these colours are suitable for executing this technology because they are opposite to the human skin tone. He further explains the terminology as the parting of a colour in an electronic image and using a software to make the colour visible in order to allow another image to be visible. Thus, a particular colour is removed to allow the usage of a new image. Initially, with the introduction of conventional chroma key technique, blue backgrounds were used in execution, but currently green backgrounds have overshadowed the former due to the details accepted by the green background. Besides, one may need less light in lighting green backgrounds due to the nature of the green colour chosen for the execution (Discroll). Also, recent manufactured professional digital cameras are more compatible to the colour green than blue.

In addition, the blue and green colours are farthest from the human skin tones. Typically, executing the chroma key technique demands various backgrounds such as *flats* or cyclorama in the process. According to Millerson, *flats* are physical television scenic units that serves as backdrops in every television production. They usually come in two forms known as the hard wall and soft wall *flats.* The soft wall refers to the *flats* covered with canvas while the hard wall includes the conventional studio hard surfaces of a plywood or metal (39). Also, *cyclorama* is the fabric hanged in every television studio to form the background along the studio walls. Therefore, the backdrop materials of the selected blue or green colour may come from a television studio *flat* or *cyclorama* fabric*.* Meanwhile, it is noted that the hard wall *flats* are preferable because it can be evenly lit as compared to a stretched or hanging cyclorama cloth. This feature prevents creases and shadows during filming and compositing. Further, in line with chroma key technique, it is advisable for performers to ignore wearing clothes of anything green or blue in colour, but rather costumes with colours that contrast with the aforementioned colours. It must be noted that wearing costumes with either green or blue, that is similar to the background colour may cause transparent effect during compositing (Foster 22). Therefore, it can be established that one of the key elements in the execution of every virtual set designed in television production is the employment of the chroma key technique. Generally, Blue or Green screens allows the TV production houses to produce content in a more creative and artistic manner.

In addition, before the chroma key technique is executed, the desired background must have been decided on by the TV production team, that is either the choice from default or customized sets. In addition, texturing and digital compositing are done to replace the desired background with digital visual effects software like ***ADOBE PHOTOSHOP*** and ***ADOBE AFTER EFFECTS***. In creating customized virtual sets, texturing enable the designer to give the sets realistic feel. In addition, compositing allows the designer to replace an

original background colour in chroma key with a desired image (Jackman 35). It must be noted that owing to advancement in technology, there are virtual set systems with varied default designed virtual sets that one can choose from which cannot be modified. Also, some virtual systems provide real-time compositing, rendering and other camera tracking devices to generate a synthetic image for live shows.

Semiotic theoretical insight

The framework supporting this study is semiotic theory. Generally, the underlining concept of every virtual set design inculcates some elements and principles of design that connotes meanings apart from its aesthetics and realism. These elements are viewed as signs or images that connotes meanings of the entire set design. Henceforth, semiotics comes to play in every virtual set design created for television. Although, semiotics is a linguistics-based theory the design concepts in every virtual set design can be viewed as images or icons that presents meanings.

According to Chandler, semiotics is explained as the "study of signs" (2). Thus, everything that can be viewed as a sign that has meanings. Similarly, Eco, an Italian medievalist, philosopher, and semiotician opines that "semiotics is specialization that looks at the signs of signification" (7). In other words, how to create meanings from signs, image, icons and symbols. Thus, studying how visuals elements are combined in virtual set designs to make meaning or represent something other than what they stand for can be referred to as semiotics. For instance, a background of a set painted in blue can be interpreted as expressing emotions as related to the theme of the show. Semiotics represents its uses and meanings which benefits the virtual set design created in television studio space. Scenic design in theatre, film, television conglomerate in general relies on semiotics to communicate effectively. This serves as an added advantage for scenic designers, digital or virtual artists, scenographers in their representations of spaces on screen. Most of these meanings depends on the cultural backgrounds and the societies in which the designs are created.

Also, in borrowing from Ferdinand de Saussure's model of semiotic theory that dwells on the signifier and the signified. "The two-part model is adopted here to make meaning. That is the significant or "signifier" which represents an image or visual and the "signified" indicating the entire virtual set design concept" (Chandler, 3). In that perspective, the elements that forms the virtual set design is known as the signifier and the virtual set concept known as the signified. This defines the aesthetics, attractiveness and importance of the science of semiotics. It must be noted that the television medium as a powerful tool of communication provides a wide range of meanings through the set designs as well as aesthetics (Pepple and Onah 232).

Methods

This paper thrives on qualitative approach and considers visual analysis of two selected television shows on *GH One* TV that uses virtual sets. The selection

criteria are based on fact that *GH One* TV Channel is among the TV stations in Accra, Ghana, which adopts virtual sets technique approach for most of her programmes. Besides, the selected shows use virtual sets that are worth analysing. Through observation by the researcher, selected screen shot images are captured from different angles and portions of the two sets for visual analysis. The paper is based on Ferdinand Saussure's semiotics, adopting his two-part model in analysis. The paper argues that virtual set used in every television show must have some added form of realism presenting a three-dimensional *look*.

Results and Discussion

Cheers Sports Show

The programme has a host and two or more guests who are usually women often invited on the show. Generally, the selected individuals who appear on the programme as guests are non-professional sports pundits, but followers of Ghanaian sports with passion invited to share their views on current sports issues. Notwithstanding, Ghanaian sports personalities such as footballers, athletes, boxers, tennis players and others are sometimes invited as guests to spice up the show.

The *Cheers Sports Show* virtual set

The general *look* of the virtual set has a physical three-seater sofa furniture placed against the background. Its background design includes vertical and horizontal lines that forms symmetrical balance. Also, geometrical shapes including rectangles and squares are placed in repetition and harmony considering the design concept. As drawn from literature presented by Pentak and Lauer (4), these elements and principles of design form the building block of the design concept. The virtual background employs the traditional three-sided wall approach and consists of *jogs* in the form of architectural elements such as square and round pillars. These *jogs* enable the set to give a three-dimensional *look* in view presenting the feel of a lived-in *look*. According to Millerson, *jogs* emulate the run of physical studio flats that are irregular serving as support in the surface (132). The show title is placed boldly in a horizontal manner representing the focal point of the design in the background and in a vertical form at the left wing of the set. Iconographies of sporting activities are arranged in the background to add to the show's identity. Two physical flower vases forms part of the set decoration that are placed at the left and right positions in symmetry. Also, colours such as purple, grey and brown runs through the entire design of the set. The colour purple which overshadows other colours represents endurance and inner strength as associated with sports. The chroma key is done accurately in such a way that one can hardly identify the entire set as a mere simulation (Peters). It has an oval *riser* or *platform* as part of the foreground. The *riser* or *platform* serves as a unit with vertical face of a step which matches performers or actors' eye-line up to the camera height in television staging (Millerson 51). Seen in figures 1 and 2, are views of the set from different angles which depicts that the texturing and

compositing are done properly since they match the lighting tones and generates fine details. Besides, you can hardly see any green or blue colour patches serving as the original background.

Figure 1: Long Shot (LS) view of the *Cheers Show* set (Source: GH One TV)

Figure 2: Medium Close-Up (MCU) of show host (Source: GH One TV)

Moreover, the choice of costumes for the programme host and guest are in the colours of ochre, red and black which adds to the energetic and vibrant feel of the sports show. The costume colours are carefully chosen according to the programme's theme and to prevent creating problems with the blue or green chroma key background. As asserted by Foster, colour of costumes selected for chroma key technique must be farthest away from the blue or green (22). Above all, there is a partial ceiling that contributes to the believability of the entire virtual set.

Deficiencies

Like many other virtual set designs created for TV programmes, the ***Cheers Sports Show*** had some shortcomings. Generally, the motifs in the entire design are repeated and overdone which takes a lot of attention from the viewer. As a result, it makes the background design look artificial and uncomfortable in view.

Tales from the Powder Room Show

The show has a host and guests who are of the male or female gender. The show focuses on relationship and marital issues. Guests invited on the show are mostly relationship experts or marriage counsellors who shares their views on marital or dating subjects addressed by anonymous viewers.

The *Tales from the Powder Room Show* virtual set

The virtual set has circles and oval shapes which represents unity, love and commitment in line with the theme of the programme. Also, other shapes as part of the design such as curves signify feminine and the straight lines masculine. These elements of design arranged in a balance form communicate to the issues discussed on the show. In referring to the above literature, the set employs some elements over principles of design as mentioned by Cudworth (39). It has physical furniture set of a two-seater and two one-seater sofas placed against the virtual background. This virtual set also employs the three-wall approach with the show title embedded in the middle and an outline drawing of a woman's head in a circle. There are other floral motifs in the design and circular shapes as part of the design concept. The floral motifs forms repetition and follows a rhythm in design as presented by Pentak and Lauer (4). However, they look flat in view which is in contrast to Millerson and Owens' (219) submission on the *look* of virtual sets which are supposed to be three-dimensional in nature. In my opinion, the purpose of creating a three-dimensional view of a virtual set using design elements over here is defeated. On the other hand, the chroma key applied in this particular set is done properly and evenly lit to deceive the audience that the computer-generated backdrop is a physical background and real. Generally, the set has background colours such as tints of pink and purple meaning affection and royalty. The set of furniture is chosen in the colour of tints of blue to depict emotions. Shown in figures 4 and 5 are views from the set showing the furniture set and design.

Figure 3: Long Shot (LS) of the *Tales from the Powder Room* set (Source: GH One TV)

Figure 4: Medium Close-Up (MCU) of host of *Tales from the Powder* show (Source: GH One TV)

Costume selection for the programme host and guests are in colours of black, brown and grey which gave a formal and natural feel. The colour of costumes was carefully chosen according to the programme's theme and to prevent the causation of problems with the blue or green chroma key backgrounds.

Deficiencies

The virtual set design employs a straight three-wall approach and without *breaks* which gives an impression of two-dimensional feel instead of a three-dimensional view. The floral motifs infused as part of the background design

looks flat and lacks some form of solidity, which defeats the idea of creating a three-dimensional feel.

Conclusion

From this paper, it may be inferred that every virtual set design created for a television programme must be real and believable as possible. Besides, the entire virtual set design should reflect on theme of the show in the *look* and make meaning to an audience. That is the combination of signifiers (forms) and signified (codes) provides significant communication of spaces for designers to analyse and define the appearance of language of space in television production. Although, the employment of virtual sets in television productions in our part of the world, still remains a wonder and a phenomenon to some television media professionals locally, it has reached innovative and advanced stages in the western world. Generally, it is good news that some set or scenic designers working with television stations locally are exploring with several three-dimensional software applications available to design spectacular virtual sets due to advancements in technology. The onus lies on television companies in Ghana to provide appropriate virtual studio facilities and systems to overcome the technical limitations and challenges linked to the creation of virtual sets, to achieve that form of perceived reality with meanings related to themes of the shows.

Recommendations

It is recommended that professional virtual set designers or set designers must be employed to design believable virtual sets for television shows and avoid the use of default virtual sets generated by the virtual systems, which may need some alterations to achieve that three-dimensional feel or a lived-in *look.* Also, some 3D modelling and rendering software packages such as Cinema 4d, Sketch Up Pro, Maya, 3d Studio Max, Rhinoceros And Vectorworks used in creating these magnificent seamless backgrounds demand enough computer memory for storage and execution. Thus, the computers must be of high speed and with bigger memory sizes. Failure to do so may result in the loss of data during the entire process. In addition, virtual set designers or scenic designers must consider television studio spaces carefully before opting for the virtual set design execution. They must make sure the measurements are accurate in the modelled design and stick to consistent lighting. Finally, set designers should be particular, including the idea of perspective in the creation of virtual set designs, which includes objects that appear between background, middle ground and foreground. In other words, sizes must differ to create that feel of perspective.

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