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Concepts of Umutara and Imigongo Colour Based Design in the Traditional Arts of Rwandans and Their Applications in Interior and Fashion Technologies

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Abstract:

Currently it is estimated that the handicraft industry earns Rwanda between 3 and 4 million US Dollars annually, with the potential to raise over 7 million US Dollars annually in its export earnings to complement the coffee, tea and mineral exports that have been dominating Rwanda's export receipts as reported in the East African new paper of 6th July, 2012. In the incongruity, some authors consider the Traditional Arts of Rwandans as a buried gold in the soft soils of the riverbank where torrential waters gradually wear away those soft soils to supply alluvium into the lands located far away from the origin because they are almost held in hands of rural and illiterate people who are intentionally and unintentionally influenced by businessmen mainly focussing on their own interests in the market. From that reason, this paper entitled "Concepts of Umutara and Imigongo Colour Based Design in the Traditional Arts of Rwandans and their Applications in Interior and Fashion Technologies" replicates the originality and uniqueness of the Traditional Arts of Rwandans into a systemized form that can officially be instructed in schools as new opportunity for economic development in Rwanda. To achieve this, a systematic examination of the gradual development of Rwandan Arts from ancient times, followed by a comparative study among the physical world collectively and the sounding features of the original products handcrafted by Rwandans or by foreigners and the computation of the mutual relationship among colours had scientifically turned out a comprehensive form outlining in details the instinct imagination and creative skill of Rwandans.

Keywords: Umutara, Imigongo, colour, interior design, fashion design

1. Introduction

Crayola's educators define colour as the aspect of things that is caused by differing qualities of light being reflected or emitted by them. In other words, colour of an object depends on both the physics of the object in its environment and the characteristics of the perceiving eye and brain as stated in the Wikipedia Free Encyclopaedia of 17th August 2015.

Colour is something of interest in our daily life. According to Kendra Cherry's findings: "Colours dramatically affect moods, feelings, and emotions to signal action, influence mood, and cause physiological reactions". In the same line, CCICOLOR-Institute for Colour Research, in its research entitled "The Importance of Color in Marketing" has showed that the average person makes a subconscious judgement about a product, another person, or the environment within 90 seconds. Between 62% and 90% of that judgement is based on colour alone. Therefore, according to them, colour is a key factor all designers and marketers should consider in their business. In 2014, Jessie Oleson Moore showed that colour is the powerful way to convey emotion in illustration or fine artwork. Further, Bernice E. Rogowitz and Lloyd A. Treinish definitely linked colour with the accuracy in any scientific research work as follows: "At the core of good science and engineering is the careful and respectful treatment of data. We calibrate our instruments, scrutinize the algorithms we use to process the data, and study the behaviour of the models we use to interpret the data or simulate the phenomena we may be observing. Surprisingly, this careful treatment of data often breaks down when we visualize our data" while Ms. Jill Morton highlighted the benefit of colour in science, social science and history as "The colours of buildings and monuments provide unique insights into the culture and the materials available at that time in history. For example: the striking reds of the Heian Shinto shrine in Japan, the golden stones of the pyramids of Egypt, and the green and blue tiled domes of the Bibi-Khanym Mosque in Uzbekistan."

2. Objective

This research work attempted to make an exact copy of the originality and uniqueness of the Traditional Arts of Rwandans into a systemized form that can officially be instructed in schools as new opportunity for employment, interior and fashion design businesses in Rwanda.

3. Materials and Methods

During our research, three main activities had been carried out to conclude the sounding concepts, rules and applications embodied in the Traditional Arts of Rwandans.

In the beginning, a detailed investigation about the gradual development of Rwandan Arts from the ancient times had been conducted by reviewing what various authors had wrote about the arts and other manifestations of Rwandans' intellectual achievements, and by making a face to face visual recorded interview with Mr. Mucyo and Mrs. Nyiramahwa. Those two respondents are both Rwandans by origin, by nationality, hundred years old by 2010, with more than fifty years professional experience in the woodworking and basketry and fluent speakers about the history of ancient Rwanda.

On the next step, a comparative study among the physical world collectively including plants, animals, the landscape, and other features and products of the earth and the sounding features of the products handcrafted either by Rwandans or by foreigners had been recorded so that at the end, the products proved original work of Rwandans were categorized and studied carefully. Irrespective when and how those products were produced, their images were cropped and pixelated in Photoshop software to compute a mutual relationship among colours consisting a unit of the product.

The process outlined above had finally turned out a theoretical form replicating the imagination and creative skill of Rwandans into a visual form such as drawings, paintings, basketry art, woodworking and other artistic works.

4. Results and Discussion

4.1. A Look on Self Sustaining Rwanda Thousands Years Ago

The territory of present-day Rwanda has been green and fertile for many thousands of years, even during the last ice age, when part of Nyungwe Forest was above the ice sheet (Booth et al., 2006). Furthermore, It is not known when that country was first inhabited, but it is thought that humans moved into the area shortly after that ice age, either in the Neolithic period, around ten thousand years ago, or in the long humid period which followed, up to around 3000 BC (Chrétien, 2003). Archaeological excavations conducted from the 1950s onwards have revealed evidence of sparse settlement by hunter gatherers in the late Stone Age, followed by a larger population of early Iron Age settlers (Booth et al., 2006). These later groups were found to have manufactured artefacts, including a type of dimpled pottery, iron tools and implements (Chrétien, 2003). About the kingdom formation and traditional technologies of Rwandans, oral histories of the Kingdom of Rwanda often trace the origins of the Rwandan people back nearly 10,000 ago, and relate that Gihanga introduced foundational elements of the African Great Lakes civilization, including leadership, religion, hunting, fire, cattle, metalworking, woodworking and pottery (Herbert, 1993).

4.2. A Look on the Region of Umutara

According to Mr. Mucyo, the name "Umutara" means "vast, plane and plentiful area." The region of Umutara currently located in the Eastern Province of Rwanda is one of the most important historic areas in Rwanda, because, it is at the hill of Gatsibo in the south part of Umutara the Umwami GIHANGA NGOMIJANA had set his first royal palace. Moreover, both the Kingdom and the Republic of Rwanda were more preoccupied with the issues of Umutara to serve as the national granary in terms of cereals, tubers, banana, milk, meat and leather.

Naturally, the region of Umutara is the rolling hills of Acacia and Brachystegia woodland coupled with scattered grassland, swamps, lakes and watercourses to create a scenic beauty landscape along with a variety of habitats, wildlife and scenery. The area is annually experienced with very little precipitation, bushfire and a migrating mass of the population looking for water and fresh grassland.

Irrespective the challenge mentioned above, under various policies, it is still plenty for wild animals to be seen in the Akagera National Park. Alongside the said wildlife reserve for elephant, zebra, buffalo, giraffe, and various species of antelope, crocodile, hippo, lions and hundreds bird species, a vast farmland grazed by thousands of African cattle followed by vast banana and maize plantations make the Eastern Province of Rwanda to yield efficiently in the public funds.

4.3. Colour and Rwandan Culture

You may have either visited the stand of Rwanda during international exhibitions or attended a traditional wedding ceremony. If so, some impressing points to you may include hygiene, special decors and clothing styles frequently produced by mixing the beauty of the local materials.



Figure 1: Wedding stage decorations

Mucyo broadly speaking say “only the beauty of nature and hygiene are in the core of our ancestors’ discovery. The colour pattern in our products is an inspiration gained from the pleasing things of Umutara whereas techniques and quality have to be dynamically improved and transferred among generations.”

In their traditional believes, Rwandans considered some colours with specific myths and taboos so that their uses were really restricted in some activities while others were useless from unknown reasons:

- The red colour for the flower of *Erythrina Abyssinica* means the curse or intense sorrow caused by the hero's death in the society. It is through the *Erythrina Abyssinica*, an ancestral god famous known as Ryangombe had been hanged up to death by a wild buffalo. Moreover, some Rwandans are still arguing that during the rainy season, the red pigmented plants like *Euphorbia Umbellata* attract lightning and thunder to kill people to sheltering under or near them.
- During long-term famines in the Kingdom of Rwanda like Muhatigicumuro (1890), Kijugunya (1895), Rumanurimbaba (1917-1918), etc, Rwandans believed the green cover of plants as the power of God of Rwanda when chasing the deadly ghosts out of the territory of Rwanda.
- During the sowing periods, the blue colour appearing throughout the day was considered the sign from God to let people be hopeful for the New Year. Therefore, the blue sky appearing at the end of the long rainy season till the middle of long dry season was for sharing seasonal agricultural produce especially sorghum and finger millet.
- Rwandans considered the rainbow as the misfortune for individuals residing within the area it has been found in. Therefore, people residing that area were assumed to face insufficiency in the amount of the rainfall to grow crops and raise livestock.

4.4. Paint Discovery

Mucyo and Nyiramahwa showed two arguments about the issue of when traditional paints had been discovered:

- It dates the periods of gradual decrease in wildlife hunting catch versus population explosion within the region of Gisaka and Buganza.
- The shift from the nomadic lifestyle of picking fruits and hunting wildlife from large forests into the new lifestyle of settling in one place for agriculture and farm animals.

According to them, techniques that were commonly useful in the traditional paint production and fixing permanently a colour on the material include:

- The use of fire flame to produce the black spots and shaped figure on the material.
- The use of tick's blood and dung of very young calf to increase the redness, yellowish and brownish of the product.
- Holding fresh material in an anaerobic-wet condition to convert its freshness and green colour into stronger material largely with red, yellow and brown colours. The same technique was also useful to fix an image of real thing on the object. With the help from this technique, it was possible to keep permanently the shape of leaf and flower of the trees or any other small organic living thing on durable materials. Moreover, the colour was among the specific characteristic quantify how much is the quality of material to resist on the applied load, moisture, fungi, fire, and insect actions.
- Holding the object in the solution of organic materials like the cow dung, the flour of cassava and inorganic materials like chalky soil, clay, etc.

- Holding material on the direct actions of the sunlight with respect to the age of material and the rate of sunlight absorption. As the material is fresh and younger and less exposed to the sunlight, it looks fresher with yellowish green colour. In contrast, as the material is old and more exposed to the sunlight, it looks yellow light brown, further, the alteration continues, the yellow light brown is converted into the yellow of gold.
- Superposing materials of different colours in their composition “gusenga”. It was a prominent technique to protect very fragile materials.
- Spraying the solution of inorganic materials with specific pigments on very hot object.
- Covering one or more parts of the object with the removable materials, and then, keep the remaining part of the object in the space travelled by warm smoke or ashes.
- Rearranging the spots of animals’ leather into a more sounding shape or pattern.
- Scratching the object’s external surface using hard material. The scratched surface may be a specific shape simulating a well-known thing or a specific texture. The scratched surface may also be finished by filling up the area with various paints.

4.5. Traditional Colour Based Design in Rwanda

Let the panoramic view of Umutara in its semi-dry and dry savanna, its habitats, its scenery, its wildlife and the African cattle farmed around its wildlife sanctuary be simply named as “Umutara colour”. Then, let a derivative emotional view of that diversity of colours by individuals assumed “Aesthetic or Appreciation of the beauty.” Finally, consider the needful skill to produce a unit of product as “Simplicity” of the work and the time factor to handle the task in that work as “Time.” The order design will then be defined as the sum of two entities of design: (i) the appreciation of beauty, (ii) simplicity. Considering aesthetic pleasure per unit of two different products slightly changes as opposed to time, knowledge and experience, there are three types of order design: (i) First order design outputting products of single colours and zebra colours; (ii) Second order design outputting the products of yellow light green and yellow light brown colours and advanced products of mixed zebra and yellow light brown colours; and (iii) Third order design outputting the products simulating the beauty of animal’s skins.

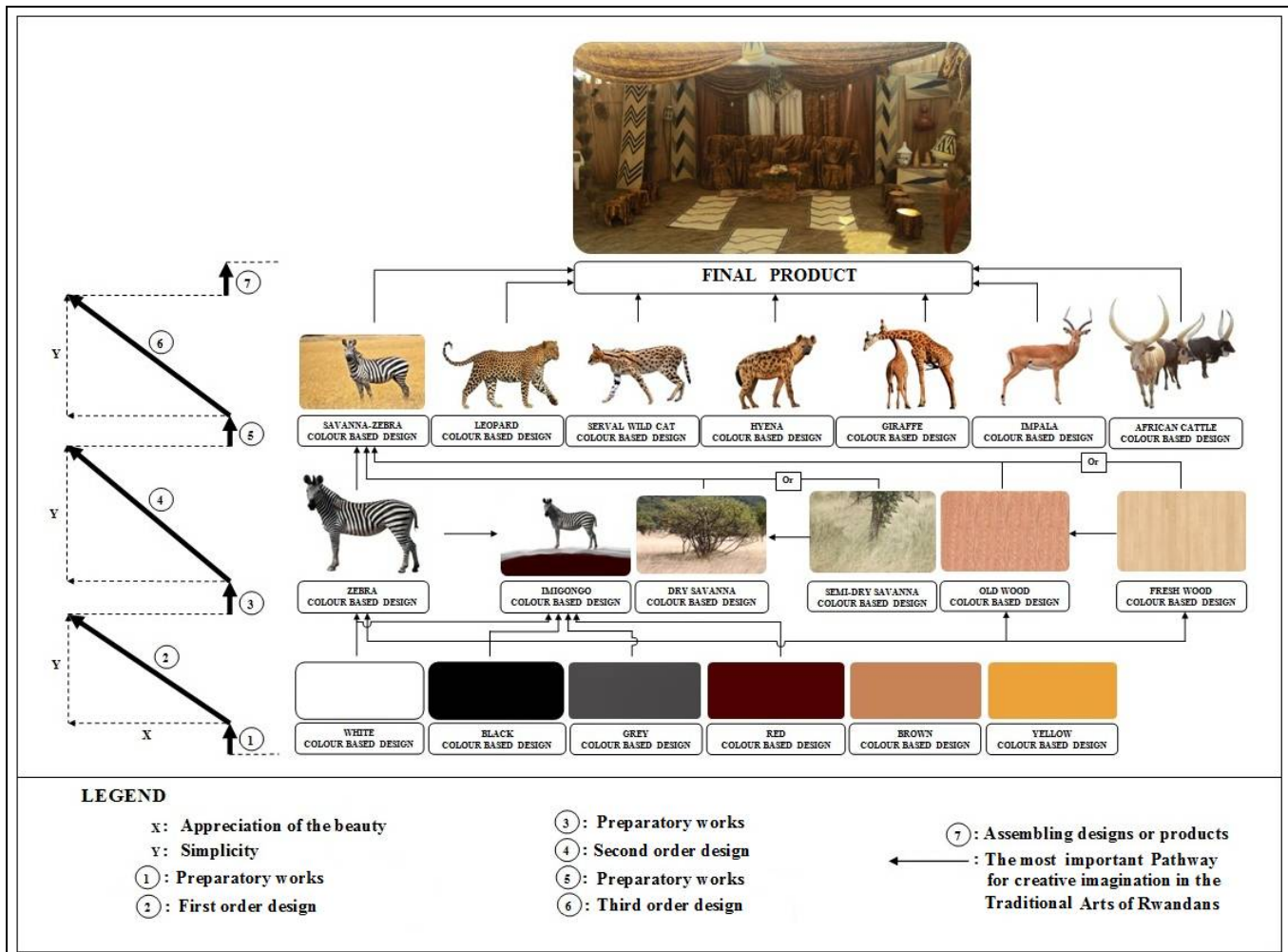


Figure 2: Concepts of the Traditional Arts of Rwandans and their Applications in Interior and Fashion Technologies

- Single colour based design are the simplest form of design in the Traditional Arts of Rwandans and less time consuming.
- Zebra colour based design is nothing but black and white colour based design often controlled by individuals' feelings upon simulating entirely the physical appearance of zebra.



Inspiration	Example of the products	Main colours (Black : White)
 <ul style="list-style-type: none"> ☑ Black and white stripes. Each zebra has a unique pattern; ☑ Black and white mane with a black margin; ☑ Black hooves. 		<p>1/8 : 1 1/4 : 1 1/2 : 1 1 : 1 1 1/2 : 1</p>

Table 1: Zebra colour based design in the Traditional Arts of Rwandans

- Imigongo colour based design is an advanced zebra colour based design essentially using cow dung, earth and organic pigments. Indeed, the special skill in geometry is more important. Imigongo is frequently painted on walls, pottery, and canvas.



Inspiration	Example of the Products	Main colours (Black : White) (Black : Red : White) (Black : Grey : Red : White)
 <ul style="list-style-type: none"> ☑ Black and white stripes; Each zebra has a unique pattern; ☑ Black and white mane with a black margin; ☑ Wavy vista of Zebra at the horizon and in the red soils of Gisaga 		<p>1 : 1 1 : 3/4 1 : 1 : 1 1 : 1 : 1/4 1/4 : 1 : 1 : 1/4 1/2 : 1</p>

Table 2: Imigongo colour based design in the Traditional Arts of Rwandans

- Semi-dry and dry savanna colour based designs are two types of designs simply having roots in the age of vegetation, the rate at which the sunlight radiation have been absorbed and the time factor for which the exposure have been done.
- Savanna-zebra colour based design is another form of advanced zebra colour based design as it is for Imigongo art. A special thing in form of art is that white colour is totally replaced by yellow light green or yellow light brown colour.



Inspiration	Example of the products	Main colours (Black : Yellow light brown)
 <ul style="list-style-type: none"> ☑ Yellow light brown for a dry season savanna; ☑ Black and white stripes of zebra; ☑ Black and white mane of zebra with a black margin. 		<p>0:1 $\frac{1}{8}$:1 $\frac{1}{4}$:1 $\frac{1}{2}$:1 1:1</p>

Table 3: Savanna-Zebra colour based design in the Traditional Arts of Rwandans

- The outputs from Imigongo and savanna-zebra colour based designing are more attractive to the extend you may thing they are an original work of engineers or products processed in factory with special machines and with the advanced technologies. Practically, properties and relations of points, lines, surfaces, solids, and higher dimensional analogues are very old ideas for Rwandans.
- Except the quality of inspiration provided by zebra, other designs are commonly dependent. The skill and experience of individual when appreciating the physical appearance of animal are very important to serve as the basis for higher quality of the product.



Inspiration	Example of the products	Main colours (Black : Pale brown) (Black : Light brown) (Dark brown : Pale brown) (Light brown : Pale brown) (Dark brown : Light brown)
 <ul style="list-style-type: none"> ☑ Black stripes on haunches; ☑ Chestnut brown coat; ☑ White tail with black stripe; ☑ Pale brown sides; ☑ White belly. 		<p>0:1 $\frac{1}{8}$:1 $\frac{1}{4}$:1 $\frac{1}{2}$:1 1:1</p>

Table 4: Impala colour based design in the Traditional Arts of Rwandans

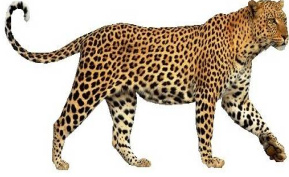

Inspiration	Example of the Products	Main colours (Dark brown : White) (Black : Brownish yellow) (Black : Dark brown : White) (Black : Brownish yellow : White)
 <ul style="list-style-type: none"> ☑ Brownish-yellow fur with black dotnut shaped spots; ☑ Lighter fur on belly with black spots; ☑ Yellow eyes with round pupils. 		$\frac{3}{4} : 1$ $1 : 1$ $\frac{3}{4} : \frac{1}{2} : \frac{1}{2}$ $1 : \frac{3}{4} : \frac{3}{4}$

Table 5: Leopard colour based design in the Traditional Arts of Rwandans



Inspiration	Example of the Products Designed in the Third Order of Design	Main colours (Ratio among colours is dependent)
 <ul style="list-style-type: none"> ☑ Originally native to Africa; ☑ Longhorn and a variety of colour spots in their fur; ☑ Living in the savannas and open grasslands. 		Ikijuju (grey) Ikigina (brown) Umweru (white) Umukara (Black) Igitare (dirty white) Ikijuju (light brown) Ibihogo (dark brown) Urwirungu (colour of ash) Ikibamba (mixture of black and white) Isine (mixture of black with brown patches) Ubugondo (mixture of white, grey and brown) Umusengo (mixture of brown with white spots)

Table 6: African cattle colour based design in the Traditional Arts of Rwandans

- Currently, we are facing a rapid extinction of species. As a result, the access on natural scenery requires some remittance along with quota for the wildlife catch. Moreover, the business of converting African cattle species into more productive cattle either by insemination or by introducing new species from abroad is another showcased hindrance. Therefore, the products previously produced from wildlife and cattle leathers are currently produced synthetically, and where the quality is low, the task is accomplished traditionally. This ambitious situation, further, let some foreign products to be officially marketed as original products of Rwandans.
- Rwandan art and crafting design does not consider the beauty of famous known savanna animals like lion, elephant, buffalo, rhinoceros, hippopotamus, crocodile, monkey or famous known mountain gorillas living in the Volcanoes National Park Rwanda, for the reason that their fur' s colour pattern is less clear, shared and more improved in African cattle.
- Giraffe colour based design is rarely applicable in fashion design but commonly useful in pottery, statue and burnt brick arch and wall decoration.
- Except black, brown, grey, red, yellow and white paints on their scale of darkness and brightness, other paints were brought in Rwanda by colonialists or born as gift from modern technology.

- In ancient times, black and grey paints were made from the sap of an aloe plant, mixed with ash of banana peel and the fruits of local plant. The white paint was prepared from kaolin; red paint and light orange were prepared from red soil and clay respectively.

5. Conclusion

Briefly, Traditional Arts of Rwandans are well known throughout the world. In contrast, there are neither official strategic plans nor specific documentation to inspire the youth through the real image of their ancestors' discovery. Thus, this paper will serve as the initial step towards an instructible and transferrable form of art to inspire people from various backgrounds and in various categories of age.

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