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An Analysis of Technological Challenges in Animation Practices In Nigeria

Kalilu, Razaq Olatunde Rom & Tafa Mufutau
Department of Fine and Applied Arts
Ladoke Akintola University of Technology
Ogbomoso, Oyo State, Nigeria
E-mais: romkalilu@lautech-edu.ng; murphyomurphy69@gmail.com

ABSTRACT

Studies and field experience indicate some motion inadequacies in animation practice in Nigeria. This study therefore appraised animation techniques and motion-related technological challenges in the practice in Nigeria with a view to simplifying animation for realistic motion effects. Using Lagos State as case study, ten of the fifteen animation studios identified were purposefully selected for studio observation, animated clips analysis and Key Informant interviews. Findings revealed that 90% of the animators have little knowledge of motion theory. Sixty-eight percent (68.3%) of them use non-professional animation software that cannot effectively render all the movements needed in animation. Furthermore, only a few numbers of the studios have modern animation equipment and gadgets; hence some consumers' preference for foreign made animations. Use of professional animation equipment and software by animators to aid rendition of believable motion illusions and inclusion of motion theory in animation in tertiary visual arts curriculum are recommended.

Keywords: Animation, Software, Practice, Nigeria, Motion Theory, Clips, Consumers, Visual Arts

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1. INTRODUCTION

Animation, which derived from the Latin word 'animates', meaning filled with life (Rusell, 2005) is the process of recording series of incremental drawings which are later played back to create the illusion of motion. Even though the technological means to show criticism in motion is relatively recent, the rudiments of the process are discernible in the Paleolithic cave arts which show depiction of multiple sets of legs in superimposed manner to convey motion (Microsoft Encarta, 2009). In the same context, an old pottery bowl of about 5,200 years discovered in Shar-e Shukhtern, Iran which has five images painted around it shows phases of a goat leaping to nip at a tree (Encyclopaedia Britanica,421). In addition, a long sequence of wrestling match was depicted in mural on the wall of about 4,000 years old tomb of Khunumhotep at the Beni Hassan cemetery (Aurore, 2017:63). There are other examples across time and global space. Notable examples in the historical times are the seven sequential anatomical drawings by Leonardo da Vinci which shows multiple angles and extension of arms when rotated (Clayton, 2013:75). These examples cannot be referred to as true animation but they are insight for the basis of development of the art of animation.

An advancement towards a true animation occurred in 1650 AD when the Magic Lantern, a device for projection of images and slides with moving lamb on the adjacent flat surface was invented by Christianah Huygeus (Kusahara, 2018:1). This was later followed by Thaumatrope, also known as Wonderturner or turning marvel, a simple mechanical optical toy that used the principle of persistence of vision and which was recognized as an important antecedence to cinematography (Encyclopaedia Britanica, 421). This particular development was credited to either John Ayrtou Paris or Peter Mark Roge Paris in 1824 (Papagiannis, 2010:3). This developmental trend continued with Phanekistoscope under which Zeotrope, Linear Zeotrope and 3D Zeotrope are categorized (Daniel, 2017). What can be considered as the first form of animation to employ linear sequence was kineograph (moving pictures) otherwise known as the Flip Book. It was invented by John Batines Linnet in 1886. It was a book with series of pictures that vary gradually from one page to the next so that when turned rapidly, the pictures appear to animate by simulation motion (Encyclopaedia Britanica: 421).

In Nigeria, animation cannot be discussed in isolation without making reference to the art form that preceded it. It can be said to be an offshoot of comic strip in the Nigerian dailies. At the decline of comic industry in Nigeria, the ever increasing number of cartoonists and illustrators found solace in advertising industry which later became a basis for the emergence of animation in Nigeria (Fasunno, 2018).

Prior to this time, magicians were employed to perform difficult scenes in the local film industry. This led to the rise of thespians like Duro Ladipo, Hubert Ogunde and a magician, Professor Moshood Pella all of blessed memory (Awujoola, 2016) up to the late 1940s. The precise beginning of animation in Nigeria has not been ascertained but evidence indicates that it must have predated early 1980s. By the 1980s, it was in practice. For example, Fasunno, (2018), an animator wrote in a blog that Yole Akinawo was a self-taught animator who later tutored other artists like Wole Aduwo and Stanley Ohikhare in his mind vision studios in the late 1980s when animation was like magic. A good number of animators in Nigeria started with 2D but later adopted 3D animations method as evident in Mind Vision Studio activities which showcased its first of its kind 3D animation during the 1996 Olympics (Fasunno, 2018).

Nonetheless in contemporary Nigerian experience, the use of foreign developed software poses a lot of challenges in animation. The most visible challenge is that of motion where feet dragging, hopping, jerkiness and rigid movements are noticed in Nigeria animated clips.

1.1 Statement of the Problem

To many, animation is approached solely from the standpoint of building the model that moves. A good looking model however cannot come alive by itself. This challenge requires an animator to be familiar with the concept of motion theory because it constitutes a vital part of the overall product. Nigerian animated works show that most of the practitioners either do not understand or do not follow natural physical laws that govern movement of their characters since animation is essentially ability to successfully deploy physical principles of inertial, squarsh and stretch, anticipation, slow in slow out and timing in addition to the anatomical principles in the area of muscle movements.

The essence of animation is hinged on motion. However, the seemingly inability of Nigerian animators to understand and implement basic principles of motion is a great barrier to the attainment of a believable and convincing motion status. This informs the naivety of their works and results in counter productivity.

A good number of literature materials have addressed the process and some of the challenges in animation. Lent (2001) wrote on animation in Asia referring to animators and their contributions to the development of the art form in their domains. Several challenges were examined some of which were similar to the Nigerian situation. He however did not discuss animation in Nigeria or Africa. Rusell (2005) traced animation ideology to a period when man started to realize that if human sees a series of images that change at a rate of at least 24 frames a second, the brain can be tricked to believe it that seeing a life moving image making reference to nineteenth-century optical toys like zeothropes as worked on the same principles.

Dariush (2004) gave a clear definition of computer generated imagery as any picture or series of pictures that are generated with the aid of computer. His submission was corroborated by Terrence (2014) also corroborated. He however made a clarification that computer generated imagery generally refers to 3D graphics and not to images created using 2D with the aid of programmes like photoshop or painter because most 2D graphic software is bitmap-based and not vector-based like 3D. He pointed out that bitmap software creates images as mosaic of pixels, filled in one at a time while vector software creates images as a series of mathematical instruction from one calculated or graphed point to another. However, software like Adobe illustrator or Macromedia Flash also uses vectors but Maya and other 3D software are a step ahead with their ability to calculate depth. Instead of being drawn on a flat plane, objects are defined in three dimensional spaces.

Wikipedia, the free encyclopedia, gave a succinct explanation on the reasons for the animation pictures to be drawn at 12 frames per second or faster. It however stated that anything above 75 frames, no realism or smoothness would be perceived due to the way eye and brain process images. It explained that if done below 12 frames per second, most people can detect jerkiness which will certainly not portray smooth movement. The technical and logistic process of special visual effects in postproduction was discussed by Benedetti (2004). Like similar literature, he divided the production process into three: preproduction, production which he also referred to as shoot and post production. As special visual effects have to do with postproduction, he elaborated this section more than preproduction and production.

From the foregoing literature review, it is evident that no special attention has been paid to how to improve motion in Nigerian animation. Achieving believable motion still remains a daunting challenge in the Nigerian animation industry and this is the basis on which this study is hinged.]

1.2 Scope of the Study and Methodology

Against the foregoing background, this study analyzed some challenges in animation technology in Nigeria. It covered all aspects of animation processes using ten selected animation studios across Lagos State (Figure 1). Lagos was selected for the study being the artistic hub of the country and the only place where animation is most actively practised in Nigeria. The practitioners are also from different educational and cultural backgrounds across Nigeria.

In this context, Lagos can therefore be justifiably taken as representational of Nigeria. The method used for the study was direct field investigation that involved both empirical study and Key Informant interview in order to establish the causes of inadequacy in the Nigerian animation contents. Animation studios were visited, animated clips were studied and Key Informants, both the animators and the consumers in Lagos State were interviewed. Data for the study were collected in Lagos State between June 2016 and February 2020. Ten animation outfits were selected for sampling (Figure 1). Seven of the ten animation studios offered both 2D and 3D animation. These studios are Dudutoonz, Orange VFX, Smids, Boez Animeit, Media Innovation, 3D Motion Pictures and Sporedust Media. The other three animation studios that engaged in 3D animation only are Basement Animation, Strictly 3D Project and Unlimited Picture.

Data collection in each of the animation outfits focused on two kinds of respondents. First, were the animators that is, managers and art designers. The second group was the patrons, comprising production personnel from advertising agencies and members of the public who are the final consumers. Participant observations were also made in the studio environment. Personal observations through participation were also made. Animated video clips were watched through computer to establish the challenges observed from the field research.

Figure 1: Map of Nigeria showing Lagos State
(Wikimedia, 2021)

Table 1: List of Animation Companies Studied

S/N	Animation Company	Technology	Year of establishment	Location
1	Basement Animation	3D	January, 2008	28, Adenuga st. off Jimoh Balogun, Ikosi Lagos
2	Dudutoonz Studioz	3D,2D	March, 2009	12B, Talabi St. Ikeja
3	Orange VFX Studios	3D,2D	May, 2010	10, Ajose St. Surulere, Lagos
4	Boez Animeit	2D,3D	March, 2011	3, Gbolade Adebanjo St. Ilupeju, Mushin
5	Sporedust Media	2D,3D	Feb. 2012	5, Fatai Irawo St. Ajao Estatae, Oshodi Lagos
6	3D Motion pictures	2D,3D	Feb; 2013	94A, Bode Thomas St. Surulere Lagos
7	Smids Animation Studios	2D,3D	15th Oct; 2013	20, Alh. Kofoworola Crescent, Ikeja Lagos
8	Media Innovation	2D, 3D	Feb; 2014	27, First Capital Plaza, Opebi Rd. Ikeja Lagos
9	Strictly 3D project	3D	5th Feb; 2015	10, Esugbayi St. Ikeja
10	Unlimited Pictures	3D	25th May, 2015	Alausa Secretariat, Ikeja Lagos.

2. ANIMATION AND ANIMATION TECHNOLOGY IN NIGERIA

Basically, there are two types of animation; analog and digital. Analog animation comprises classic or cel animation where every frame is drawn by hand on transparent sheets of plastic cels. These are photographed as sequence against painted background. Analog animation was believably invented by Earl Hurd and John bray in 1915 (Russell, 2005:271). This development was actually preceded by an early cartoon animation like Getie the Dinosaur (1914), where the entire frame including the background, characters and items were drawn on a single sheet of paper and photographed. Everything had to be redrawn for each frame containing movements. As observed by Maltin (1980), this led to objects slightly different from one frame to the other thereby resulting in a form of jittery effect.

Cut out animation or stop motion animation is a result of the efforts made at improvising cel animation technique. In cut-out animation, two dimensional drawings were cut out as the name implies and placed on a fixed background. These are photographed as they are being moved in small increments to create the impression of movement (Russell, 2005:271). Stop motion is a three-dimensional version of cut-out animation. In stop motion or stop frame technique, three dimensional objects of figure molded in clay (claymation) (Ian Crook, 2016:110) or any other form of plastic materials are physically manipulated in small increments against a fixed background to produce the illusion of movement (plate 1). However, where object or household utensil is used in place of molded figure, it is called object animation, the use of which has been with filming since early days of cinema (Musser, Charles; 1994:471).

Other variant of stop motion technique which is more recent is stereoscopic one. A stereoscope is a device by which two photographs of the same object taken at slightly different angels are viewed together creating an impression of depth and solidity. Seldomly, this is used in creating characters for computer games in place of Computer Generated Imagery (CGI). Software made for such illusions include Nintendo 3Ds and Movie ParaNormal among other video software. The software comes with the option of stop motion videos. Games produced out of the technique include 'clay fighter' for super Nintendo and The Neverhood for the PC (Musser, Charles; 1994:472)

In cel animation, Go motion, a process in animation, is necessary. It is more of effect creation technique than animation. It is used to simulate motion blur. This however cannot be overlooked as motion blur is very vital in creation of the illusion of movement. Four distinctive methods of generating motion blur are identified. First, vaselensin (the art of application of Vaseline on the camera lens, then cleaning and reapplying it after each shot to create motion blur around the model). The second method is bumping or flicking the puppet before taking the shot to produce a slight blur (Microsoft Encarta, 2009). The third approach of creation of motion blur is by moving the platform on which the model is standing while the film is being exposed. This gives a more realistic blur effect. The fourth method which is most accurate classic method is rod puppet model which is attached to motors and linked to a computer in order to record movements when model is being animated traditionally and since the model is moving during shots, motion blur is created (Dancyger, 1997:336).

3. DIGITAL ANIMATION

Digital animation or computer generated imagery is the process used to move images with the aid of computer (Ian crook 2016:107). It is a digital replacement for the analog methods of 2D cell animation, 3D stop motion and other variables in their analog forms. It is a more reent, easier, faster, cost effective and more controllable means of achieving animation. Also, creation of images that may be impossible using any other technology is achievable in digital method. Like the analog type, there are also two major digital methods of animation that are identifiable namely; key framing animation comprising 2D and 3D animation methods; and motion capture. In 2D animation, figures are animated directly on the monitor with the aid of an input device known as Wacom Cintiq or vector method (Aragbada, 2016). Wacom Cintiq is an electronic pen that is capable of drawing directly from the computer system. Images can also be created in 2D vector method.

Hence, the key frames are drawn and the tweening or morphing, which are the differences between two or more key frames, are automatically done by the computer. The animation is finally rendered. For 3D animation, objects are modeled and rigged with virtual skeletons on the computer monitor. Unlike in 2D, where rendering takes place only in key frames, all frames in 3D must be rendered after the modeling.

Also, in the digital sequence is a newer method known as motion capture which makes use of life action footage motion capture method in animation requires a real performer to act out the scenes. His or her motion is recorded using video cameras and makers. The performance is then applied to the animated modeled character. Both key frame and motion capture are important here. Key frame animation can produce motions that would be difficult or impossible to act out while motion capture can produce the subtleties of a particular actor. It is appropriate in situation where believable, realistic and action of a particular actor is required. However, where amazing shots are impossible with life action actors, it can be digitally enhanced. Some of movies that are produced with this technique include Trivia, Beowulf and *Ijoya*. Beowulf is an animated satire of an original poem released on November 22, 2007 (Lent 2001:217) while *Ijoya* is animated song by Shola Idowu popularly known as Weird MC and is a product of Obinna Owuewue, a Nigerian animator. The films look real and very interesting.

In the same vein, virtual reality is another digital device which allows a subscriber to have a preliminary knowledge of a situation before a real one is attained. It is a three dimensional environment constructed electronically by computer. The user enters the environment by wearing helmet equipped with visualizers over the eyes. Images and sounds created by computer give the user the sensation of actually moving within the place they see. The use of this technology has grown beyond leisure like interactive video games to use for professional purposes. For example doctors can go in experience and difficult surgical operations before they actually do them and identify possible risks through simulated flying practice; Architects can 'enter' a stately home or illustrate a project before it is built. The technology allows for determination of the suitability or otherwise of a project before it is carried out (Watson, 2002:185).

Procedurally, the analog or digital animation consists of three broad stages: preproduction, production and postproduction. Preproduction starts with script writing. This serves as initial blueprint for all important intents in the animation. It also includes storyboarding where characters are drawn on character sheet in different views, the breakdown of the script into scenes and subsequently shots. Dariush (2004:5) aptly observed that it is at the storyboard level that camera angles, position of character, lighting, mood and so on are determined.

In the production stage, models are created from the boards and model sheets, characters, sets and props are modeled and assigned colours and textures and animated according to the boards and scripts. At this stage, computer also calculates how the scenes should look like when displayed. On the other hand, postproduction involves bringing all the film elements together and assembling them into the final form known as composition. It is the stage where sound and visual effects are used, characters lips-synchronisation and rendering are done (Benedetti 2004:53)

4. FINDINGS AND DISCUSSION

The study conducted among the animators revealed that ninety percent (90%) of the animators have little knowledge of motion theory. Sixty-eight point three percent (68.3%) of them use elementary animation software such as: Adobe Photoshop and PowerPoint packages which cannot render all the effective movements needed in animation as against the more specialized advanced packages like Autodesk Maya, 3D Max After effects and Premiere Professional. Furthermore, only a few animation outfits are buoyant enough to acquire modern animation equipment and gadgets and are being patronized by a few number of clients that have resources to do so. Ninety percent (90%) of the practitioners are not professionals and the industry lacks good hands on training. Another finding is lack of incentives as most consumers prefer foreign made animations to local ones (Mbuotidem, 2016; Aladeniji, 2016) .

Many animators admitted that fundamental knowledge of motion theory bothering on animation remains at its latent stage in Nigeria (Aragbada, 2016; Aregbesola, 2016). Additionally, a good number of practitioners are not professionals as evident in the study. Examples of such are Uche Anisinba, a mass communication graduate of Anambra State University with a marketing communication major; Tayo Fasunon, a Mathematics graduate of Obafemi Awolowo University, Ile Ife and Richard Oboh who is currently studying Business Administration and Management at the University of South Wales. Anisinba was trained at Orange VFX and Ianimate. He is a co-founder of Quadron Studio with Tayo Fasunon who happens to be a co-producer of *Gbedu* Ovie and Wale. Richard Oboh is a creative director of Orange VFX studios. He read Chemical Engineering at University of Port Harcourt and also a co-producer of Ovie and Wale. Others are undergraduates, admission seekers who see the practice of animation as gap-bridging venture before their admission is secured.

There is no doubt that animation in Nigeria, because of its nascent status, is experiencing enormous challenges. In the past, what we had was an animation community comprising animation lovers and gamers which fed on foreign contents (Fajimi, 2016). The challenges of animation in Nigeria were solved by magic providers in our local film industry. Magicians were employed to perform the scenes out. This led to the rise of thespians like Duro Ladipo, Hubert Ogunde and a magician Professor Moshood Pella, all of blessed memory (Awujoola, 2016). They filled the vacuum the absence of animators could have created. The study examined the motion-related problems in Nigerian animation industry from the physical, anatomical and logical standpoints.

In order to achieve a believable motion in animation, two observable classes of principles are identified. One is scientific; physical and anatomical principles while the other appeals to common sense. In the realm of scientific principles that govern a convincing motion in animation are squash and stretch, overlapping action, follow through and arched trajectory. Exaggerated motion, secondary action, slow in slow out, anticipation and staging only appeal to a logical order. Following these principles judiciously will go a long way in achieving a realistic and believable movement in our animation works.

Squash and stretch give the illusion of weight and flexibility in drawn objects. It can be applied to both simple and complex constructions like a football and musculature of a human face respectively. It is capable of giving a comical effect when exaggerated especially in cartoon animation. However, it cannot be applied on a very hard and dense object except for comical or special task effect reasons (Elliott, 1995:126). It is mostly employed in cartoon animation or films where pictures of trees in "The Lord of the Ring" or other inanimate objects are made to perform one task or the other.

To understand this concept, a good knowledge on biomechanism is required. Biomechanism is the study of effect of mechanical forces on biological materials (Norris, 1999:1). It is virtually impossible discussing stress without considering gravitational forces. The centre of gravity of an object is its balance point where the weight of the object is focused. In symmetrical objects e.g bricks and books, the centre of gravity lies at the centre while it is nearer to the larger and heavier end in asymmetrical objects like human body (Norris, 1999: 3). For an object to remain in balance, its line of gravity must pass through its base of support. If the line of gravity moves outside the base of support, the object becomes unstable and will topple over (see figures 5 and 6). To compensate for this, the body position will change i.e. bend to one side when a pressure is inserted or something is carried (Norris, 1999:4).

Follow Through goes hand-in-hand with overlapping action. The principle of inertia is observed to be in operation. The loosely tied parts of a body continue to move beyond the point where the character has stopped only to be pulled back by a greater force of the body. Inertia is an object's resistance to change in its position of rest or state of uniform motion in a straight line, unless that state is changed by an external force (Norris: 2003:5, Adams, 2000:85).

It is also noteworthy that most actions tend to follow an arched trajectory. The curving part appears to be natural to every moving object with the exception of the motion that is mechanical. To achieve a believable motion, animators should adhere to this principle when planning character's movement. Inability to follow this curved motion principle results in an unnatural, mechanical or robotic movement (Elliott, 1995:135) the types of which are obtainable in mechanomorphic films like "Iron Man" and some scenes in "The Terminator"(Zakia, 2002: 197). The study does not intend to delve into a serious mechanical and anatomical study. However, understanding fundamental principles of muscle movements towards achieving a believable motion in animation is imperative.

As regards facial expressions, there are many muscles involved in chewing, whistling and making gestures. *Occipitofrontalis* which consists of a posterior muscular part over occipital bone, an anterior part over the frontal bone and an extensive flat tendon or apo neurosis that stretches over the dome of the skull and joins the two muscular parts is responsible for raising the eyebrows. *Levatorpalpebraesuperioris* which extends from the posterior part of the orbital carvity to the upper eyelid raises the eyelid. Orbicularis oculi, the muscle that surrounds the eye, eyelid and orbital cavity, closes the eye and when strongly contracted "screws up" the eyes. The flat muscle of the cheek known as Buccinator draws the cheek in towards the teeth in chewing and in forcible expulsion of air from the mouth. This is also known as trumpeter's muscle. *Orbicularis oris* which surrounds the mouth and blends with the muscles of the cheek is responsible for closing of lips and when strongly contracted, shapes the mouth for whistling.

Other muscles that play major roles in facial expression include temporalis which closes the mouth and assist in chewing. Pterygoid muscle pulls the lower jaw forward in addition to closure of mouth (Kathleen, 1999:414). The study of these muscles is important as their activities translate into various facial expressions and gestures which cannot be ignored when discussing believable motion.
Anticipation prepares the mind of an audience for an expected action to take place. It alerts the audience of an impending action to make it realistic. It is a preliminary action by a character that sets up another action. Anticipation simulates real motion. An object at rest needs some preliminary actions to transfer energy with which it executes the primary action. One example is a character looking off the book before him and focusing at the doorway in expectation of someone's arrival. Another example is that of a character pulling a trigger to anticipate gun firing (Ajibola, 2016).

Exaggerated motion works in conjunction with anticipation. It helps to ensure that a particular action does not go unnoticed by the audience. It works together with anticipation and staging to direct the audience attention to a target action. While anticipation sets up the action, staging ensures that the action is conspicuous and exaggeration makes sure that the action is not so subtle that the audience fails to notice. It is not a counter-productive step to exaggerate, after all efforts put in place to make an animation realistic, rather, it is a must to exaggerate where necessary for the audience to catch target action. The possible exception is animation produced for courtroom presentations where strict adherence to precise motion is more important than good presentation (Elliott, 1995:130).

As for secondary action, it assists in giving more life to main action. Examples are swinging arms or keeping them in pockets while walking (see figure 7). A character can equally speak, whistle or express facial gestures to show emotions (Amidi, 2016). Another one is deflection of a rim stricken by a bouncing ball or surface of a beaten drum. The inability to include secondary action in an animation makes it look fake, lifeless and mechanical. Also, it is observed that movement of the human body and most other objects needs time to accelerate and slow down. Human body does not attain a uniform speed from the point of taking off to where it stops. Equally, there is no abrupt end to a human speed. It has to be gradual. The only way to achieve this is to have more drawings near the beginning and the end of an action, emphasizing the extreme poses, and fewer in the middle. This is better expressed in a character moving between two extreme poses (Wikimedia).

In animation, motion is more important than any other element of design. There are gross inadequacies as regards motion in the selected Nigerian animation films and adverts. Unnecessary performance of same action or movement of same body parts by two different characters at the same time is done by Ovie and Wale in Gbedu (Figure 2). There is also excessive use of limited animation that is blinking of eyes, movement of the eyeballs and mouth alone while other parts of the body remain still (Figures 3 and 4).

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Figure 2: A Still frame of animation showing Ovie and Wale with unnecessary same body movement

Example of this can be found in 'OUR OWN AREA, OWO MONEY and JUST GO BACK. The problem of excessive limited animation is better solved with anatomical knowledge of body movements and gestures. This will help in bringing out life in such figures.

Figure 3: A Still frame picture from Owo Money animation showing excessive use eye blinking

Figure 4: A still frame picture from Last Man animation showing hopping, rigid movements of and jerkiness

Other problems include hopping instead of walking, moving a whole body parts at a time and jerkiness, all resulting from insufficient frame rate. 'Last Man' and 'The Brazillian Kpomo' for GT mobile money animation are good examples of these shortcomings. Some modeled figures are seen floating and others dragging feet which makes the movement very unrealistic at the violation of gravitational laws.

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Figure 5: A still frame picture from African kpomo showing hopping, rigid movement and jerkiness

Even in the much celebrated hilarious 'Ovie and Wale' otherwise known as *Gbedu,* the two characters were mostly animated together at a time possibly to save the number of frames and the cost of rendering. This however is not in conformity with the mandatory rendering of individual character in every scene. These and other principles discussed earlier in this chapter need to be worked on to achieve better results. Among the stipulated animation outfits for the study, some turn out to be middle men between clients and animators proper. This explains the reason for a change in the animation studios proposed for the study. Some are not up to the expected standard required while some are just computer graphic centres and website designers that want better image for public perception.

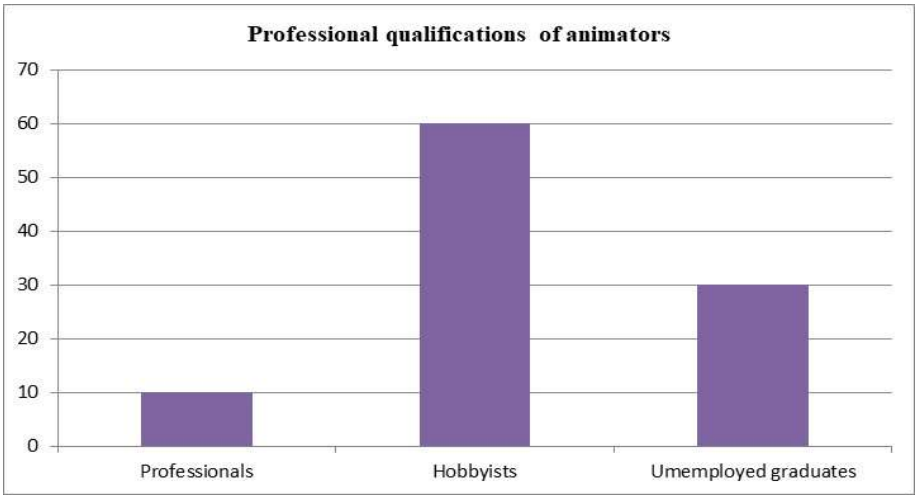

Fig. 6: Bar chart showing responses on professionalism of animators

The Bar chart shows that only 10% of the respondents are professionals, 60% are hobbyists and 30% of them are unemployed graduates that engage in animation to survive.

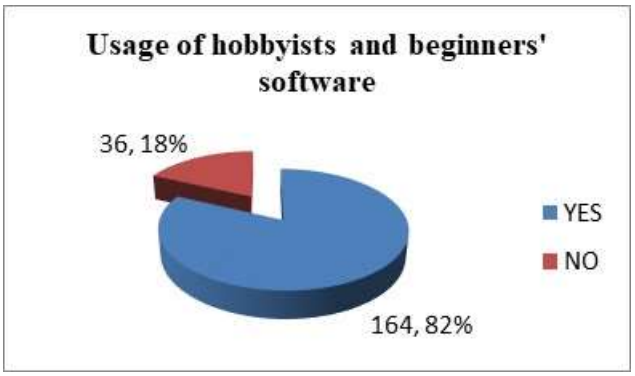

Fig 7: Pie chart showing frequency of respondents on usage of hobbyists/beginners' standard software.

The pie chart above shows that the majority of the respondents, 164(88.3%) use hobbyist/beginners standard software while 36(31.7%) of the respondents do not use hobbyist/beginners' standard software. This implies that many of the respondents do not use professional software for doing their animation. This might be because the majority of the animators interviewed are not professional animators as revealed in fig. 1.

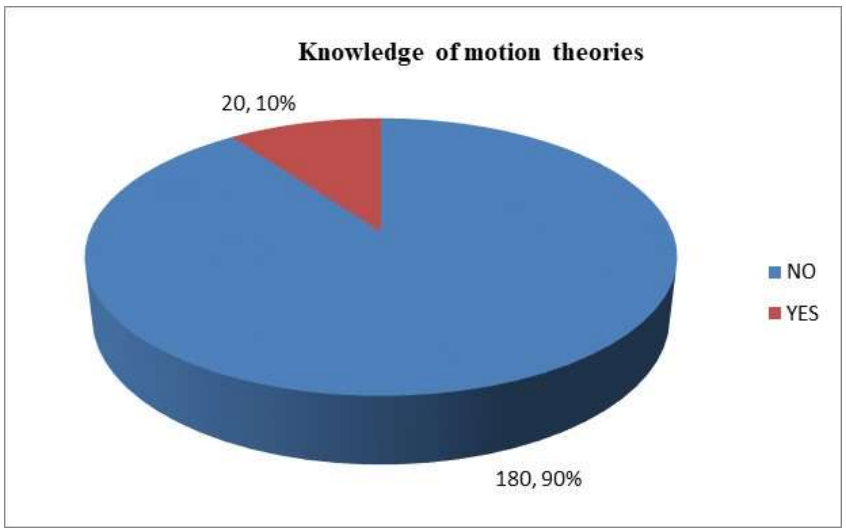

Fig. 8: Pie chart showing frequency of respondents on their knowledge on motion theories as applied to animation.

The result on the pie chart above reveals that 20(10%) of the respondents have knowledge about motion theories since they are professional animators as shown in fig. 1 while the majority of the respondents 180 (90.0%) have low knowledge about the motion theories and this is because they are not professional animators, they only do animation for profit sake.

5. DISCUSSION OF FINDINGS

The outcome of the research conducted among the animators has shown that most of them are not trained artists. They are conglomerate of young talented people from diverse fields of study especially, commercial and humanities with the exception of few who studied science related courses. The school drop-outs whose love for internet browsing led them into the field of animation are not left out (Ogunsola, 2016). An animator with art background is likely to make a difference. His superior sense of observation is capable of making him understand most of the principles of believable motion mentioned earlier than others. This attests to the fact that any professional who is an artist is always at the edge of others in the same area (Kalilu,1999:9).

Our higher institutions in collaboration with foreign professionals should start teaching animation. Students should be obliged to study drawing, colour and design not just the software packages that automatically do all the in betweening for them. A more traditional approach to the study of animation means that it has been seen as artistic rather than technical. Emphasis should be laid on the challenges referred to in the previous chapter and how to solve them. Relevant fields of study should be harnessed to help achieve a robust animation status in Nigeria. Also, people with a flair for motion and a creative mindset should be trained by foreign professionals through an international manpower programme (Ehikioya, 2016).

Moreover, in special effect animation, a wide set of tools are relied upon to create illusions. State-of-the-art animation and rendering tools with competent hands to handle them are required. In the Nigerian situation, only a few animation outfits are buoyant enough to meet this requirement and are being patronized by a few clients that have resources to do so (Okoye, 2016). Availability of the right software packages for animation and their ability to use them is also a daunting challenge. Many of them use cost-effective elementary software like Adobe and PowerPoint packages which cannot give them all effective movements needed in animation like more specialized and advanced packages of Autodesk Maya, 3D Max, After Effects and Premiere Pro.

The preference of foreign made animation to locally made ones in Nigeria should be redressed. The attitude discourages local talents as potential talents are lost to other countries through ignorance and prejudice. Advertisers like ‘Chi Vita’ rely on foreign contents because they lack confidence in the ability of local animators in meeting their standard. Many more follow this trend especially the politicians and government agencies except few in Lagos axis.

6. CONCLUSION

The study has established that lack of good knowledge in motion theory and that of good hands on training are seen as major problems in Nigerian animation industry. It is also evident that no special attention is paid to how to rectify the problems. Practising the art of animation with unprofessional software is also seen as another clog in the wheel of progress in Nigerian animation industry.

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APPENDIX C

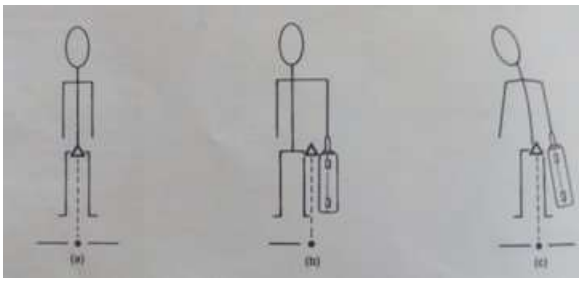

Figure 9: The centre of gravity of the body mass moves when an object is carried (a) line of gravity through base of support = STABLE (b) line of gravity moves outside based of support = UNSTABLE (c) body shifts to bring line of gravity back within base = stable Culled from Complete Guide to Stretching P4

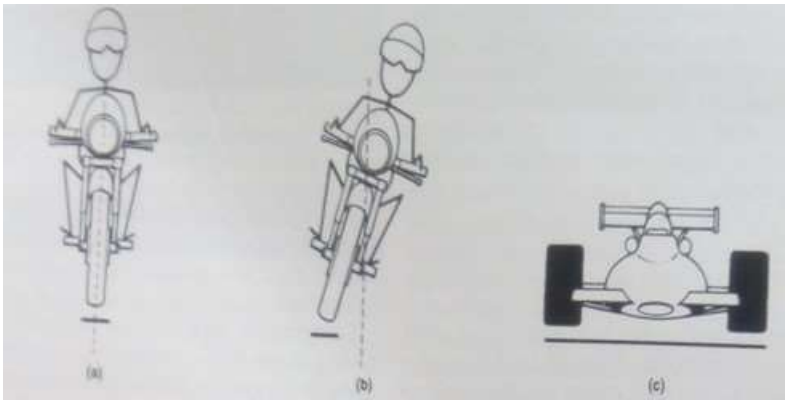

Figure 10: Stability, centre of gravity and base of support (a) motorcycle upright – line of gravity midway through base (b) motorcycle tipped – line of gravity at edge of base (c) racing car – wide based support. Culled from Complete Guide to Stretching P5

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Figure 11: Stop motion method: objects are moved in small movement manually
Culled from Animation in Asia and the Pacific, P26

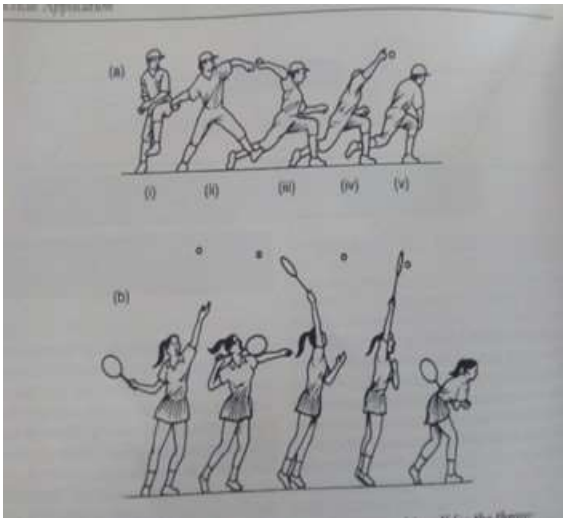

Figure 12: Secondary action: Body movement needs time to accelerate and slow down when carrying out a specific task. Culled from Complete Guide to Stretching P35

Figure 13: Wacom cintic being used as an input device.
Culled from Animation in Asia and the Pacific, P 242

Figure 14: Moulded figures being manipulated manually.
Culled from Animation in Asia and the Pacific, P 235

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