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CHROMOBIOTICS: The Silent Neglect of a Salient Need

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Abstract
Colour has been one of the multi-faceted means of human development interwoven in the social structure and institutions which practically, psychologically and physiologically reveal the beauty and benefits of nature. This paper focuses on the subject of colour with particular emphasis on its often nuanced involvement in human well-being as regards health, and the vital edification of social life. It looks at the roles colour play in the life of humanity, dwelling on its functionalities. The study combines historical and discourse analysis methods based upon the qualitative research approach. How does colour draw on human inbuilt capacities to rejuvenate and restore the entire system to enliven and delight the senses? This inquiry is to incline human-kind to identify more with colour and be responsible and respectful in its application, to appreciate the intrinsic importance of the power of colour to life and to understand its contingent potential for maximum employment. The study provides exciting opportunity and inspiration to advance the reader's knowledge and experience of colour in an overarching manner.
Keywords: hue, chromatics, physio-psychological, colour sensibilities, holistic, chromo-therapy.

1. Introduction

People tend to ignore things they do not understand and lose interest when they cannot control functions and impact upon their lives. Colour attracts and for most people, their interaction with colour does not go beyond the level of attraction. And for those who are attracted by it, some limit themselves to specific ones identified as personal colour preferences. The question could be asked: what if the attraction we feel towards a specific colour is nature's signification of deeper benefits for those keen enough to appreciate and share in its radiant gift in order to maximise and improve upon their physiological lives?

The following report is relevant to our current subject, as it looks into some results from an interaction with colour on a personal level.

> *Mr. Twyeffort suffered from dyspepsia when he was young, yet his doctors found no explanation. He also feared cars, trains and paved streets. One day he donned a scarlet hunting coat, and felt so exhilarated that he began wearing coloured ties vests and pyjamas. His fears not only vanished, his stomach troubles also disappeared and he suddenly realized that the colour had been responsible for the changes" and another "Reports state that a four year old child dying from an asthma attack was given an injection. The injection had no effect. Then a doctor instructed the child's mother to tie a red ribbon around the child's wrist. Four hours later, the child sat up, and by evening, was back to normal. (Clark, 1978:61).*

Reports like this may easily be dismissed as unsubstantiated stories to be ignored. However, an ancient survey and historical look as well as recent research reveal deeper properties – the Physio–psychological nature of colour embedded in its frequency, yet to gain the needed attention. Could there be any relationship between this and the coloured incubator used to save the lives of prematurely born babies, or the proverbial coat of many colours of the Biblical Joseph? These and many other patterns in recent colour studies make it something more than simple visual element for subjective impressions, but beyond that, it is a force or energy that could cause changes in the human system. "The effect of colour is not merely psychological. It is necessary to think of it as wavelength of radiant energy" (Ott. 1973).

Arguably, colour being the most compelling and powerful design tool in all graphic expressions may be the quickest and most inexpensive way to transform one's life and make it a happier, calmer, and more attractive in human existence. Even though most people love colour and are willing to explore it, many still live "colourless" lives, and do not know how to explore it in ways to enhance and even transform their lives. Peoples' openness to colour vary; while some readily identify with a variety of them, others are reluctant to 'meddle' with it, maintaining an inhibitive attitude towards its expressive use. Such surmise that the phenomenon is best left for the psychedelic artist to grapple with.

1.1 Colour Defined

Colour is the visual quality of an object or substance with respect to light reflecting from its surface registering on the retina of the eyes. Colour, consequently cannot be perceived except in an environment flooded with light. Light therefore becomes the crucial means by which colour is perceived. 'White light', like that of the sun possesses all the hues of the colour spectrum, this means that all the different wavelengths from red to violet are present in the rays of the sun as it beams its radiance. This gives basis for water irradiation therapy (Clark, 1978). Light makes colour perception possible. The brilliance of tropical colours are then explicable on account of its brilliant light. Perception is determined by the quality of light present (Goethe, 1749-1832). Beyond the quality of light the author insists on a balance of light and darkness for effective colour perception. This concept by extension explains the difference in the qualities of light and colour in temperate and tropical climates. Temperate regions experience lower intensities of the rays of the sun, while tropical regions have the sun in full intensity. Living in the tropics then forms the basis for a potentially healthy life full of vitality and radiance. An Old Italian proverb says “Where the sun does not enter, the doctor does”.

Though the process of perception may sound complex in its description, nature facilitates it so well, we hardly stop to think through. For our minds to register the red ball sitting on the green grass under the bright sun, all the colour wavelengths from the sun will be absorbed except the red reflecting from the ball and the green from the grass that surround the ball. Colour reflecting from the surface of an object or substance is visually measured in terms of hue, saturation and brightness.

We do not find colour tickling our emotions just because we ate too much onion the previous night, which is to refer to colour effect as some random haphazard process that cannot have any predictable effect on a person. Rather, it is electromagnetic energy and as such could be expected to have specific effects on its environment, and this has actually been tested with many uniform results as exhaustively demonstrated in the Luscher Colour Test designed by Max Luscher (M.D.) of Basel, Switzerland. This method is sometimes condemned as not up to scratch with modern diagnostics, the accuracy it rings with participants in measuring their psycho-physical state is yet remarkable. The relationship between most ancient traditions and colour employed through body painting was common phenomenon and may initially have been centred on colour therapy. Pigment colour or paint that was used by cave artists were not obtained in their varying spectrum of colours as available today. The three colours of red, white and black seem common among most cultures around the world. The limitation of the palette of early artists did not mean they were limited in their perception of colour. Seeing, they had witnessed the rainbow with its seven colours countless times before dreaming of expressing themselves graphically with vegetable colours on their caves. But the available range provided enough code for their metaphysical representations.

The exploration of colour, sometimes misunderstood and inaccurately reported, has enormous potential to benefit mankind: how does colour affect us? For example, which colours can calm someone, which kind can irritate, affect ones mood, raise or lower blood pressure, remind one of an old friend and even help to develop ones imagination and creativity? Finding answers to these could positively transform how one uses colour. "Colour is a ubiquitous, primary, and nonverbal aspect of human environments, and investigating its psychological significance broadens the understanding of human behaviour on the most basic level” (Ireland et al. 1992:1). Admittedly, in spite of colour’s deep reverberation between our natural self and environment, we hardly recognise the mutual frequency involved.

2. Literature Review

The Assyrians, Babylonians, and Egyptians all used forms of colour and light therapies in healing (Demarco and Clarke, 2001). The Persians are believed to have practiced a form of colour therapy based on the emanations of light (Birren, 1961). Pythagoras, a Greek philosopher around 500 BC, is believed to have used music, poetry, and colour to cure disease (Birren, 1961). Celsus, who practiced medicine at the beginning of the Christian era, prescribed medicine with colour in mind. He once wrote, “there is one plaster almost of a red colour, which seems to bring wounds very rapidly to cicatrize” (Birren, 1961:21). The early beliefs behind the healing power of colour were fairly simple. “Colours were associated with disease because disease produced colour” (Birren, 1961:35). The Egyptians were the first civilization to research colour healing. They created “colour halls” within their great temples, such as Karnack and Thebes, in which they explored the impact of colour on an individual’s ability to heal (Anderson, 1975).

With the advancement of modern medicine, the interest in the healing power of colour was left to the artists and poets. Johann Wolfgang von Goethe (1749-1832) was a famous German poet, who developed his own theory on colour, which explained that, the individual colours induce particular moods. In order to experience fully these important individual effects the eye should be entirely surrounded by one colour; we should be in a room of one colour, or look through a coloured glass. We are then identified with the colour; it induces both eye and mind in unison with it. (Boos-Hamburger, 1963:5).

Goethe had very specific beliefs as to what emotions particular colours would induce. He believed that

orange gave people a warm feeling that is reminiscent of the setting of the sun, he believed that green was very satisfying to the eye. "If both mother colours (yellow and blue) are absolutely balanced in the mixture so that neither is more noticeable than the other, the eye and the mind rest on the mixture as though on something simple, therefore, green wallpaper is so often chosen for a room which is in constant use" (Boss-Hamburger, 1963:7). Further, Goethe believed that a very pale form of purple has a certain amount of life in it, but no joyousness. Through the efforts of S. Pancoast (1823-1889) in 1877, colour therapy was reunited with medicine in North America. He wrote, "…to accelerate the Nervous System, in all cases of relaxation, the red ray must be used, and to relax the Nervous System, in all cases of excessively accelerated tension, the blue ray must be used" (Birren, 1961:53). Around this same time, Edwin D. Babbitt began to wonder how to incorporate color therapy with modern medicine. According to him;

> *Substances combine in a harmonizing union with those substances whose colors form a chemical affinity with their own and thus keep up that law of equilibrium which is the safety of all things. This law having been so abundantly explained, it is obvious beyond guesswork, that if the red arterial blood vessel should become overactive and inflammatory, blue light or some other blue substance must be the balancing and harmonizing principle. While again if the yellow and to some extent the red and orange principle nerves should become unduly excited, the violet and also the blue and indigo would be the soothing principles to have applied. This applies to the nerves of the cranium, stomach, bowels, and kidneys, as well as elsewhere, in which the heating and expansive action of these thermal principles may beget the condition of delirium, emesis, diarrhoea, diuresis, etc., that can be assuaged only by the cooling and contracting influence of substances possessing the electrical colours. Can this law, which thus stands out clearly and simply like a mathematical demonstration be shown to have a basis in actual practice harmony with the experiences of the medical world for ages back? (Babbit, 1925).*

Although there seem to be limited investigations, especially by mainstream medicine, as follow up to these scientific findings and historical beliefs about the association between colour and health, these beliefs not excluding that of the ancients, show the long standing fascination with this association. According to Vernolia (1988:63), "Red stimulates and invigorates the physical body. It increases circulation, muscular activity, blood pressure, respiration, nervous tension, heart rate, and hormonal and sexual activity. It stimulates the nervous system, liver, adrenals, and senses in general." Yellow raises blood pressure, pulse and respiration. It can relieve depression, tension, and fear, and soothe mental and nervous exhaustion. Orange is an appetite stimulant, and is seen as a universal healer that can counteract depression and humourlessness. The author asserts that green effects the whole nervous system and is especially beneficial to the central nervous system. It has a sedative effect, relieving irritation and exhaustion. It soothes emotional disorders and nervous headaches. "Green harmonizes us. If we wish to refresh ourselves, we go to the countryside, where the green of nature restores us after the city has taken its toll of our nerves" (Anderson, 1975:8). Purple induces relaxation and sleep, lowers body temperature, and decreases sensitivity to pain. It also increases the activity of the veins (Vernolia, 1988).

2.1 Laboratory Studies on Human Responses to Colour

Laboratory research studies have shown that colour can have a direct effect on a person physically, as well as, mentally. Kurt Goldstein is a recognized authority on psycho neurology. He wrote, "It is probably not a false statement if we say that specific color stimulation is accompanied by a specific response pattern in the entire organism" (Birren, 1961:144). His studies have documented the effects of specific colours on individuals having certain diseases. In one such case, a woman with a cerebellar disease had a tendency to fall unexpectedly and to walk with an unsteady gait. When she wore a red dress, her symptoms were more pronounced. Green and blue clothing restored her equilibrium to almost normal (Birren, 1961). Another study showed that when patients suffering from tremors and twitching wore green glasses, their symptoms were relieved. The Environmental Docility Hypothesis, developed by M. Powell Lawton, states that, "the less competent the individual, the greater the impact of environmental factors on the individual" (Malkin, 1992:47). A patient's emotions can be related to their environment, which can affect wellness. Cohen et al (1986) found that environmental stress, or a situation in which the demands on an individual tax or exceed his adaptive capabilities, could affect a person's physiological and psychological well-being. Research on the psychological effects of colour has been difficult because human emotions are not stable and an individual's psychic make-up varies from person to person (Birren, 1961). In 1976 however, a special workshop, "Colour in the Health Care Environment," was held at the National Bureau of Standards in Gaithersburg, Maryland. This workshop brought together the architects, engineers, financial institutions, builders and users of the healthcare facilities. Marcella Graham (Pierman, 1976), an environmental design consultant, was a speaker at the workshop. Graham believes that the human response to colour falls within six categories, which are shown below in Table 1.

Table 1. Human Responses to Colour (Pierman, 1976)

Physiological:	Changes in blood pressure, pulse rate, automatic nervous system, hormonal activity, rate of tissue oxidation and growth.
Within the Eye:	Change in size of pupil, shape of lens, position of eyeball, chemical response of retinal nerve endings.
Cognitive:	Memory and recall illusion and perceptive confusion, Values judgement, associative response.
Mood:	Stimulating, irritating, cheerful, relaxing, boring, exciting, melancholy, gay.
Impressionistic:	Space seem larger, smaller, warmer, cooler, clean or dirty, bright or drab, people appear healthy or unhealthy, food is appetizing or not, older, younger, old, new.
Associative:	With nature, with technology, religious and cultural traditions, with art and science, typical or atypical.

The explanation by association will not suffice us in many, and the most important cases. Those into chromo-therapy will know that coloured light can exercise very definite influences on the whole body. Attempts have been made with different colours in the treatment of various nervous ailments. They have shown that red light stimulates and excites the heart, while blue light can cause temporary paralysis. But when the experiments come to be tried on animals and even plants, the association theory falls to the ground. So one is bound to admit that the question is at present unexplored, but that colour can exercise enormous influence over the body as a physical organism. No more sufficient, in the psychic sphere, is the theory of association.

After a long search into the concept of colour, the artist that was well known for his colour concerns concluded; “Generally speaking, colour is a power which directly influences the soul. Colour is the keyboard, the eyes are the hammers, and the soul is the piano with many strings. The artist is the hand which plays, touching one key or another, to cause vibrations in the soul” (Kandisky, n.d).

3. Methodology

The study combines historical and discourse analysis methods based on the qualitative research approach. We use these to access and analyse written documents on the subject of colour and wellbeing not overlooking the concepts of power and ideology that often accompany the concepts of discourse (Jørgensen & Phillips, 2002). Language, either spoken or written should never be ‘treated as a neutral, transparent, means of communication’ (Berger, 1991). Discourse analysis has demonstrably been proven as an effective means to interrogate and tweak claims of institutionalised and expert knowledge constructed, contested or consented and how they are digested in the public sphere and consequently, its implications to social change. The historical purview leads to making written records available to the study, thus enabling critical analysis as we draw upon the various findings of earlier and current studies that should lead towards insightful revelations in the field. Human beings are fundamentally historical and cultural beings and therefore their views of, and knowledge about the world are the “products of historically situated interchanges among people” (Gergen, 1985: 267). Thus making humans appreciation and communication of their worldviews limitedly specific. It is upon this account that historical analysis of knowledge and institutions become crucial for the purpose of yielding a continually, and maintaining an organic and evolving form of knowledge, subject to critique towards the utmost benefit of society. The position of the analyst is not that of judge of societal institutions and knowledge but rather focuses his or her instruments upon the discourse itself to see its current flow and effect on society and what could have been by deployment of alternative models. We reflexively analyse taken-for-granted common-sense understandings trying to decipher the reasons behind their inherent acceptability and truthfulness or otherwise, thus positioning discourse analysis as an important means for the generation of knowledge.

4. Findings and Discussions

4.1 Colour Effect on Humans

Colour has been used in all cultures for all manner of purposes. Like language, it was one of the earliest means of communication to be employed by Palaeolithic people and has dynamically been an integral part of the culture on all levels. It has found itself in use as makeup on bodies, and as a means of identification and power expression by rulers, both religious and socio-political. Colour has even found it's used in the identification of deities of certain religions. Gold is the flesh of gods in many indigenous religions.

Humans can naturally perceive over a thousand different colours (Western, 1996). Miller (2001) however, places it at ten million different colours. Such function in perception cannot be accidental or meaningless, but as found in other body functions, its effective use should inure to the benefit of the whole body. The good that accrue to the human muscle from use, would serve a good illustration. Muscles in the human body that are often used maintain suppleness and grow stronger. In the same vein when they are not used they lose vitality and wither. When an individual learns to consistently engage his/her entire system, the life become more enriched and empowered through use, and when less and less of the human organ is employed, death is opted for, by stealth and hastened. The best guide therefore to lose anything is to keep it disengaged from use. Humans are

created with capacity to interact with, absorb and enjoy colour, maximizing this biological propensity, puts related organs to their respective effective order and use, which would only goes to eventually enrich the entire life of the individual. Just as food is to be eaten, water drunk, and air to be breathed and enjoyed, so do we have to see, wear, breath, bathe and think colour.

Nature has so much to teach humanity. Imagine a colourless world. Or a world where everything appear in the same colour, say brown all over the world. Such a world would be a dead one (Itten. 2001), because the liveliness we experience as excitement, composure or downheartedness, through colour impression on us, and our reflexive expression of it would be absent. Studies show that attitudes change under different colour conditions. A subject spending some time in a red lit room is likely to get her/his cells more activated; blood circulation increased, and become excited. Unlike an opposite effect of calmness and even depression that may result from the same subject sitting in a blue lit room.

Nature, in its stimulating role towards human development presents us with many different colours, to enable us explore various levels of colour experiences at every point in time. Life lived on different dimensions each moment, is the kind of life that has interest in varying fields of endeavour. Lives that embrace such wider purviews of existence and experiences therefore become inspired, invigorated and hence extended. An old Chinese axiom says "we live best when life is lived on many different levels". If humans have the natural ability to differentiate between 10,000,000 colours, could this fact just be explained away as an occurrence of chance, or a furnishing of purpose which if well managed could lead to a better life and optimised living? Nature often demonstrates its own purposeful intelligence which is admittedly, often messed up through human ignorance or pride when tempered with, to their eventual ruin. The fact that nature provides colour in abundance and programs humans to perceive it in all its subtleties prove that the concept of colour has a meaningful (enhancing) role to play in the lives of people.

4.2 Eating Colour

Humanity has demonstrably expressed the value of organic sun-nourished food as against synthetic food over the years. It is common knowledge that ethnicities that have remained in close contact with the earth subsisting on original natural farm produce have retained their vitality and longevity. This partially explains the recent drive for permaculture (Toby, 2009) On the other hand; ethnicities that have turned away from these original earth and sun-nourished foods have suffered in their health, even to the point of experiencing diseases without precedence to the history of their ancestors. Colourful food full of nourishing is what does the body good. When food is naturally cultivated on the field, the rich colours found in those fruits and vegetables, are the nutrition held to nourish the body. “Whether natural sunlight or colour is admitted into the body through the skin, the eyes, or by food and beverage, it does apparently promote health and well-being” (Ott, 1973). Last year, a farmer well known to the authors visited his farm and found a wild fruit of bright orange, well textured (for grips), about the size of lime. The seeds within resemble that of cacao but smaller. Though the kind of fruit was unknown to him, being hungry he consumed a good number of them within minutes without hesitation, asked by his friend why he could be so careless. He explained based upon his knowledge in nature how he knew that nature had coloured the fruit with a sharp orange to attract the eyes of the prospective hungry forest wanderers; be they birds, animals or humans, thus setting it apart from the range of poisonous fruits.

In nature, there are hardly mistakes. What may be identified as nature’s mistake may at best be human ignorance. And the building and advancement of city life further estrange humans from nature. Everything in nature happens for some purpose. Edibles come in ways to attract the senses. If science has not been able yet, to come up with specific answers, it should not mean that nature's programme is futile. Why does nature bring fruits and vegetables to us in vivid colour? Could it not be that nature has something to tell with these colour significations? Apart from announcing the category of nutrients available by its look, one is supposed to thankfully delight in the colour of the fruit or vegetable consciously absorbing their colour frequencies with the eyes before consuming. Feeding is a form of ingestion of imprisoned sunlight or energy (Clark. 1978: 76), colour is supposed to also delight the eyes (feeding on its electrical vibration through the senses), as the nutrients are fed through the mouth. Therefore the body does not only need to feed alimentally but also, ‘ocularly’ and dermally as well.

Clark's work on colour therapy brought to light great scientifically proven results by men like Babbitt (1878), Brunler (1948), Brenton, Ott (1973) and Baldwin (1927) all of them being Medical Doctors. She explains that vitamin D is not the only vitamin found in solarized food, but that other vitamins have been detected and have been correlated with certain colours. According to her, vitamin A is yellow. Vitamin B-12 is red (other B vitamins are included in red and orange colours). Vitamin C is lemon coloured. Vitamin D is violet. Vitamin E is scarlet. Vitamin K is indigo. Therefore most yellow foods are rich in vitamin A. Yellow and green foods are usually rich in vitamin C, etc.

Ouseley (1963), in his book "The Power of the Rays" tells of the benefits in absorbing colour through the use of fruits and vegetables that have been Sun-charged. The benefit of the advice is dilated by Stevens (1923)

that; every food has its vibratory value and therefore on entering the body modifies the body's own rate of vibration. A disharmonic rate results in a discord. It is always good therefore to maintain colours of foods through their preparation before consumption, rather than denature them through overcooking.

We are yet to see a study that registers a correlation between people mostly open to colours and their attitude to life as against those not open to variety of colours and their attitude towards life. It is expected that women, due to their positive disposition to life are more open to colour exploration than men. Could the argument be extended that, the latter are also more open to life in general, including dancing, acting and playing, than the former? Does this hint on why men alone fall within the biological deficiency bracket of colour blindness. Could it also account for the fortitude and resilient life of women over men...? How about life expectancy rate of the two sexes? (LeDuc, n.d), which of the two easily compare with children? And finally which of the two play and enjoy life the more?

Colour affects moods and attitudes. It is able to suggest to the psyche as well as communicate with the emotions. Because colour has the power to do all these, colour consultants and designers specialize in organizing colour with other elements of design in order to create the most agreeable objects, spaces or substances (packages) for people. They create with the view of getting a result whose colour effect could best meet people's expected impressions.

4.3 Jacob's Colour Methods

The Biblical Jacob may be cited as among the earliest people to actively employ colour for positive effects. When he wanted cattle of a single colour scheme to breed variegated offspring, he employed the "gaze to become" approach for concrete results. He carved the speckled effect he wanted on sticks and kept them in the sight of the animals most of the time – when they were drinking or mating, and when they delivered he had the speckled ones he wanted. Again when he could have made any kind of tunic for his lovely son Joseph, "he made a tunic of many colours". One could tell the Patriarch was purposeful and knew exactly what he wanted to achieve in these two applications. The story is told of the Lad in the Quran that his handsomeness could make women so enthralled that those peeling apples ended up cutting themselves;

> *Zuleika's circle of friends thought that she was becoming infatuated with Joseph and mocked her for being in love with a slave. She invited them to her home and gave them all apples, and knives to peel them with. She then had Joseph walk through and distract the women who cut themselves with the knives. Zuleika then pointed out that she had to see Joseph every day*. (Quran Sura 12.17)

Apparently she confided in her friends how thoughts of the young Hebrew slave was giving her sleepless nights. He is described as having a stature so handsome like that of an Angel. It is debatable to associate the brilliant nature of the young man with clolour effects on persons though, the fact remained that a lad who has had much interaction with colour since childhood grew up charmingly in physique and well behaved even as slave in a foreign land.

The following are summarised findings, logically presented by Wilson (2015) to reveal why colour proves to be a vital factor in human health and wellbeing.

4.4 Basics to Colour Needs and Use in the Human Body

a. *All objects have characteristic frequencies of vibrations.*
b. *All organs have characteristic frequencies of vibrations in health.*
c. *Disease is altered function which is the natural response of the body to strain. Altered function is nothing more than a change in frequency, the stepping-up or the lowering of a vibration caused by a strainer, whether chemical, mechanical, or thermal. Germs are one of many hundreds of strainers. Therefore all diseases have characteristic frequencies of vibration.*
d. *The application of the right frequency, whether food, drugs etc., will change altered function because the body has a tendency to return to its original pattern if given an opportunity.*
e. *Cells have selectivity taking the rays and vibrations as well as rejecting the rays/vibrations they do not need. If the cells lack color, which is another name for food, they begin to depolarize and change their frequency and therefore their pattern of growth.*
f. *The wrong color or the wrong type of food tends to change the frequency of the electro-magnetic field force of the cell, and this force interacts with the larger field force of the organ which, in turn, affects the system which then reacts upon the total field force of the body (typical chain reaction). This change leads to fatigue, and the degree of fatigue is the cause of exhaustion and death.*
g. *Color, being pure vibration, is the rational type of therapy for health and disease because it is in the right form, in the right place, at the right time.*

We now proceed to show interaction with colour through dressing, in hospitals, schools, sports, and in industries.

4.5 Colour in Dressing

Knowledge in colour concepts has helped individuals to lighten their life burden in one way or another in the management of stress and emotional problems. Buying based upon the colours we love is an important skill to have, but choosing the colour to wear on a certain day to compensate for the way you actually feel is also crucial. Such competence could spell the difference between success and failure of an interview. Mr. Twyeffort mentioned earlier in the introduction of this paper believed that if colour is used freely, it may even cure dyspepsia as well as feelings of inferiority and discouragement. One of the authors has a friend whose daughter was too bashful for the father's liking. The father, during consultation was advised to get her more brightly coloured dresses. The daughter came through as a sweet interactive personality in less than a year to the pleasure of the father. Another elderly friend John Galibor (not real name) related to the authors, how many years ago when preparing for a decisive examination, he saw a man in a dream who described to him the specific colour of shirts to wear each day of the week while sitting for the examination. Well he excelled in all his papers, as he consistently felt the surge that bolstered his confident level during the period.

4.6 The use of colour in the hospitals

One of the earliest practitioners of colour therapy was Doctor Edwin Babbit in 1878, whose system was developed scientifically into Spectro-Chrome therapy for virtually any malady by Dinshah Ghadiali (Adams, 2009).

Clark tells of how colour was used to enhance recovery of patients. In this case bright yellows and oranges were used in the University of California, San Francisco Medical Centre hospital rooms. These warm bright colours particularly in the intensive care unit are found to make patients feel stimulated, cheerful and want to get well faster.

Babies born with jaundice are usually kept in a blue lit incubator to cure them. There are several reports that might otherwise sound quite sceptical to the uninformed. The following is the opening paragraph of a publication presented by Kate W. Baldwin, a Medical Doctor from the state of Pennsylvania, in the Atlantic Medical Journal of April 1927; "For centuries, scientists have devoted untiring efforts to discover means for the relief or cure of human ills and restoration of the normal functions. Yet in neglected light and colour there is potency far beyond drugs and serums". Whether the assertion is scientifically valid or not, may not have been unquestionably proven, yet one would have encountered a phenomenal experience during her experimental sessions to write the way she did. Could it be that Baldwin's findings possessed no scientific validity or viability and therefore left to the wind? It is also possible that the prospect was so positive that developing it might disrupt the interests of established medicine. Change is painful for obvious reasons and therefore not easily embraced and adopted.

4.7 The use of colour in Schools

Colour can affect the psyche, emotions and hence the rate at which we learn. Richard J. Michael was an instructor in the San Francisco College in the department of Design and Industry. After experimenting with different colour combinations in his presentations, he found that when green slides were used, test scores rose as much as 40 per cent above exposure to ordinary black and white slides. Two-colour slides of red and green produced test scores of more than twice as high as black-and-white. Three-color visual-aids - red and green on a blue background - increased the test scores by 30 (Clark, 1978). Most schools in Ghana do not use black boards anymore. They either use white board and green markers or green boards and white chalk. The latter is recommended over the former, because rich green though a cool colour, tend to invigorate the senses when written over with white.

4.8 The use of colour in sports

Since certain colours have been identified as more stimulating than others, it stands to reason that team managers could use this knowledge to their advantage. Reds oranges and yellows could be employed for players outfit as well as their dressing rooms. "The athletic director at the University of New Mexico decorated his own football team dressing room with red and that of the visiting opponent team in blue". Obviously, the intention here was to depress the opponent, while impelling his team to action. (Clark, 1978). So did the Aztecs cover their prisoners in blue before sacrificing them to their god (Schuman, 2001). Why did they use blue, beside all other colours available to their culture? Among all the good objective uses of blue it does well in projecting depression, gloom and doom. The colour that announces death to a dying body, should be the most appropriate colour for a victim going to be sacrificed.

4.9 Colour in industries

Companies and corporations adopt colour ‘corporate identities’ which combine specific colours to represent their institutions. The assumption of the concept is that these companies believe in the objective meaning of colour

and its impact on people. For example 'Coca-Cola' is very much aware of the kind of red it employs and the impact on the people. They employ a kind of red that is undiluted, full and strong to give the feeling of an attraction towards that strong and pure wish of a deeper thirst to be fulfilled. Industries that often employ the element constantly depend upon the objective communication of colour with the people. Examples of such are advertising companies, colour consultants and designers of websites and public spaces. Colour is consciously used in industries, internally, in order to positively affect the general working environment and condition, being a function of output. Colour would therefore be employed to enhance output of workers; in uniforms, working environment, eating spaces, drinking and resting areas. In its external focus however, colour would be used or deployed by institutions to secure expected impression of prospective clients. This is exemplified in the numerous corporate identities across the cities. There is little or no argument against the fact that these colours are well thought out.

5. Conclusion

In this study we attempt to call attention to the mystery chord that has sounded along the concept of colour over the centuries. We do this by analysing important historical and recent works as we try to relate the connected benefit of colour to human development and well-being. And yet the study can safely be described as a cursory look at colour and its benefit to life, pitched against the enormity of data and traction of the subject especially in recent times. Though may not be realized, humans continually need to experience colour on different perceivable levels for their holistic nurturing-development. This assertion is based upon nature's complex provision in terms of colour and its correspondent human capacity endowment that enables him/her to access it.

In spite of all the research done in colour, we could securely state that the surface of the matter has barely been scratched. Could it not be a possibility that beyond all the scientific and technological achievement, humans are yet to appreciate how to optimise colour in their lives? Studies in colour seem promising with pleasant surprises awaiting. One of two different directions should result as the way forward; to either waive off all these early findings as one funny joke, or undertake a deeper unfettered research as a way of practically interrogating these findings either to their disapproval and futility or nurture and deepen their usefulness to the fair benefit of humanity. Sufficient yet it is, to state that men and women would better their lot by taking time to experience and maximize interactions with all possible forms and means of colour, to enliven their senses as well as satisfy the silent and inherent but often neglected need.

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Notes

Dinshah Ghadiali was among the earliest practitioners of colour therapy around 1911 in New York. He joined the American Association of Progressive Medicine in 1918, building on the earlier works of Babbit and Pancoast (both medical practitioners) to come out with a complete protocol of light colour ranges that addressed specific human ailments.

Johann Wolfgang von Goethe (1749-1832) was a German poet, novelist and dramatist who lived in Veimar. He studied colour for about four decades in order to come out with a more convincing theory. Maria Schindler's New Knowledge Books, Sussex, England was among the first to disseminate *Goethe's Theory of Colour*.

Linda Clark was a well-known writer on healthful living in the United States of America. Her writings have inspired many people to plan and live healthily. The author of several books including: Gluten-Free Life and The Ancient Art of Color Therapy.

Max Luscher (M.D.) LÜSCHER COLOR DIAGNOSTICS. www.colortest.ue-foundation.org Prof. Dr. Max Luscher of Switzerland originated the Luscher color diagnostics. His interest in colour, psychology and philosophy was kindled at an early age, almost making his colour diagnostic method result of a lifetime study. He insists that colour conveys a definite signification to the senses of all humans, though people have different preferences to colour.

Wassily Kandinsky (1866-1944). At thirty, he abandoned his successful profession of law and moved to Munich to study art. He returned to Moscow after world war I. finding the official theories of art unfavourable in communist Moscow, he returned to Germany to teach at the Bauhaus School of art and Architecture from 1922 until it was closed in 1933 by the Nazis. He lived and died finally in France. Kandinsky made a lot of contributions, practically and theoretically to art including an extensive study on colour.