CONSUMING COLOUR:

A CRITICAL THEORY OF COLOUR CONCERNING THE LEGALITY AND
IMPLICATIONS OF COLOUR IN PUBLIC SPACE

BY

MICHELLE CORVETTE

DEPARTMENT OF ART

GOLDSMITHS

UNIVERSITY OF LONDON

DECEMBER 2015 / MAY 2016

DECLARATION OF AUTHORSHIP

I, Michelle Corvette, declare that this thesis has been generated by me as the result of my own original research. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

DEDICATION

To my angel

ACKNOWLEDGEMENTS

"We are like islands in the sea, separate on the surface but connected in the deep."

~ William James

ABSTRACT

This thesis investigates the legality of colours and the implications of colours within public spaces. By legality of colours, this thesis references the quality or state of being in accordance and observance of laws that address colour. Colour is a phenomenon of visual light perception described in terms of hue, lightness, and saturation in tandem with the understanding that colour is a vibrating wavelength interpreted through the brain within a complex neurobiological construction. What are the impacts, force, and agency of colours in public spaces? How do colours re(produce) socio-cultural power relationships in neoliberal societies? How do colours contribute to fixing and replicating social, national, and economic differences? In what ways do colours either implicitly or explicitly work as mechanisms of inclusion and exclusion?

It is argued that colour is a mechanism for the commodification of public spaces within neoliberal societies. By commodification, this thesis refers to the theory used to describe the process by which something that does not have an economic value is assigned a value and thus illustrating how market values can replace other social values. Colour has been controlled, manipulated, and regulated within public spaces by authoritative powers to psychologically influence human populations. Within this argument, a concern for the effects of colour in public spaces has predominately been overshadowed by a concern for capitalization. An understanding of the historical trajectory of the control of colour immersed with the perspicacity of how colour becomes a device of capitalism is essential. Case studies analyzed draw attention to utilizations of colour by dominant forms of authority such as the colour elite nexus and government institutions. Colour is revealed to be a process and is therefore multitudinal and complex. The unraveling of these threads will provide a sharpened sense of colour and the implications of colour within public spaces.

TABLE OF CONTENTS

LIST OF FIGURES

"It may be that we are puppets-

puppets controlled by the strings of society.

But at least we are puppets with perception, with awareness.

And perhaps our awareness is the first step to our liberation."

~ Stanley Milgram (1933-1984)

INTRODUCTION

> "Nothing is so difficult as not deceiving oneself."
>
> ~ Ludwig Wittgenstein (1977/1980)

The Social Production of Colour

This thesis examines the legality of colours and the implications of colours within public spaces. By legality of colours, this thesis references the quality or state of being in accordance and observance of laws that address colour. Colour is a phenomenon of visual light perception described in terms of hue, lightness, and saturation in tandem with the understanding that colour is a vibrating wavelength interpreted through the brain within a complex neurobiological construction. It is not to indicate that objects and things do not possess 'colour', but rather that they possess specific wavelengths, luminance, and saturations which our eyes then perceive and reinterpret through our neurological networking to indicate a 'hue' (Palmer, 1999). By public spaces, this thesis means a social space that is generally open and accessible to people such as roads, pavements, public squares, parks, beaches, etc. (Carr et al, 1993). The history of colour is brought into consideration with the laws and codes created during specific periods that pass influence onto visual perceptions of colour, even in current society. Questions that arise are: What are the impacts, force, and agency of colours? How do colours re(produce) socio-cultural power relations? How do they contribute to fixing and replicating social, national, and economic differences? In what ways do colours either implicitly or explicitly work as mechanisms of inclusion and exclusion?

As a whole this thesis argues that the research on colour be reconceptualized to address the lack of acknowledgment towards dominant paradigms of control and legislation concerning colour in public space. By reconceptualized, this thesis refers to forming a concept or idea again; to rethink; to come up with a new observations about a concept or idea. Not in terms of replacing an existing idea, but in terms of adding to it. The research presented demonstrates and raises awareness of how colours in the everyday ultimately convey influence into societal value systems. By utilizing critical social theory as the methodology, this thesis is

able to focus on a form of reflective knowledge involving both comprehension and theoretical explanations with the intent to reduce entrapment in systems of domination. Max Horkheimer's (1937) *Traditional and Critical Theory*, highlights a social theory orientated towards critiquing and changing society as a whole. The essence of critical theory lies in its interest in the ways people think and act and how social circumstances influence those thoughts and actions. The historical ontology of critical social theory assumes that there is a 'reality' that is apprehendable. This is a reality created and shaped by social, political, cultural, economic, ethnic and gender-based forces that have been reified or crystallized over time into social structures that are taken to be natural or real. Society functions under the assumption that for all practical purposes these structures are real. Critical theorists believe this assumption is inappropriate (Kincheloe and McLaren, 1994; Habermas, 1971, 1973).

This thesis specifically employs a theory of society grounded in an understanding of capitalism in order to make sense of the socio-historical colour processes and developments, given the constitutive role played by the dynamics of capitalism within colour and society. By capitalism, this thesis means an economic system characterized by private or corporate ownership of capital goods, by investments that are determined by private decision, and by prices, production, and the distribution of goods that are determined mainly by competition in a free market. I recognize that capitalism is far more convoluted than this definition, however because this research is about a critical theory of colour and not a critical theory of capitalism per se, I offer a basic understanding of the concept here and a more detailed definition in Chapter I.

In order to begin the investigation of such questions, I would like to frame the research with an introductory example of what I am referring to. During the research undertaken for this thesis, a tri-colour park opened in the Nørrebro district of Copenhagen, Denmark and it serves as an illustration of how colours are utilized in public space and the concerns that accompany such use. The park, called Superkilen, is the result of design collaboration between Bjarke Ingels Group, Topotek 1 and Superflex. These design groups are well known in the art world with international recognition for their projects. Superflex in particular is an artists' group founded in 1993 by Jakob Fenger, Rasmus Nielsen and Bjørnstjerne

Christiansen. Superflex describe their projects as *Tools*, as proposals that invite people to participate in and communicate the development of experimental models that alter the economic production conditions. Together the design groups created a synthesis of landscapes, artworks, and architectural designs coordinated and funded by the Copenhagen Municipality in partnership with Realdania, a private investment company. The objective was to upgrade the Nørrebro district to a higher standard of urban development as "an inspiration to other cities" (Jordana, 2011). It was a governmental initiative that from the onset involved members of the diverse community (i.e., 50+ nationalities) to contribute ideas and artifacts to the project.

The park is divided into three sections according to colour: The Red Square, The Black Market, and The Green Park and the total park area covers 30,000 square meters (320,000 sq. ft.). The Red Square has various shades of red paint covering the pavements/bike paths and red coloured foam placed under trees and playground areas (See Fig. 0.1). The focus for this area is on recreation and modern living activities. The Black Market is predominately black asphalt with large white strips repeated in patterns of zigzags and circles (See Fig. 0.2). This area is the centre of the park with a fountain, barbecue grills, and palm trees from China. The Green Park is quite literally all green, including green painted pavements and bike lanes, with areas for picnics, sports, and dog walking (See Fig. 0.3). Numerous objects within the park have been donated or acquired from various countries (i.e., Iraq, Brazil, Morocco, United States, Spain, England, etc.) to represent a 'melting pot' of the community.

The items have been colour matched to their respective locations within the park. For example, there is a black Japanese octopus sculpture for children to play on, white Armenian picnic tables, a yellow/blue (make green) Russian pavilion, and white Los Angeles sewer drains. There are also over 108 different plants from around the world and even the manhole covers were imported from Zanzibar, Gdansk, and Paris to help illustrate the ethnic diversity of the local population. The Superflex website states that, "each object is accompanied by a small stainless plate inlaid in the ground describing the object, what it is and where it is from...

Figure 0.1 – The Red Square from Superkilen, a public park in the Nørrebro district of Copenhagen, Denmark.
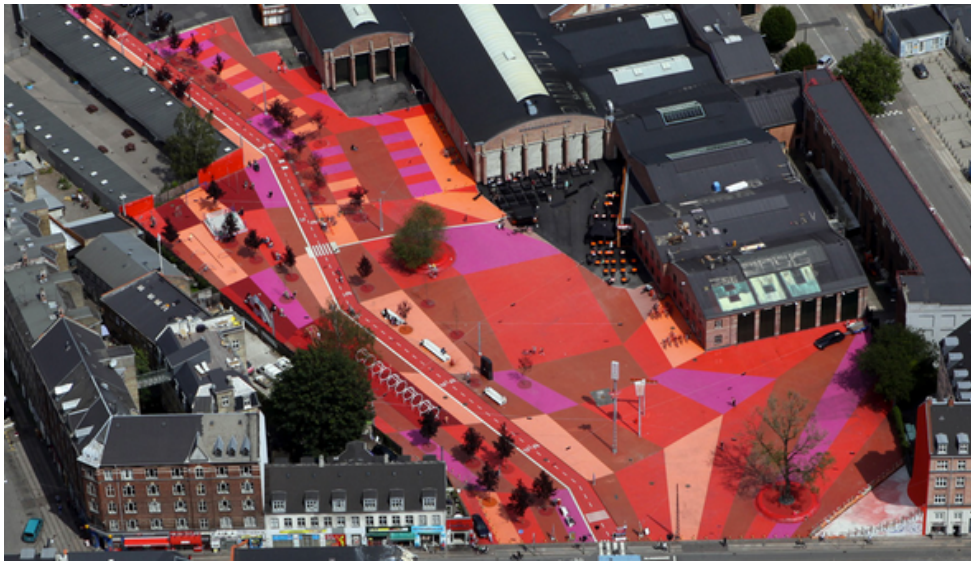
Superkilen: Red Square from above. 2013. Public domain image; fair dealing for review. Website: http://www.publicspace.org. (Accessed 25 November 2015).

Figure 0.2 – The Black Market from Superkilen.

Superkilen: The Black Market from above. 2013. Public domain image; fair dealing for review. Website: http://www.archiscapes.wordpress.com. (Accessed 25 November 2015).

Figure 0.3 – Superkilen from above highlighting all three areas of the public park: The Red Square, The Black Market, and The Green Park.

Superkilen: the Red Square, the Black Market, and the Green Park. 2013. Public domain image; fair dealing for review. Website: http://www.denmark.dk. (Accessed 25 November 2015).

A sort of surrealist collection of global urban diversity that in fact reflects the true nature of the local neighborhood – rather than perpetuating a petrified image of homogenous Denmark" (Superkilen, 2015). Of course all of this sounds like a beneficial move forward for the neighborhood. The problem is that it operates on a temporality of producing an implied discrete continuity within one of the most diverse and asperous areas of the city. Additionally, the colours red, black, and green each carry with them profound and disconcerting effects upon human beings, both psychologically and physically.

Colour psychology is the scientific study of a psychophysical reaction to the effects of the electromagnetic radiation of light in human mood and behavior (Dutton, 2003; Whitfield and Wiltshire, 1990, p. 387). It is closely related to innate instincts that are largely unconscious. This is different than colour symbolism where colours are associated through symbolic cultural conditioning. For example, red is the colour of blood and carries associations of war. Colours are intensely visceral, emotional, personal, and highly political. They encompass deep meanings and connections to the past and future. Colour has been cited in research as influencing personal identity, social status, group affiliation, and the symbolization of movements (Howard, 2000, pp. 367-93).

Consider for example that the colour red stimulates and raises human pulse rates more than any other colour. The increase in heartbeat produces excitement and hyperactivity in children, whilst provoking concerns for the elderly who may be in decreased health (Wiedemann et al, 2015). Red can also trigger aggression, assertiveness and defiance (Barton and Hill, 2005). Red impacts human vision as the highest scientifically visible colour due to its wavelength being the longest. The impression of time passing faster has been associated with red and it creates a 'fight or flight' response in perceptions of dominance situations (Little and Hill, 2007, pp. 87-9; Bertrams et al, 2014). Finally, which may have influence on the decision to use the colour within the park so excessively, red is an attention-grabbing colour, hence its use and effectiveness in traffic lights and stop signs (Ou et al, 2004, pp. 232-40). When viewed from above the Red Square procures the attention of a viewer, as well as brings awareness to the area and increased tourism (Steiner, 2013).

The combination of colours and elements from around the globe indicates a contemporary trend of opening up the sourcing of objects, designs, and colours from particular cultures. As cities become more and more diversified, public spaces such as the Superkilen offer the potential to reflect communities of change. Yet again, this is an intricate position and a complex model for future cities to reference as a guide. Controversy has followed the park since its inception with Danish citizens speaking out against it as destroying their own native culture, the colour red being 'too loud', and issues of gentrification (Federation of German Landscape Architects, 2013). Where does the new 'cultural transformation' occur and where does the notion of protecting the culture of the national society meet? How is a balance maintained and who shall be the gatekeepers of the decisions that effect human populations and colours in public spaces? The complexity of accounting for the diversity of views, nationalities, and cultural differences, as well as colours, is problematic because these actions solidify our social constructions and value systems.

This introductory example is a significant development in the history of colour in public space. The Superflex design group tagged Superkilen as 'public art' on their website (Superflex, 2015). For theorist Chantal Mouffe, art is political by the means to which it relates to the current symbolic order (Mouffe, 2008, pp. 6-15). I argue that colour is political by this same means. Colour is "what makes visible what the dominant consensus tends to obscure and obliterate" (Mouffe, 2007, pp. B37-47). A need to acknowledge the hegemonic power dynamics that encompass colour in public space is recognized by Mouffe as, "the hegemonic nature of every kind of social order and the fact that every society is the product of a series of practices that attempt to establish order in a context of contingency" (Mouffe, 2008, p. 5).

In the Marxist theory of cultural hegemony, associated particularly with Antonio Gramsci, the term describes the domination of a culturally diverse society by the ruling class who manipulate the culture of that society (i.e., the beliefs, explanations, perceptions, and values) in order for their perspective to become the worldview (i.e., Weltanschauung) that is imposed and accepted as the cultural

norm (Bullock and Trombley, 2000, pp. 387-88; Germino, 1990, p. 157). Mouffe contends that, "public space is the battleground where different hegemonic projects are confronted" which contradicts the popular concept of the public space as a terrain for consensus building and reconciliation between different parties (Mouffe, 2005, pp. 804-7). This is precisely what is at stake; the challenge of colour to the liberal construction of public space, its role and emergence, the articulation of a fundamental shift in our understandings of colour processes and its critical magnitude. This thesis adheres to Mouffe's critique of the public sphere in order to investigate colours' potential to position itself as a counter-hegemonic construct by exploring its political capacity for fomenting uncertainty.

Only as we understand the dynamics of colour in public space as the struggle between different hegemonic processes that endeavor to institute themselves as 'social order' can we understand the implications of colours within such spaces. Colour is 'performed' rather than presented passively; it is a tool for authorities to use as a form of biopolitical manipulation (please note that biopolitics is defined and addressed in Section II of this thesis). This thesis is not contending that colour in public space is part of a mutually exclusive binary opposition of good or bad. Rather it submits that colour in public space is a far more multifarious and esoteric process than first assumed. It maps the difficulty of understanding how to interpret colour and questions the authorities of power surrounding its utilization. How does colour disrupt hegemonic public space? What is at stake when colours are used in an attempt to bring populations together or keep them apart? The unlearning of our assumptions of colour is a process that demands one acknowledges the recognition of control and power embodied within colours themselves. This challenges our own awareness and established value systems, a process that is uncomfortable yet necessary for new learning to occur.

This thesis claims that colour is closely linked to the psychological composition of human perception and that the use of colour in public spaces greatly impacts society as a whole and should not be ignored. Colour has been overlooked and taken for granted in regards to in-depth research concerning a re-examination of colours, colour theory, and psychology. Briony Fer posits, "Irrelevance is color's enemy". She maintains, "Our failure to create a totalizing theory highlights both

color's weakness and its strength, which is that color is not entirely free from rules, but neither is it entirely systematic" (Temkin et al, 2008, p. 12). The contentious and sometimes conflicting views of colour need to be analyzed in relation to the socio-cultural and historical literature, as well as the quotidian political notions that operate in conjunction with the investigation.

My research on colour, public space, and legality are multifaceted topics that need multifaceted viewpoints and frameworks to help create a gestalt within the thesis. There is no single theory to address the complexity of the topic and therefore the thesis needs various key theorists and areas of focus to assist with the understandings of colours in public space. As Donn Garrison articulates on the shift from structural to transactional issues, "Theoretical inquiry is central to the vitality and development of a field of practice- not to mention its recognition and credibility from those not yet initiated into the field. The theoretical foundations of a field describe and inform the practice and provide the primary means to guide future developments" (Garrison, 2000). By turning to political theorists, I am seeking to bridge a gap in the understanding and communication of colour generated by capitalism in contemporary society. It is important to bring these established writers into the frame of colour not only because it has never been articulated previously, but also because colour is typically associated with aesthetic specialists (Burchett, 2002; O'Connor, 2010; Feisner, 2000; Mahnke, 1996; Brockman, 1965; Albers, 2006) who do not address the political concepts and principles to describe, explain, and evaluate colour events and institutions.

Specifically, the thesis utilizes the works of a main theorist in Section II and III with a combination of two other theorists to elucidate concerns that might have been overlooked or not addressed by the main theorist (i.e., Foucault with Harvey/Chomsky; Habermas with Arendt/Lefebvre; Mitchell with Mouffe/Deutsche). I articulate this multifaceted struggle of colours in public space through a historiography of the control of colours, an examination of court cases concerning attempts by corporations to 'own' colours, an investigation into what I term the colour elite nexus (the colour elite nexus is investigated and explained in-depth in Section II) and a review of three case studies that position themselves not only as different ways of approaching current understandings of colour, but also as a critical counter-hegemonic construct in public space.

§

The first section on the historiography of colours examines different aspects of the social function of colours and the legality established to control them, not out of fear, but out of the demands of the elite to keep colour as a commodity for their own utilization as part of the establishment of classes or social divides. By elite, this thesis refers to a group of people considered to be the best in a particular society because of their power, talent, or wealth; the socially superior part of society; or a group of persons who by virtue of position or education exercise much power or influence. In this way, I am contributing a different perspective on the question of the control of colour, giving weight to an underemphasized aspect of it. It is the attempt of these chapters to bring awareness to the economy of colour as a politically controllable wealth-creation mechanism that is becoming increasingly contentious. It also questions the dominant model of art historical research that traditionally focused on the application and sources of the colours rather than power and control relationships involving colours. By presenting the historical accounts of the discovery of colours in conjunction with the legality and distribution of colours, the social and technological evolutions undergone during this process are highlighted to aid with the more contemporary aspects of colours' interactions with neoliberalism and capitalism. Their concepts sanction colours' role in the everyday as far more complex than originally considered.

Therefore, this thesis builds upon and extends the discourse around colours in relation to the political legality of human consumptions through the commodification of colours in society. The specific analysis concentrates on tangible developments of colours as they relate to and within the developing systems of neoliberal societies both historically and globally. By neoliberal, this thesis means the political movement beginning in the 1940s that blends traditional liberal concerns for social justice with an emphasis on economic growth (a review of neoliberalism is included in Section II of this thesis). The research presented is critical of legislative initiatives that push for free trade, deregulation, enhanced privatization, and an overall reduction in government control of the economy. By acknowledging the ethnographical research bases encompassing this topic, this thesis utilizes a methodology that addresses the mutually dependent nature of

colour and society, as well as the structures that create, legalize, and psychologically manipulate populations.

In exploring these processes, it is imperative to understand the significance of the development of colours throughout history. The introductory chapters establish the thematic and theoretical groundwork for the thesis. What is colour and who controls it? How might colour, public space and commodification support or diverge from the regulations and legalities of colour systems, primarily in Western societies? By reviewing the literature on the history of colours, this thesis offers a new historical account of the emergence of colour as it is framed through the legality and regulations of colours. First, a brief ontology is presented in order to clearly define the use of the term and provide a context for the understanding of colour research. There is also an expanded analysis of the ontology of colour located in the appendix section. To ascertain and understand the friction between the study of colour and the regulating of colours within societies, the first chapter examines the ontological background of the relationship between colour and science. By offering an ontological and historical perspective focused on the development of colours within the socio-cultural powers of society, governments, and media, the purpose for this chapter is to argue for a particular account of the nature of colour legality that has been lacking in the historiography of colours.

In the remainder of chapter I and II an extensive re-examination of the historiography of colours in relationship with legality, regulation and capitalism is explored. The research presented demonstrates that colour has been utilized as a mechanism for communication, power, and influence since the beginning of colour history. This thesis argues that colour has a long lineage of being regulated by societies, governments, and authorities up until contemporary times. Included in the text is brief background information on the history of colour from the Paleolithic, Neolithic, Egyptian, Chinese, and Greek time periods to trace and unify the trajectory of controls of colour. To begin to differentiate some of the laws surrounding colours, a slightly more in depth focus is applied to the Roman period and the Middle Ages (primarily in Western Europe). The periods after World War I and World War II in Europe and the United States are examined in relation to the market economy and the emergence of colour being utilized for the commodification of goods and services. Finally, the historiography touches upon

contemporary issues surrounding colours by examining court cases focused on colour ownership, branding, and capitalism. The first two chapters are therefore a historical survey that examines the origins of methods and legal concepts of colours. It investigates the regulation of colour as a vivid surviving manifestation of general attitudes towards commodification expressed in visual form.

§

In order to investigate and understand the friction between the study of colour and the regulation of colours within societies, the second section responds to new problems raised by court cases generated by an influential group termed the colour elite nexus. It links the legality and legislation surrounding contemporary colours with those in power of the utilization of colours in public spheres. The alliance between colour and law was anticipated (not directly) in Michel Foucault's well-known Collège de France course lecture series from 1970 to 1984, specifically the "The Birth of Biopolitics" where he drew parallels between capitalism/neoliberalism and the control of society. The purpose of this section is to illustrate how the history of neoliberalism relates to the production, regulation and use of colour through the concept of biopolitics.

The core argument that helps facilitate this contribution is situated within the actual term biopolitics. This is described in Section II, but to explain briefly Michel Foucault (1926-1984) was a French philosopher, historian of ideas, social theorist, philologist, and literary critic whose theories addressed the relationship between power and knowledge, and how they can be utilized as a mechanism for social control (Macey, 1995; Malette, 2009). Therefore, a close analysis of Foucault's ideas is addressed in order to support an argument about the use of colour. This thesis is less concerned with avowing, repudiating, or appraising Foucault's biopolitics as it is with understanding the entanglement of Foucault's text within the colour elite nexus' usage of colour conditioned by a neoliberal society. In sum, the way colour is socially embedded reflects both prevailing systems of control and manipulation motivated by profit and power. It illustrates

how not only these generative opacities enable the various usage of colours within the biopolitical turn but also how they retain the potential to exceed it from within.

§

The final section questions what public space constitutes in a neoliberal society and how it is different from the concept of the public sphere- questions that have become more prevalent amoung architecture, art and urban cities. After articulating the concept of public space, it returns to question the use of colour in public space. The challenge of bringing into light the obscure background of the quotidian details of colour, specifically in public spaces, in order to penetrate this obscurity and make it possible to articulate the psychological effects of colour in the everyday is at stake. Chapter VII addresses the concept of public space by examining the texts of Jürgen Habermas, Hannah Arendt, and Don Mitchell. It addresses the concept of colour in public space by comparing the use of colour by an artist, an artist/politician, and government/policy makers.

This section reconsiders the psychological impact of colours explored briefly in earlier sections. It focuses on a specific aspect of the control and regulation of colour, namely the relationship between colour and public spaces as they interplay with psychology, in order to address issues of how colours are being used to create disruptions within public environments. In what way does the legality of colours by various neoliberal societies bear influence upon city populations? How does colour affect human psychology and behaviour? This chapter investigates the psychological effects of colour and claims colour manipulation occurs in multiple locations by various forms of authority, including artists and governments, thereby addressing a growing concern within literature as to the effects of colours' systems and humanity's well being.

A number of works by artists mobilize colour and light in a particularly nuanced and direct way. These works share in the questions and complexity of colours' psychological effects upon human beings. To examine this issue further, the thesis

examines artwork by two artists, Olafur Eliasson and Edi Rama in chapters VIII and IX. In examining Olafur Eliasson's portfolio, specifically *The Green River Series* (1998-2001), a claim is made as to how artworks using colours in a very direct and intentional form can be linked back to human psychological reactions and conditioning within a capitalistic society to raise awareness of colour and the city environment. The Eliasson case study offers a claim that the colours of the everyday are located in both the socio-cultural control and political mobilization of neoliberal societies that descends from historical and psychological influences throughout time and need to be understood within the quotidian. Whilst certain characteristics of colour consumption are predicated upon the development of colours synthetically and naturally, it remains challenging to bring awareness to the quotidian notion of colours within a city due to the dynamic nature of the urban landscape. As Michel De Certeau contemplates the essential paradox of the un-noticeability or invisibility of the everyday, it becomes apparent that the colours of the city have limited research conducted on them; specifically in the fields of visual art research, critical social theory and psychogeography. Texts by Henri Lefebvre and De Certeau are discussed to help facilitate a dialogue between colour awareness and the implications colours have upon society.

The case study of artist/politician Edi Rama's *Clean and Green Project* (2000), where as the former Mayor of Tirana, Albania, he established as his mission to paint the entire city in order to 'bring back a notion of community, pride, and a decrease in crime', elucidates at several levels the importance of the awareness of the colours of the everyday, and from it, the critical potentiality for colours within the city emerges. Giorgio Agamben posits in *The Coming Community* that colours interact within social surroundings and invade the space of our minds psychologically (Agamben, 1993). The occurrence and directness of these potential effects are embedded within the city itself and are juxtaposed by ideological constructs of the lived experience. Colour on the one hand is phenomenologically centered on a notion of experience whilst on the other hand opens onto the cultural and institutional conditions of perceptions as premised by socio-political powers of neoliberal society. Texts by Chantal Mouffe and Rosalyn Deutsche help to re-examine the importance of how colours render psychological

senses through the political mobilizations of colours and simultaneously establish a synthesis of community responsibility.

In Chapter X, a final case study of the use of coloured lights in public spaces is offered to illustrate how a government has utilized colours to control a public. Specifically, an example of the legality of colours is found in a recent attempt to reduce the large amount of street crime in the city of Glasgow, Scotland where blue Light-Emitting Diode (LED) streetlights were introduced to create a 'calmer environment'. Rather than merely condemning the use of such colours, a claim is made to the importance of bringing awareness to these new emergences as an opportunity to evaluate the possible effects of such colour operations by ascribing potential understandings that are activated by the occurrence rather than acquiesced by the commodification of colour in society. How do the colours of these particular blue LEDs create calming environments to the human psychology, and what impacts do the lights have on the populations over long periods of time? Is this a Foucaultian device to control and subdue residents by neoliberal societies? By returning to Foucault's text, issues surrounding the biopolitics of colour are highlighted.

All three examples demonstrate a wider concern in which the choice of colour in daily life is laden with psychophysical reactions, symbolism, cultural connotations that affect the visual reception of public spaces. Artists, designers, and policy makers (etc.) use colour in numerous ways, for example, to explore visual perception and effects, or to represent or evoke an emotion. The psychological effects of colour have been studied in a variety of contexts and have been described as having tangible effects on the viewers such as calming or stimulating properties. How does the work of artists and policy makers and/or governments using colour create moments of reflection for the general populations to begin to bring back an awareness of colour? Alternatively, do these projects only further push ideas of commodification through the idea of the spectator and lose potential to address other issues such as environmentalism and sustainability?

§

Ultimately, the validation of colours' control means acknowledging that commodification often hides the economics behind colour, as well as the stakeholders who select, rank, and channel the colours into the public spaces and public spheres. From the beginnings of the political legality of colours it becomes evident that the rise of the commodification of colours in society is present throughout history. This specific analysis concentrates on the tangible developments of colours as they related to and within the developing systems of neoliberal societies both historically and globally. The structures that create, legalize, and psychologically manipulate city populations are present in environmental, public and governmental uses of colour. By addressing the connection between the psychological affects of colours within the city, a deeper understanding of the role and power of colour has been manifested. City colours are no longer unique to a culture, but rather are controlled by governments to promote sameness and the Foucaultian idea of the control of society. As Theodor Adorno and Max Horkheimer posited in *Dialectic of Enlightenment*, "Culture is affecting everything with sameness…the older buildings around the concrete centers already look like slums, and the new bungalows on the outskirts, like flimsy structures at international trade fairs, sing the praises of technical progress while inviting their users to throw them away after short use like tin cans" (Adorno, 2002, p. 95).

By understanding and bringing awareness to the power of colours, this thesis explores the types of colour operations characterizing consumption in the framework of the urban landscape and located in these colour relationships the indexes of the socio-cultural power relations and psychological effects of colour systems. Colours have the power to transform society. If used in a subversive manner, colours can lead to a type of destruction that can be "dangerous" to communities. The socio-cultural implications operate on an immanent level to define or alter an entire scene. I argue that colours contribute to fixing and replicating social, national and economic differences as to be witnessed in Albania and Scotland as described in Chapter IX and X. Colours implicitly and explicitly

25

work as mechanisms of inclusion and exclusion that not only have the potential to rip apart communities, but also to re-examine the notion of a national identity as seen in Rama's *Clean and Green Project*.

I conclude that through all of these complex relationships with colour, the center of core values in human cognition is challenged by perceptual humanism. The nature of colour suggests that it is a part of cultural commons, a part of the everyday, yet because of colours' 'naturalness' and ubiquity, there is a failure to realize and assess how it has been sequestered, directed, and/or controlled by legal interests, which in turn affect human value systems. Lifting the veil on this control reveals that there is an economics behind colour, as well as a series of concerns to the psychological perceptions of values for human beings. In short, understanding colour as a device to reclaim the potential Bergsonian notion of 'free will' necessitates an awareness of how, and by whom colour has been controlled in order to make new unconstrained choices of colour. Value is produced and structured in part by colour and perceptual humanism. With this recognition, a new level to the importance of colour begins.

Colour is Dangerously Complex

The nature of research is to examine the questions: 'how do we know what we know?' and 'how do we legitimize our knowledge?' (Creswell, 2007). The impetus for this body of research is woven into the very nature of my practice as an artist and researcher: how to understand the colour of the everyday. My own artistic practice focuses on a collection of interventions, paintings, and photographs that conceptualize the relationship of colour and the everyday within public space. The artwork is consistently motivated by colour; the interactions of colours between individuals, crowds, streets, cityscapes, and environments. During my time in Europe, I have been granted permissions to some of the tallest structures to observe the quotidian details of the colours of life happening embodied in the urban environment below me. As my practice moved from my studio to the public realm, my interventions of colours on the physical streets of London, Paris, and in the United States allowed me to understand the dynamic nature of colour and its many

complexities. Included in the appendices of this thesis are images of my current body of artwork that highlight my exploration of colour as an artist (select images and artist statement located in the appendices section of this thesis; see also www.michellecorvette.com).

It is from this shift in my own art practice of making paintings in my studio to creating interventions in public space where I noticed that colour is being politicized by authorities to control and subdue citizens. As I added bright lemon yellow and vibrant orange to the streets of London, strangers would approach me and engage in dialogue about colour, art, what is means to create art in public space, and perhaps most importantly question me about why there was not more colour in cities as their own perception would be awakened watching me add colour to the environment. It is well documented that the urban environment shapes human behaviour, knowledge, and disposition (Lynch, 1960; Jacobs, 1961; Cullen, 1961). In order to examine the role of colour in public space, I had to form an understanding of power relationships, representation, and value in public space to see where colour functions and even exists.

As I researched urban planning and design, I noticed a gap in the literature- colour was often the last element addressed. First and foremost was a focus on security or the 'perceived safety' of public space to the critical mass of law-abiding users. Second was a concern for events and festivals or the "economic exchange value of the public space" (Flusty, 1994, p. 16). This was more important than the use value or social interaction value of the space. Visual coherence, spatial order, and aesthetic improvements are promoted over any investment in colour psychology, mindfulness, and unmediated social interaction. The omission of colour and its connection to public space raised within me a strong desire to investigate the history, legality, and control of colours in public space.

I discovered the recent political and economic shifts from the mid- to late-twentieth century have accelerated changes in the manners to which public space is managed, designed, and reconstituted or more often, clamped down. Economic globalization, technology, expansion, deindustrialization, and competition create shifts and transformations in how public space is produced. As Low and Smith articulated, "The connections between public space and political and cultural

economy deserve closer scrutiny because public spaces are simultaneously an expression of social power and a force themselves that help shape social relations" (Low and Smith, 2006, p. vii). These insights led me on a path to researching colour in public space.

I would like to end the introduction on a more anecdotal level with reference to David Batchelor's *Chromophobia*, which over the course of my professional teaching and artistic career has become a dominant book in shaping perceptions of colour specifically within the art world. Discernably my interest in colour has developed as an artist working with colour. It was revealing for me to turn to Batchelor's book to discover how another artist, who utilizes a variety of colours in his own artwork, writes about colour. His text focuses on a central theme concerning fear of colour in society. Although his book could be considered a 'popular' non-academic piece of writing, it has permeated into numerous fine art departments and classrooms as a way of understanding approaches to colour and contains merit in colour research. Just because a text is considered to be 'popular' or even jargonistic does not necessarily mean it has limited value in academic environments. Batchelor posits a number of important and significant ideas about colour that have greatly influenced the art world.

Batchelor argues that fear has kept colour confined. He posits, "colour has been the object of extreme prejudice in Western culture. For the most part this prejudice has remained unchecked and passed unnoticed" (Batchelor, 2000, p. 22). What has lead to this fear and what does fear actually mean? In psychology, fears typically stem from a lack of rational understanding (Öhman, 2000, pp. 573-93). Fear is considered to be an emotion induced by a threat perceived by living creatures which causes a change in brain, organ, and behavior functioning as a risk is perceived to be life threatening. In humans fear is modulated by the process of cognition/learning and is regarded in terms of rational or irrational. An irrational fear is considered a phobia that is a type of anxiety disorder. This disorder causes the sufferer to commit great lengths in avoiding the situation that is marked by distress and significant interference in social or occupational activities (Bourne, 2011, pp. 50-1).

This thesis attempts to understand the intricate interpretations of how to begin to ascertain where the fear of colours originates, as well as colours' complex relationship with capitalism. To begin to go deeper one needs to consider the basis of where fear is manifested. Causes of fear come from three pathways of acquiring fear conditioning: classical, vicarious, and instructional. Classical conditioning refers to the behavioural shock conditioned response, vicarious refers to the observational learning of a fear, and instructional refers to the direct informational conditioning of being taught to have a fear. Treating fears may involve medications, systematic desensitization processes and cognitive behavioural therapy where an individual is allowed to challenge dysfunctional thoughts or beliefs by being mindful of their own feelings with the aim of understanding through knowledge that the fear is irrational. Because fear is more complex that just forgetting, observing, or deleting memories, an active approach involves investigating the roots of the fear and developing a strategy for coping or dealing with them (Travis, 2004, pp. 42-4). Furthermore, Batchelor continues his argument, stating that:

> Chromophobia manifests itself in the many and varied attempts to purge colour from culture, to devalue colour, to diminish its significance, to deny its complexity. More specifically: this purging of colour is usually accomplished in one of two ways. In the first, colour is made out to be the property of some 'foreign' body – usually the feminine, the oriental, the primitive, the infantile, the vulgar, the queer or the pathological. In the second, colour is relegated to the realm of the superficial, the supplementary, the inessential or the cosmetic. In one, colour is regarded as alien and therefore dangerous; in the other, it is perceived merely as a secondary quality of experience, and thus unworthy of serious consideration. Colour is dangerous, or it is trivial, or it is both. (Batchelor, 2000, p. 22)

The above quote lends one of the most valuable piece of information presented overall in Batchelor's text which is that colour is dangerous. Colour is dangerous and yet perhaps a better or more accurate statement could be that colour is dangerously complex. This thesis addresses the idea that colour is not to be something that is feared, but rather colour is something to be rediscovered, understood, and cognitively considered. The research in this thesis seeks to grasp a deeper cognitive understanding of how colour functions in everyday life not by

fear, but by rational historical, political, and contemporary formations of colours' power and influence to unravel why colour could be perceived as dangerous. These ideas raise the following questions: How did colours develop and in conjunction with what type of power networks or controls? How do colours interface with politics and laws and how do colours influence societal values and culture? To explore these questions, first and foremost, there needs to be an understanding that colour and power have an intricate history together which needs to be articulated.

SECTION I

CHAPTER I - HISTORIOGRAPHY OF COLOUR PART I

"So far, all that has given colour to existence still lacks a history."

~ Friedrich Nietzsche (1882/2013)

Colour

Michel Pastoureau suggests that the importance of colour is linked intrinsically to our history as human beings as one of the first forms of language (Pastoureau, 2001). Pastoureau wrote that colour is essential to the very existence of humanity and society, that colour is necessary for our processes of consciousness and unconsciousness. By linking colour and perception, he posited that every act of colour, speech, and communication begins with the accumulation of colour experience. Accordingly, as David Batchelor contends, "colour is dangerous" because it carries the weight of experience in society and can influence even the simplest understanding. He argues that colour, "has been the object of extreme prejudice in Western culture…systematically marginalized, reviled, diminished, and degraded" since Antiquity and is characterized by extreme "fear" and "loathing" (Batchelor, 2000, pp. 22-3). This view of colour corresponds to Charlene Elliott's argument that colour is therefore something to be researched and understood because, "powerful ends can be gained by successfully controlling colour: political ends, public ends, commercial and corporate ends" (Elliott, 2003, p. 7).

The first two chapters of this thesis are a historical literature review in the sense that the focus is developed on examining the origins of the methods, regulations, and legality concepts of colours. It investigates the capitalization of colour as the most vivid surviving manifestation of general attitudes towards commodification expressed in visual form. Societies presently exist under "the spectral reign of global capitalism" according to the recent social-economical analysis of Antonio Negri and Michael Hardt (Negri and Hardt, 2000, p. 16). Spectral effects are not necessarily something to be overcome or eradicated, but perhaps are a more

enduring feature of human experience that can shed light on new notions of freedom through awareness (Klein, 2007). This type of 'spectrality' may be a constant condition of the world, something that is taken for granted, not unlike the visual processing of colour.

There are two problems in the recent past that have plagued the historiography of colour. The first is that the psycho-physiological effects of colours, the societal rules, and governmental laws have been taken for granted and for the most part, exempted from analysis. The second problem has been the longest running debate about colour concerning its ontological background and cognitive status. For a long time, the philosophical divide between Goethe's view of the knowledge of the world as conditioned by our understanding of its coloured surfaces and Locke's view that colour was an accidental attribute of the visual world and visual phenomena were unreliable indexes of substance, propositioned the original binary limitations to understanding colours. These views have been extended in some unexpected directions and have been challenged in unexpected ways. The time may be opportune for new ways of thinking about the historiography of colour in relation to capitalism. This thesis is not focused on a critique of capitalism, but rather a critique of colours. A brief description of capitalism is offered as a platform to be able to articulate the situation concerning colours.

By capitalism, this thesis is referring to the term used to describe the economic and social system, which exists in nearly all countries (in various forms) around the world and is controlled by a small minority of individuals/corporations as a means for producing and distributing goods or services (Marx et al, 1992). In addition, Chris Jenks. *Core Sociological Dichotomies*, specifically defines capitalism as: "a mode of production, is an economic system of manufacture and exchange which is geared toward the production and sale of commodities within a market for profit, where the manufacture of commodities consists of the use of the formally free labor of workers in exchange for a wage to create commodities in which the manufacturer extracts surplus value from the labor of the workers in terms of the difference between the wages paid to the worker and the value of the commodity produced by him/her to generate that profit" (Jenks, 1998, p. 383). Capitalism is also referred to at times as the 1% (see Joseph Stiglitz's article "Of the 1%, By the

1%, For the 1%" in Vanity Fair, 2011 and David Graeber's "We the 99%" on NYC Occupy Flyer, 2011), capitalist class, or private enterprises; although they are distinctive within their own definitions as well.

It is worth noting that there are many variants of capitalism in existence that differ according to country and region. They also vary in their institutional formation and by their economic policies. The majority of the other people surviving on the planet have to sell their ability to work in return for a wage or salary. The majorities of the other people are also referred to as the 99%, working class, or labor power, although they are articulated as each being distinct within their own definitions (Korstanje, 2015, pp. 97-100). The goods and services produced by the working class are sold for a profit (as opposed to satisfying people's needs) that is gained by the capitalism class (a process often referred to as exploitation due to the inequality of bargaining power between the classes; i.e. wage slavery). The profits and commodities generated form the base of value creation in a society. By researching this socio-economic system, an understanding of how private ownership of the means of production and the exploitation of the labor force carries weight as to how value is produced and distributed throughout the economy (Marx et al, 1992).

According to Karl Marx, the definition of capital extends into the tendency for the increase in the cheapening of commodities. Marx explains:

> The composition of capital is to be understood in a two-fold sense. On the side of value, it is determined by the proportion in which it is divided into constant capital or value of the means of production, and variable capital or value of labour power, the sum total of wages. On the side of material, as it functions in the process of production, all capital is divided into means of production and living labour power. This latter composition is determined by the relation between the mass of the means of production employed, on the one hand, and the mass of labour necessary for their employment on the other... The battle of competition is fought by cheapening of commodities. The cheapness of commodities demands, *caeteris paribus*, on the productiveness of labour, and this again on the scale of production. (Marx, 1867, p. 2)

The extent to which different markets are free becomes matters of politics and policy in a capitalistic society. Noam Chomsky and David Harvey have claimed that the elite maintain wage slavery and a divided working class through their influence over the media, entertainment industry, educational institutions, unjust laws, nationalist/corporate propaganda, political interventions/influences (i.e., donations, support), pressures/incentives to internalise values serviceable to the power structure, state violence, war/conflict, fear of unemployment, and numerous other methods that have shaped the development of economic theory. Harvey argues that profit motive and class division are at the root of most of the world's problems in contemporary society. He posits, "The freedom of the market is not freedom at all. It is a fetishistic illusion. Under capitalism, individuals surrender to the discipline of abstract forces (such as the hidden hand of the market made much of by Adam Smith) that effectively govern their relations and choices" (Harvey, 2010, p. 21).

The role of governments, in theory, does not prohibit private property or prevent individuals from working, determine wages (some countries have minimum wage labor laws), or regulate what type of process to charge for products. However most are involved with a number of economic functions (i.e., issuing money, supervising public utilities, enforcing private contracts, etc.), oversee regulation standards of services (i.e., airlines, broadcasting, etc.) and regulate the flow of capital through interest rates to control inflation and unemployment. Yet the role of the state in a capitalist society can be considered to be in the defense of the interests of the bourgeoisie by implementations of such directives as national markets, national currencies, and customs systems (Miliband, 2014). Neoliberalism refers to the laissez-faire economic liberalism that advocates polices such as privatization, fiscal austerity, deregulation, free trade, and reductions in government spending in order to enhance the role of the private sector in the economy (Boas and Gans-Morse, 2009, pp. 137-161). The problems with capitalism and neoliberalism include social inequality, unfair distribution of wealth and power, materialism, repression of workers and trade unionists, social alienation, unemployment, economic inequality, and instability (Lavoie, 2012, pp. 215–233; Braedley and Luxton, 2010, p. 3; Steger and Roy, 2010, p. 123; Duménil and Lévy, 2013; and Kotz, 2015).

The questions surrounding this research are derived from the fact that colour is part of a social history and it is society that constructs colour codes, customs, values, and meanings, which come to have influence over the culture. Yet a large part of contemporary society is firmly rooted in established capitalistic governments. To undertake this social history of colour a clear definition and ontology of colour is needed and a review of important historical instances involving the legality of how colour has been organized by European, Eastern, and American societies throughout history is in order. The intention is to expose the hidden transformations of the control of colours and to question the experiences of the thousands of individuals who interact, consume, and 'absorb' colours on a daily basis by relating the control of colour to the capitalization of colour. What do individuals make of what they are 'absorbing', receiving, and seeing in relation to the history of colours? Furthermore, what are the effects of colours as they become embedded within human epistemologies and legal issues?

The colour sensory experience precedes, influences, and creates a priori reason for the development of cultural laws and sets up an intervention of the organization of memory through colour, through seeing, and through visual pluralities that seek negotiation. Within this negotiation, the relationship of new possibilities is interesting precisely because it creates a space of focality that is not a function of the makers, but rather a phenomenon of the users. This shift in attention may reveal different modes of conduct, surreptitious or even repressed within the passivity of colour so that a politics of colour may begin to be articulated within the practices that have long been in effect in order to illuminate their potential to be politicalized. First, a brief ontology of colour is provided and second, a historiographical survey of the regulations surrounding colours legality is considered (please see a more complete investigation included in the appendices section of this thesis on the ontology of colour for reference).

Colour Ontology

After numerous years of colour receiving minor attention, recent philosophical journals, books, and conference schedules illuminate the reconsideration of colour at the center of philosophical inquiry (Color Language Conference; University of Glasgow Color Group; Yale Center for British Art Color Conference 2012; Joann Eckstut and Arielle Eckstut, 2013; Black Dog & Leventhal; Finlay, 2014; Hunt and Pointer, 2011; Gonnella and Friedman, 2014; Holtzschue, 2012; Lewis, 2014; Stewart, 2013; Feisner and Reed, 2013; O'Connor, 2015; Dusenbury, 2015; Forman 2015). This resurgence is both significant and stimulating as the discussion about colour encompasses multiple fields of study including contemporary colour sciences, physics, computer science, psychophysics, evolutionary biology, medical research and vision science, which all have influence upon the ontological and epistemological questions about colour. This interdisciplinary research has helped generate new positions and ideas, as well as contemporary arguments and theories concerning colour. Colours are pervasive, salient, and unstable features of the world that inform the way human beings communicate and glean information. To a degree, colours are the *prima facie* to understanding the physical properties of human existence.

Remarkably, colour has not been clearly defined in most contexts of its use in articles and research journals. Multiple misunderstandings in relation to colour (i.e., by whom, for whom, and in what context) have developed due to this lack of clarification. Colour research has given rise to controversy across disciplines because of this issue (Gage, 1995/2009; Gage, 2000/2011). When colour is discussed without a definition provided to help the reader understand the concept, assumptions could be made that may be inaccurate or misleading. Colour is a vibrating wavelength of visual light interpreted through the brain within a neurobiological construct (Waldman, 2002, p. 193). Therefore, things themselves actually possess specific wavelengths and hue saturations, which our eyes reinterpret to understand as colour. In this regard, each living thing sees colours differently.

Scientific research in summary, posits that colour is a limited perception of our mind and perhaps has no consistent reception. Therefore, this suggests that objects do not have colour, at least not in the traditional sense, but perhaps in the more contemporary understandings of colour ontology the human eye and brain work in combination to interpret colour upon the object based on the reflectance profile at any given context. This type of inference serves to complicate the history of colours within societies because the colours referred to directly in the literature may or may not be the colours assumed in present day. This thesis is not providing an extensive review of the ontology of colour, as there are numerous books and articles already addressing many of the controversial issues about the topic including works by Galileo, Boyle, Descartes, Newton, Young, Maxwell and Helmholtz (Maxwell, 1890/1970). Nor shall it focus in depth on the variances of how different cultures view colours as other books have already established this research (Davidoff, 1991; Gage, 2009). Rather than present a neurobiological construction of colour, it is important to return currently in this chapter to the notion of colour as a social construct embedded within a culture with the understanding that the historical ontology of colour is discussed in further detail in the appendices.

The purpose for the first two chapters is to argue for a particular account of the nature of colour regulation and legality that has been lacking in the historiography of colours. To establish this, the history of colour is brought into consideration in tandem with the laws and codes created during specific time periods that pass influence onto the visual perception of colour. The first chapter presents a basis of the beginnings of the legality of colour by examining Paleolithic and Neolithic periods for examples of the first use of pigments and the inherent human imposed limitations upon colours. Transitioning into the early periods of ancient Egypt, the first instances of colours being restricted for specific areas based on location, material, and nobility are addressed. The ancient civilization of China provides the first recorded restriction of colours being regulated to certain members of society and the Greek and Roman periods provide the foundation of specific decrees and the first laws concerning the control of colour.

The second chapter concerning the Middle Ages up to the 1850s focuses on the majority of drastic debates centered around colours within the Western dialogue, including the influences of the churches, nobilities, and the market economy. The changes in the history of the regulations of colour continue with the development of organic chemistry in the 1850s until the First World War. Both World War I and World War II provide drastic limitations on colour production, the market economy, and the public utilization of colours. Finally, the history of colour regulation is brought into the contemporary by examining how colour develops into a mechanism for consumer commodification first in industry and fashion and later in specific court cases concerning the trademarking of colours.

History of Colour

The Foucauldian notion of being manipulated by mechanisms of control is found throughout the history of colour in Europe beginning with ancient civilizations to current times, especially within capitalistic societies. Colour is manipulated and regulated through governments, socio-cultural influences, and mass media. To accept a passive voice in the legality and control of colour would be a dangerous position to take as demonstrated through the history of colours. This encounter at stake between the socio-cultural power relations and colours psychological effects upon humanity's ways of being opens the visual processing of structurally different modalities of engagement. The recurring key characteristics of seemingly non-coherent colours and the dispersal of them accumulate into a colour psychology of thoughts brought into question as the history of colour is re-examined from a political viewpoint of legality. As Michel Pastoureau submits, "…color is a social phenomenon. It is society that 'makes' color, defines it, gives its meaning, constructs its codes and values, establishes its uses, and determines whether it is acceptable or not" (Pastoureau, 2001, p. 10).

A key component of the history is centered on the use of dyes as the first sources of colour. Therefore, since dyes are used in providing colours to everything from fabrics, paints, inks, plastics, construction materials, food, and other materials, it begins the perspective on the history of colours. Accompanying colour dyes are

mordant dyes (i.e., dyes requiring auxiliary chemicals to precipitate them into a fabric) which carry the largest influence of colour throughout history, stemming from areas and societies around the world such as the Chaldea, the Hebrews, Phoenicia, Egypt, Greece, Rome, Byzantium, Persia, India, Japan, China, East Indies, and the Americas. There are numerous books which detail the development of the dyes and pigments from these areas (Zollinger, 2003; Kvavadze et.al, 2009, p. 1359; Hunger, 2003). However, for the purposes of this research, only a few very noteworthy examples shall be discussed, which will help establish the laws surrounding colour and the uses of colour by authorities.

Paleolithic and Neolithic Periods

To begin with an accurate conceptualization of the history of colour, the roots of the discovery of colours by early humans is the foundation of colour knowledge. This section does not present that during the Paleolithic and Neolithic periods human beings were regulating colours, but rather it seeks to introduce the platform upon which all other colour developments build upon. It has been suggested that certain colours from these periods could have been used in a symbolic fashion, however, the speculation has an inability to prove or disprove this form of rationality due to lack of evidence (Sorlini, 1985, p. 145). Yet it is within these early developments and uses of colours that the wide spread use of pigments and dyes begin to unfold. The desire to create colour dates as far back as the cusp of the transition between Paleolithic and Neolithic Stone Ages, somewhere around 2,500,000 BCE -30,000 BCE. During the Upper Paleolithic era, the oldest pigment found is carbon black that was produced from various wood, ash, barks, shells, and pits. The shade of black varied in terms of intensity and luminosity depending upon the material and the calcination. Through the development of using bone and deer antlers to obtain deeper blacks, along with the addition of binders such as minerals like manganese oxide, the creation of the cave paintings at Lascaux, Pech-Merle, and Altamira occurred around thirty thousand years ago (Pastoureau, 2008, p. 25).

During the Neolithic period there is little documentation that remains to adequately illuminate the predominate colours of the culture. By examining the history of the cave paintings, as well as tools and cloth fragments, the colours found during this time were white, black, and red. The origination of the fabrics and their locations imply that red perhaps functioned in a social role within society as an opposite of white. There are also indications that white shared two opposites, black and red, which were sometimes referred to as red's 'darkness' to white's 'lightness' (Pastoureau, ibid). From the Indo-European cultures until the Middles Ages, these three colours repeatedly organized social codes and systems of representations based on colour. This is not to imply that other colours were not present during this period, but rather the other colours were not used in a social or symbolic level that is known in current research, however, it has been speculated as being symbolic (Pastoureau, ibid).

Although it is impossible to know for certain if there were rules surrounding the use of colours or dyes, inferences from this time have been noted as to which colours were used with specific animals to form a supposed narrative. Approximately around 40,000 BC, the use of yellow ocher appeared in Arcy-sur-Cure and Yonne during the Middle Paleolithic period and into the Neolithic period (Delamare and Guineau, 2000, p.16). The predominant colour ranges found in caves of this period are the earth colours of yellow ochre, red ochre, red earth (terra rossa), bauxite (aluminous red), carbon black, chalk white, and maghemite. Archaeologists also discovered a settlement in Çatalhöyûk, the southern region of Anatolia, dating to approximately 6,000 BC, where evidence of the earliest textile dying processes used a form of red ochre dye that is an iron oxide pigment derived from heating the yellow ocher clay or using the seed of the weld plant to produce yellow. Most of the remnants of fabric swatches found are tan or 'white', the natural colour of the wool, linen, and cotton, thus the red dyed fabric was especially noted, researched, and recorded (Barber, 1991, p. 223). Towards the end of the Neolithic period, the development of using plant madder (i.e., organic colour containing alizarin and purpurin derived from the plant *Rubia tinctorum*) to produce red dye would be developed around the areas of the Mohenjo-Daro, in the Indus Valley, 2500-1500 BC, and from the Lacustrine settlements in Switzerland.

The use of woad, a blue dye from the leaves of the *Isatis tinctoria* plant, and madder, a red dye, were developed during this early period in history and carry influence for numerous laws passed much later on during the Medieval ages. The red dye of Kermes was developed from the dried bodies of female scale insects called *Kermes Vermillio* that lived on the oak trees in the Mediterranean. The colour is also referred to as crimson or carmine as derived from English terminology. Jars of Kermes were found inside some Neolithic burial cave sites in Adaoutse, Bouches-du-Rhône. Later the Mexican cochineal (after the Spanish conquest of the Aztec Empire) would replace Kermes as the leading red dye because the cochineal held stronger dye colourfastness (Barber, ibid., p. 230). The cochineal is also a small scale insect found in South America and Mexico that lived on cacti plants and continues to be implemented in contemporary society in food colouring and cosmetics (i.e. lipstick or even coffee) (Burrows, 2012). One other insect used to create red dyes was called lac however it was primarily used in India, Burma, and Southern Asia. The most common red dye discovered was madder. It was cultivated and controlled during the Egyptian period and yet the true origin is questionable since henna, a similar substance, has been found in Syria and Palestine in various amounts in the Neolithic period suggesting a much earlier use of the pigment.

Egyptian Period

Although there is lack of written evidence from the Egyptian period in regard to rules or laws surrounding colours, there are very specific colour palettes found in tombs and sacred burial chambers and objects that indicate a type of regulation of colours. Two categories exist in Egyptian paintings that support this idea. For images depicting landscapes and daily activities, a natural colour palette composed of unlimited mixed colours is present (i.e., local colour and imposed colours). However, the images that depicted the supernatural world or were used for religious purposes involving medical or funeral artworks, a strict limited palette composed of six colours (black, red, yellow, brown, blue, and green or blue-green) permeates the pieces, as well as adornments of silver and gold. It has been speculated that for this ancient civilization the idea of mixing or blending the

colours used in these types of works would render them meaningless for even the very colour itself was highly symbolic (Delamare and Guineau, ibid., p. 20). For example, the colour blue was referred to as the 'life-giving' colour and can be viewed in such works as King Ramses III two-dimensional painting (c. 1170 BC) located within his tomb where a human figure (i.e., King Ramses) wears a helmet of Egyptian blue adored with a golden serpent (Davies, 2000). The blue represented the symbol of royalty, longevity, and life during the Egyptian period (Douma, 2008). Likewise, it has been noted that similar characteristics are found in the three-dimensional clay blue hippopotamuses from the 12th Dynasty to symbolize the life-giving river.

A distinguishing feature of the Egyptians in regard to colour is the development of Egyptian blue (i.e., frit or *wedjet*), later referred to by the Romans as Alexandrian blue, circa 3000 BC. Originally identified and excavated by William Flinders Petrie in the early 20th century and re-excavated a century later by Paul T. Nicholson, a manufacturing site for Egyptian blue tells the narrative of the first development of an organic synthetic colour in history. The desire to imitate semi-precious stones of turquoise and lapis lazuli motivated the Egyptians to produce a synthetic blue pigment that could be manufactured in large quantities (See Fig. 1.1). Using a mixture of calcium compound (i.e., carbonate, sulfate or hydroxide), copper compound (i.e., oxide or malachite) and silica gel or quartz which is then heated to 900°C with a flux of sodium and potassium carbonate, lowered to 800°C and maintained for 10 to 100 hours, the Egyptians were able to reach the brightest blue luminosity in the world at that time (Chase, 1971, pp. 80-90). In addition to using the Egyptian blue in painting and ceramics, they invented blue glass, glazes, inks, make-up (i.e., eyeliner), and dyed textiles (See Fig. 1.2). The Egyptians were masters at adding mordants to create increased colourfastness (i.e., first development of gum-arabic used as a base for paintings), prompting Pliny the Elder, a 1st century AD Roman historian to write about the Egyptian mordanting techniques:

> In Egypt, too, they employ a very remarkable process of fabrics.
> After pressing the material, which is white at first, they saturate it,
> not with colors, but with mordants that are calculated to absorb
> color. With this completed the fabrics, still unchanged in
> appearance, are plunged into a cauldron of boiling dye and are

Figure 1.1 – Dry colour pigments to be used in the dying process.

Dry Pigments from Mysore, India. 2013. Photograph courtesy of Jor-El C. Zajatz. Public domain image; fair dealing for review . https://earthbycycle.wordpress.com/2013/02/09/incense-and-fame/. (Accessed 23 November 2015).

Figure 1.2 – Naturally dyed yarn using organic pigments without chemicals.

Naturally Dyed Yarn. 2014. Public domain image; fair dealing for review. http://www.wildbynaturenewmillennium.wordpress.com. (Accessed 25 November 2015).

removed the next moment fully colored. It is a singular fact, too, that although the dye in the pan is one uniform color, the material when taken out of it is of various colors, according to the nature of the mordants that have been respectively applied to it: these colors, too, will never wash out. (Pliny the Elder, 1855, pp. 35-42)

The mordants used by the Egyptians for fabric were most likely aluminum sulfate as that would have been available at the time and could have offered the strongest colourfastness. The Egyptian blue, having traveled along the Silk Road trade routes with China, is speculated to have influenced the development of Chinese blue, known as Han blue and later Han purple, which will be discussed in the next section (Lee and Quirke, 2000, p. 30).

On a final note about Egyptian colours, it is significant to address the use of black and red ink on papyrus, as well as in the symbolism contained within the colours. Egyptian black symbolizes the silt deposits of the Nile River and the beneficial floods that counteracted the red desert sands. Fertile and fecund, black is neither diabolical or harmful, but rather it is the passage to the beyond or the promise of rebirth. Black is the colour of the earth and was respected as a positive colour within the culture. Red is the colour associated more closely with destruction, negativity and evil, or as a warning sign of sorts (Kees, 1999, pp. 60-61). Researchers speculate the negative to be associated with blood, disease, war, sacrifice, and anger (Lee and Quirke, ibid.).

Customs of using black text and red titles have endured well into the modern era and continues to have influence even in the present day, as witnessed in A. J. Well's London street signs that are composed of black street names with red titles of boroughs and postcode location letter/number. In the Prisse d'Avennes papyrus, the text is written in black ink and the red ink was used for the subtitles and chapter titles. By using black ink for the body of the text as related to colour psychology and Egyptian symbolism, black would function as the 'heart' or earth/roots of the text whilst the red would function as a signifier for change or disruption. Again, red being a colour that is less frequently viewed in earth's natural landscape and thus exciting the viewer's eye indicating a visual shift in comprehension.

China

As one of the ancient civilizations, China's colour history corresponds closely to the Egyptian period, however, evidence of laws regarding colour are much more apparent. Five thousand years ago, roughly 2600 BC, evidence of Chinese colours (i.e., yánsè, yán liù) being sourced from plants, barks, and insects had been discovered. Han blue and Han purple (i.e., deep indigo), organic synthetic dyes created during the Western Zhou period (c. 1045-771 BC) and used until the end of the Han Dynasty (c. 220 AD) were believed to be influenced by the Egyptian blue via the silk road trade routes. However, the Han pigments were created using barium rather than calcium, a change that would create a different shade of blue than the one the Egyptians developed and used; the blue was slightly more blue-violet (Berke, 2002, v.41, p. 14). Shortly towards the end of the Sui Dynasty, 589 AD, a comprehensive clothing colour code was established for the Chinese court. The marked differences in clothing and colours were meant to enforce the statuses of the bureaucracy.

For example, the colour yellow was reserved for only the Emperor to wear, as yellow was considered a sacred colour representing the earth. Both Buddhism and Daoism were accepted side by side during the Tang Dynasty, 618-907 AD, and Confucian beliefs were followed throughout society. One particular view that changed during this time was the declaration by Confucius that purple was an impure variation of red. Instead, the Emperor adopted purple and yellow for ritual purposes and the common general public were banned from making or selling such colours under threat of harsh discipline and abusive punishment (Berke, ibid., p. 14).

Colour symbolism in Chinese culture stems from the Huang Di and continues to carry influence in present day China. The order of colour theory is based on the five elements and corresponding concepts: *Wu Xing*, (i.e., water, metal, earth, fire, wood), each having corresponding colours (i.e., black, white, yellow, red, and blue-green), directions (i.e., north, west, center, south, east), planets (i.e., Mercury, Venus, Saturn, Mars, Jupiter), heavenly creatures (i.e., black tortoise, white tiger, yellow dragon, vermilion bird, azure dragon), energies (i.e., conserving,

contracting, stabilizing, expansive, generative), phases (i.e., full Yin, new Yin, Yin/Yang balance, full Yang, new Yang), developments/actions (i.e., dormant, withering, ripening, blooming, sprouting), seasons (i.e., winter, autumn, change of seasons/every third month, summer, spring), climates (i.e., cold, dry, damp, hot, windy), livestocks (i.e, pig, chicken, cattle, sheep, dog), fruits (i.e., chestnut, peach, jujube, apricot, plum), and grains (i.e., millet, hemp, rice, beans, wheat) (Needham, 2008, p. 263; Yu-lan, 1983, p. 13).

In contemporary Chinese society it is common knowledge that red holds great importance and symbolism. Red, corresponding with fire, symbolizes good fortune and joy. Red is found everywhere during the Chinese New Year and other holidays, but is strictly forbidden at funerals, for writing names, and for writing names at funerals, other than official seals (once used to write the names of the dead). As a very popular colour, it is controlled and frequently used by the Communist government for propaganda purposes (Iserson, 1994). These instances of attributing symbolic meanings to colour are important because they illustrate the power behind colour that will be discussed in later chapters.

Greek and Roman Periods

Although the Greek civilization period came before the Roman period, much of what remains historically in regards to colour is intrinsically tied to both cultures. The Greek city-states were more advanced in their learning and philosophy than the Roman culture and after the Romans conquered Greece, they absorbed the cultural influences of the Hellenistic east. There are similar crossovers between the Gods and Goddesses as there are between the colours developed during this time and the laws surrounding the colours. It has been posited that the Greeks were perhaps limited by linguistic relativity, that is, they did not have the words to describe what they were seeing in regards to colour (Brinkmann, 2008). Ancient Greek colour theorists described colour as residing in four areas: light/white, dark/black, red and yellow. Xenophanes described the rainbow as having three bands of colour: red, yellow/green, and purple (Zajonc, 1995, pp. 14-15).

These colours are similar to the ones that Homer used in his descriptive passages of the Iliad and Odyssey. Contrary to what some researchers have speculated (Gladstone, 1858, pp. 458-99; Price, 1883, pp. 61-87), the Greeks and Romans were not colour blind, nor could they not see the colour blue, but rather the term used during the time would have been synonymous with many dark colours (Pastoureau, 2001, p. 24). This misconception needs to be put to rest. Since the words for colours represented a wide range of hues within the spectrum, *kyaneos* was used to describe colours that were dark and could include anything from black, violet/indigo, brown, and deep blue, as it was meant to evoke more of an emotional connection to the darkness of the colour and not an actual hue identification. As Michel Pastoureau posits:

> These theorists, which stirred a heated debate and continue to have their proponents, seem to me both false and indefensible. Not only are they ethnocentric, imprecise, and dangerous (by what criteria do we judge a society "evolved" or "primitive", and who decides?), but they also confuse vision (a biological phenomenon) with perception (which is a function of culture). Moreover, these theories ignore the often considerable gap that exists, in all eras and cultures, between "real" color (as it is objectively seen), color as it is perceived, and color as it is named. (Pastoureau, 2001, pp. 25-6)

It is worth mentioning this confusion because part of the complexity in understanding the laws and regulations surrounding colours are distinctly tied back into how the various cultures perceive and use colour terminology. The colour that carries the most weight by far in regards to the laws established around it during the Roman period is the colour purple. Although Pliny the Elder mentions in his book *Natural History* that the colour purple developed around 1600 BC by the Phoenicians from sea snails called Muricidae or Murex, this type of purple (i.e., Tyrian purple) actually has roots going back to the Minoans (Reese, 1987, pp. 201-6).

Cicero mentions equity, customs, and decided cases in his account of Roman laws in references to purple. Numerous laws began as customs influenced by Royal decrees and focused on the civil structure, origins, operations, and creation of the *paterfamilias* (i.e., head of household). The creation of the Twelve Tablets, whose knowledge was recorded by many writers of the times although the originals were destroyed when the Gauls attacked Rome in 386 BC, were considered Rome's first

code of laws equal to all Roman citizens from the Royalty to the general public. The Roman emperors were so enamored with the colour purple that they immediately passed a series of customs (i.e., laws) controlling the dye processes. The selling and the wearing of the Tyrian purple sometimes associated as antique or imperial purple have been traced back to the Twelve Tablets and were restricted. For example, the Roman sumptuary laws decreed statues of gods were allowed to dress in purple, just as the emperor was allowed, but no one else (i.e., general public) and councils on public festivals were allowed to wear white with a purple band or stripe. The laws were revised several times by multiple emperors, such as when Nero refused to allow anyone but the emperors to wear the colour purple, and if anyone was discovered wearing the colour, it was punishable by death (Lassard and Koptev, 2013).

Part of the reason the Tyrian purple was so special was the process from which it was created using over 12,000 Murex mollusks to yield 1.4g of pure dye. This lengthy process was controlled by the Roman governments and continued to have influence over the culture by reflecting important social statuses within the Byzantine period with the first imperial court laws restricting both the dye and silk trades. This type of legislative power and legality is passed down and carries weight that influences the establishments of multiple governments throughout history and well into contemporary society.

CHAPTER II – HISTORIOGRAPHY OF COLOUR PART II

Middle Ages

After the fall of the Western Roman Empire, various kingdoms developed amoung the natives of Europe. Within this period, there is a marked shift in the form of religious reformations and the beginnings of a feudal societal structure with a monarchy as the ideal form of governance. Marc Bloch's *Feudal Society*, helps to illuminate the historical aspects of the period which included not only the warrior aristocracy bound by vassalage, but all three estates of the realm (clergy, nobility, and the commoners), along with the peasantry bonds of manorialism and the church to encompass all members of society into the feudal system (Bloch, 1989). The Catholic Church had a vast amount of influence and control of colours during the Middle Ages. Colours such as white, red, and black were used by the Catholic Church to illuminate manuscripts and to depict religious scenes, whilst blue had little symbolic or aesthetic value. In the early Middle Ages during the Merovingian era (c. 6th-8th AD) blue was used as a legacy of Celts and Germanic barbarian culture to terrify their opponents during conflicts and wars. Later blue would be banished by the Carolingian court as speculated due to the use of blue by the Celts and Germans as body and face paint during such wars. The emergence of the first Dyer's Guilds in Germany, circa 925 AD, would signify a change within the society in regards to colours' importance and role.

By the year 1000, a number of customs surrounding colour were already common throughout the Roman Christian Empire. In 1195, the future Pope Innocent III treatise on the Mass was decreed with white as the symbol of purity, red as the blood spilled for Christ, and black for times of penitence and waiting. It is during this time of Medieval theology when Saint Augustine argues that light is the only part of the physical world that is both visible and immaterial (Gonzalez, 1970/1975). Hence the development of stained glass and gold mosaic tiles, as seen in the small and much fragmented panel from a *Jesse Tree* window at York Minster, which is considered to be the oldest surviving stained glass in England, dating from perhaps as early as 1150 (Brown, 1992).

The utilization of light and golden adornments prompted a major division of thoughts and arguments that transpired between Abbot Suger (1081-1151) of the Christian Church, and Cistercians. Suger and his followers, the Chromophiles, proposed during the Romanesque period that God was light and colour was light, therefore nothing was too beautiful to serve the divine in terms of colours in his *De consecreation* treatise from 1143-44 (Pastoureau, 2001, p. 61). The Christian Churches argued colours banished darkness and expanded the place of the divine. This was in opposition to the beliefs proposed by the Cistercians who were hostile to colour in their worship and argued that colours were distractions to the true light of God. Saint Bernard (1008-1081) and his followers, the chromophobes, posited that colour was a material before it was light often referring to it as a problem of density and opacity and in this way was suffocatingly diabolical. The Cistercian order grew out of the chromophobic trend and aversion to polychromy. These questions of colour were not merely theological in nature as illustrated throughout history; rather they would carry with them historic changes on the material culture and everyday life (Pastoureau, 2009, pp. 63-7). Thus the differences of monks wearing black verses monks wearing white to differentiate their belief systems through he symbolic use of emblematic colours.

Towards the middle of the twelfth century, rules established by the Churches and royalty surrounding the use of colour for the coats of arms developed on the battlefields and at tournaments. The appearance of the coats of arms was closely associated with the transformed feudal society. Since the use of such emblems was not restricted to nobility alone, even common families could establish their own coat of arms and therefore the colours used needed to be regulated over time to keep the identity significant and separate between the families. The European coat of arm categories established by the French heraldry consisted of six colours that have remained the basis of Western culture since the Middle Ages. They are as follows: *or* (yellow), *argent* (white), *gueules* (red), *azur* (blue), *sable* (black), and *sinople* (green) (Pastoureau, 2009, p. 71). Drawing influence from the heraldry colours, black emerges during the thirteenth century as the most powerful colour, reflecting notions of being austere and virtuous. Members of public authority, clerks, government officials, and law documents began to use black exclusively.

This would later influence bankers and merchants by the second half of the century who sought to establish their own sense of respect, importance, and authority as demonstrated by the churches and royalty.

However, it is questionable as to if this was only an influence of religious belief systems or a device implemented by the both the Church and state to control the population after the Great Plague when economic resources were low amoung the common people and the extravagant spending by the nobility began to create rising conflicts amoung the social classes. Thus, some of the first sets of sumptuary laws from the Middle Ages were created which banned colours to particular social classes because they were too expensive to make and therefore needed to be reserved for the wardrobe of individuals of high birth, fortune, or good standing (Pastoureau, 2009, p. 81). For example, the red dye of the kermes insect, referred to as 'Venetian scarlet', was reserved for princes and great dignitaries only. The Church also influenced the legality of colours by decreeing that violent contrasts of colours, striped, checked, or rainbow hued clothes were prohibited and unworthy of a good Christian. Thus, the development of the idea of the 'court jester' in an outfit of contrasting bright colours was constructed in opposition to the laws as a mockery (Soutworth, 1998, pp. 89–93). The sumptuary laws established a system of segregation by dress colour (i.e., gender, age, station, standing, rank) that was meant to prevent slippage between one class and another.

The sumptuary laws of the Fourth Lateran Council, 1215, also indicated very specifically the chromatic dictates of certain professions according to colour, often assigning insignias. Those affected were doctors and surgeons, executioners, prostitutes, usurers, minstrels, musicians, beggars, vagabonds, and all the poor and destitute general public (i.e., drunks, blasphemers, physically or mentally ill, Jews, and Muslims, as well as marriages between Christians and non-Christians). As Pastoureau addresses:

> Most of these laws appeared to be reactionary; they were hostile to changes and innovations, which disrupted the established order and transgressed accepted moral behavior, and they were often directed against youth and women, two social categories too eager for the pleasures of novelty. (Pastoureau, 2009, p. 96)

Customs varied widely from region to region within this time period and proved to be challenging to regulate for the various councils and royal families in power. However, enough of the laws were absorbed into the belief and value systems to cause permanent social change and would later be adopted by the Protestant Reformation.

Protestantism reflected the moral colour codes of the late Middle Ages with a shift to the views of Saint Bernard and the Chromophobes that focused on black, grey, white and red colours as the axis of cultural decisions. These conflicts in the church will be spread throughout the 9th century to the 12th century and will persist until the Protestant Reformation in the 16th century. Suger and the abbots of Cluny attribute blue and gold to be the distinctive sign of power for the Church and royalty. In opposition are the chromophobes and their greatest representative, Saint Bernard. They believe that colour is an envelope or a vanity that must be dispelled of entirely from the Church and consequently, the home. Thus, in all Cistercian churches here is no colour and the only tolerable object is the crucifix. The Church recommends that all honest Christians wear clothing of dark and sober colours and not "distinctus a varies colorbus velut pavo" or 'different colours like a peacock'.

The sermons of the times reference the dislike of colours and repeated the words of prophet Jeremiah losing his temper to king Joachim against "those who construct temples like palaces, cutting windows in them, paneling the walls with cedar and painting them vermillion" (Pastoureau, 2009, p. 124). By 1467, Pope Paul II decreed that all cardinals' robes formerly dyed imperial purple would be dyed cochineal red or kermes red depending upon the resources. The expulsion of liturgical colour occurred in churches across Europe with the destruction of stained glass windows and the whitewashing of buildings. The limited use of colours is also reflected in the paintings and artwork of the time with sober tones and dramatic lighting to convey a sense of the undeniable spiritual intensity without the use of a broad range of colours. As Pastoureau posits, the Protestant Church "played a crucial role in the development of Western sensibility with regard to color" (Pastoureau, 2009, p. 128).

With the Protestant Church and the Catholic Church regulating the colours of society, decrees were issued that recommended white be used for children's clothing and sometimes woman's clothing, blue was tolerated if it was minimal, and any expression of loud colours was severely condemned. The Church recommends that all honest Christians wear clothing of dark and sober colours and not "distinctus a varies colorbus velut pavo" or 'different colours like a peacock' (Calvin, 1527, pp. 139; Thompson, 1995, pp. 331-8). From the 15th to 19th centuries, black, brown, white, and grey were the main colours of dress codes and sumptuary laws spread across Western Europe. During this time period, the dyers across Europe formed guilds and codes to help secure and protect their importance within society. Various professions often came into conflict with each other creating the need for further laws surrounding the development of dyes, pigments, and colours. Strict regulations provided the dyers with a monopoly in the colour market, especially in contrast to tanners and weavers who were involved with many litigations and trials over the use of various dyes and water sources.

The types of dyes permissible were also restricted to help local merchants throughout Europe. For example, woad was the only dye allowed by Queen Blanche to aid in the demand of blue cloth by the general public in England and France (Klaniczay, 2002; Pastoureau, 2001, p. 68). Woad was grown and manufactured in England during this time and the restriction to using only woad helped the economy in capitalistic fashion. Similarly in 1533, a Parisian regulation prohibited dyers to expunge of their dye water into the Seine River as it was leading to the poisoning of nearby communities. Licenses were issued and dyers were restricted to using only approved cloths, wools, linen, cotton, other fabrics and water sources as required by the courts. Many dyers and tanners began to work together to create their own dye factories within the city (See Fig. 1.3 & 1.4).

In Germany and Italy, the rise of using madder dye verses cochineal, lac, or kermes, in addition to the use of particular mordants to set the colours, became highly contested amoungst the dyers of the region and was controlled by official decrees. In Greenwich, 1574, Queen Elizabeth I enforced new sumptuary laws called the Statutes of Apparel to limit the expenditures on clothes and control the social class structures in England. Within this document, such decrees were given

Figure 1.3 – Detail of dye baths from the Middle Ages (c.1400).

Detail of dye baths from Fez, Morocco. 2012. Public domain image; fair dealing for review. Website: http: www.kaufmann-mercantile.com. (Accessed 25 November 2015).

Figure 1.4 – Overview of dye baths including the ammonia softening baths.

Overview of dye baths from Fez, Morocco. 2010. Photograph courtesy by Darby Sawchuk. Public domain image; fair dealing for review. Website: http://www.dsphotogaphic.com. (Accessed 25 November 2015).

that only allowed purple to be worn by the nobility and gold or silver embroidery to be used by very specific members of the Royal courts and families. The legality of colours became common to the point that someone of the general public could be identified as part of a specific class solely on the colours used in their garments (Owen-Crocker, 2004).

Throughout the Renaissance and the Enlightenment periods, colours were still subdued and regulated by moral influences from the church and religious decrees. Within any given sample size, there are outliers where the laws were challenged or were so remote that it proved difficult to enforce the laws. It is important to note that due to the lack of dyes and economic resources the colours available were already limited. As debates crept up with the introduction of new colour possibilities through alchemy and dyeing errors, critics of colour were prone to shun it. Pastoureau noted that colour was viewed as a "deceitful seducer, a form of artifice, falsity, and lies" (Pastoureau, 2001, p. 119). Colour was dangerous because it was uncontrollable. It had to be controlled or restrained at all times.

Organic Chemistry and Synthetic Colours

Scientists were unintentionally affecting the way colours were viewed by conducting research into colour theory in the later parts of the Middle Ages. In 1666, Sir Isaac Newton would radically change the understanding of colour relationships. His discovery that white light separated into coloured rays and created the spectrum of colours still used in present time was considered a breakthrough (Gage, 1999, p. 140). As colour became mastered by scientific research, it began to lose the mystery that had surrounded it for thousands of years. With the discovery of new elements such as cobalt, nitrogen, manganese, chlorine, and tungsten, chemists began to embark on a journey that would transform the world of colour. In 1706, Berlin chemists Johann Jacob Disbach and Johann Konrad Dippel accidentally discovered a dark blue, later termed Prussian blue, made from cyanide, potassium, iron, and prussic acid for which it was named. This dark blue was the first modern synthetic pigment (Kraft, 2008, pp. 61-67). The pigment replaced the expensive lapis lazuli and caught the attention of a tradesman

named Johann Leonhard Frisch. By 1708, Frisch began to promote and sell the pigment across Europe. Because it was easily made, cheap, nontoxic to a degree, and intensely saturated (i.e., bright with hue illumination), the colour attracted numerous tradesmen in the disciplines of painting, dyeing, inking, and cyanotypes (i.e., blueprints) (Berrie, 1997; Lowengard, 2008).

By 1710, manufacturing of this pigment was underway and demands for new colours began to increase from the general public and royal families. With the demand for new colours, the rise of laws and restrictions to keep colours under regulation grew exponentially with more and more patents on dyes and pigments in England, Germany, France, and Italy. In 1751, France was establishing itself as the colour capital of Europe with rapidly changing fashions and heavily controlled dye industries (Pinault, 1987; Fribourg, 1987, pp. 135-41). Paris was considered the most unrestrained of large cities and both women and men celebrated a short rebirth of colours in their wardrobes. However, this flash of excitement and return to colour would be sequestered by 1785-88 with the Revolution and subsequent war.

One of the biggest influences on colour during this time was Goethe's *Theory of Colour* published in 1810, which was continuously revised until his death in 1832. Goethe was one of the first scientists to link colour with psychology and perception. He also argued for the juxtaposition of colours in harmony. For example, the idea of complimentary colours such as orange and blue creating a stronger intensity when viewed next to each other (Goethe, 1982; Hokusai, 36AD). Goethe's influence on colour theory would later impact other writers of colour such as Michel Eugene Chevreul's *The Laws of Contrast of Colour*, Albert Henry Munsell's *A Color Notation,* and Wassily Kandinsky's *Concerning the Spiritual in Art*.

With the birth of organic chemistry, England became the cradle of the colour revolution and produced numerous advances in the production of textiles and uses of coal-tar. August Wilhelm von Hofmann (1818-92) began experimenting with chemicals and metals in hopes of synthesizing quinine from aniline, which has a coal-tar base, in order to find a treatment for malaria. He would later discover the

synthetic dye fuchsia or commonly called magenta. In 1856, as a teacher at the Royal College of Chemistry in London, one of Hofmann's youngest students, Sir William Henry Perkin (1838-1907) accidentally created the world's first synthetic dye called mauve (mauvine) that would forever change the global knowledge base of colours.

Created from the distillation of coal-tar, mauve was a colour that in contemporary culture could be closely related to a light tint of violet with a touch of red, perhaps referred to as lilac or lavender in commercial terminology depending upon colourfastness. Perkin patented mauve and began to manufacture it at a factory in Greenford Green, near London. The colour was the sensational hit of the time period. Empress Eugénie of France declared the colour matched her eyes and wore mauve around France creating an even greater demand for fabrics of this colour. Queen Victoria of England wore mauve to her daughter's wedding and again produced an outcry for the colour that the world had never seen before. Both events helped to secure Perkin's capitalistic financial stability for the rest of his life and establish synthetic dyes as a new form of colouring in fashion, food, and cosmetic industries (Garfield, 2000, p. 59). Mauve and Prussian blue were the first commodification of colours in modern times. These events all set into motion the foundation of the commodification of colours and the ultimate capitalization of colours in contemporary society.

The significance of Perkin's mauve influences a number of different areas of science, industry, and laws both directly and later on indirectly. Aniline dyes have been used in the earliest forms of chemotherapy; microscopic staining of cells for research; analysis of brain specimens; improved glass lens in eyeglasses with the reduction of glare; breakthroughs in DNA research (i.e. chromosomes); numerous chemical reactions; treatment for syphilis; photo-dynamic light therapy for cancer; increasing the production of war chemicals, uniforms, bombs; molecular diagnostics (i.e., fingerprint traces at crime scenes); home testing kits for chemicals; increased the English language with new words for colours (i.e., 7,500 words as of 1956); creation of many petroleum-based products; perfume research; and widespread use in the pharmaceutical industry (Garfield, 2000, p. 156). Each

new discovery would give rise to a series of patents, laws, controversies and further research and advances created to control or restrict the use of the dyes.

By 1863, Great Britain, France, Germany, and Switzerland had all established synthetic dye industries. Through the synthetic dyes in fabrics, it did not take long for the development of food dyes to penetrate into mainstream societies. In London, synthetic food dyes such as arsenic, picric acid, and aniline, were used in confectionary candies that caused serious health complications and raised concern over the use of dyes in food. Food colourings, cosmetic uses, and wallpaper colouring mostly made from coal-tars or arsenic all came into question in the late 1880s across the globe.

It has been suggested that Napoléon Bonaparte died of high levels of arsenic poisoning from Emerald Green, also referred to as Scheele's Green, that was used to dye wallpaper at the time, which was high in arsenic compounds. Forensic samples of his hair were 13 times the normal amount, however the case is equivocal in the absence of clearly authenticated samples from the wallpaper of Saint Helena (Whorton, 2011). Federal oversight of colour additives was one of the first public initiatives undertaken by the United States in 1881 when the US Department of Agriculture's (USDA) Bureau of Chemistry researched various foods, drugs, and cosmetics on the market. Poisonous materials such as lead, arsenic, and mercury were discovered in large amounts in fabrics, food, drugs, and cosmetics. Synthetic colouring agents were found to contain toxins, irritants, sensitizers, pesticides, and carcinogens at such high levels that resulted in numerous cases of people were becoming very ill or even dying (Garfield, 2000, pp. 103-4).

In 1906, the Pure Foods and Drugs Act came into effect prohibiting the use of poisonous or deleterious colours in confectionery and food additives. Cosmetics and medical devices (i.e., glasses, early contacts, dental floss, artificial implants) were included in the 1938 Act because some eyelash dyes had blinded women during that time. The standardized fifteen colour codes were issued numbers instead of being referred to by hue names to simplify the additive list of dyes (i.e., Red #40, Yellow #5, etc) (Gullett, 1992). Colours were further controlled in 1960

when the Foods, Drugs, and Cosmetics agency (FD&C) became aware that Orange No.1, a colour additive approved for use in food, made several children seriously ill from the consumption of Halloween candy on a national level (Ensminger, et.al, 1994, pp. 458-61). The European Food Safety Authority was founded in 2002 to address the concerns of the European Union's food additive industry and uses E numbers to code past and current dyes (See Fig. 1.5).

Currently the list of foods, drugs, and cosmetics colourings permitted supposedly do not harm general populations, however food colouring additives have been linked to cancer, digestive problems, neurological conditions, ADHD, heart disease, obesity, and multiple allergic reactions across the world (Farrer, 2000). In 2007, Britain's Food Standards Agency published an article through the medical journal *The Lancet*, which provided evidence that food colourants in children's foods increase the mean level of hyperactivity, citing "the findings lend strong support for the case that food additives exacerbate hyperactive behaviors (i.e., inattention, impulsivity, and over activity) at least into middle childhood" (McCann et al, 2007, pp. 1560–7). As consumers become more informed about the food dyes and additives, a growing demand is arising to ban synthetic dyes entirely and recommendations to return to using natural dyes from vegetable and plant sources are increasing.

A similar narrative is derived from the history of pigments and paints which also corresponds to the development of synthetic dyes. The first azo dyes in pigments used for oil paints were created in the 1880s. With the emergence of new oil paint colours from azo synthetic dyes, artists working with impressionistic landscapes and images began to adopt and request higher intensity and saturated pigments as diketopyrrolopyrroles (DPP). They contain light-absorbing molecules that produce a shimmering or pearlescent effect and highlight the new technological developments in current paint research (Ball, 2001, pp. 334-7). The *Colour Index International* text is considered the 'colour bible' or dominant text for dyers, reflected in their work. By 1935, a synthesized quinacridone pigment was developed but not marketed for artist's oil and acrylic paints until 1958. The new colours would further change the artist's available palette and shift the painting yet

Figure 1.5 – Dyes used in food linked to numerous health concerns.
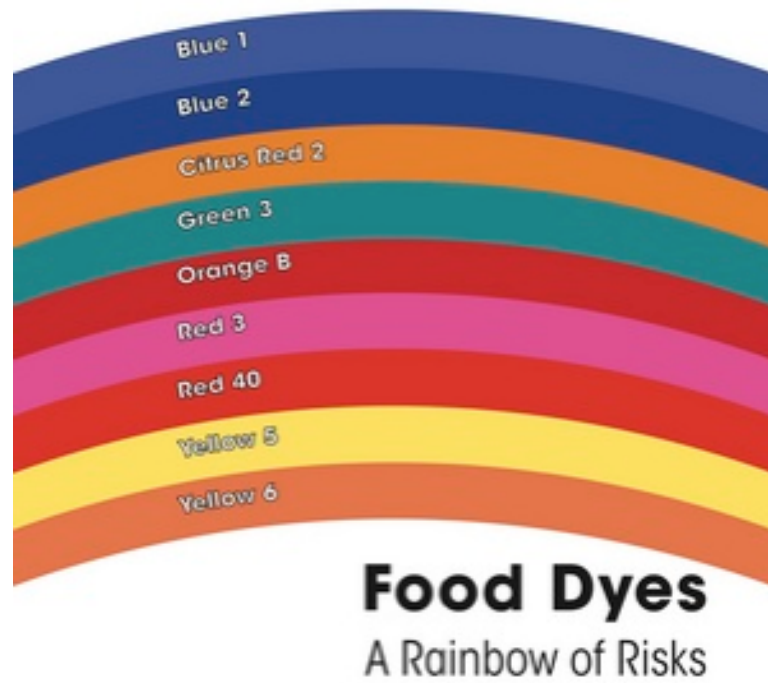
Blue 1
Blue 2
Citrus Red 2
Green 3
Orange B
Red 3
Red 40
Yellow 5
Yellow 6

Food Dyes
A Rainbow of Risks

Food Dyes: A Rainbow of Risks. 2010. Center for Science in the Public Interest. Public domain image; fair dealing for review. http://www.cspinet.org. (Accessed 2 April 2015).

again by the Abstract Expressionists who integrated them. Finally, it is worth mentioning that in 1983, another class of pigments were patented called diketopyrrolopyrroles (DPP). They contain light-absorbing molecules that produce a shimmering or pearlescent effect and highlight the new technological developments in current paint research (Ball, 2001, pp. 334-7). The *Colour Index International* text is considered the 'colour bible' or dominant text for dyers, painters, and colourists, first published in 1925 and modified extensively over the years. Each colour is listed by hue, use, and a number denoting the chemical composition. For example, CI Vat Red 13 CI No. 70320. The text functions as a detailed and precise tool for the manufacturing of colours, however there are ambiguities of colours that are lost with such regulations due to the agglomeration classifications and the abridgment of information concerning tints, tones, and shades of pigments, plus or minus chemical reactions to light, materials, and durational pertinence.

Colour Theory and the Punch Period

The developments of synthetic dyes stimulated a surge of new fabric colour choices for the general public that had never been available before. Sumptuary laws that were passed in England during earlier years were ignored as the desire for the new colours fueled the capitalistic economy and created a new movement in colour history referred to as 'punch'. The new colours were brighter and of higher intensity than traditional natural dyes. The public wore them with abandon across Western Europe and the United States. As Hippolyte Taine noted in 1861 as he walked through Hyde Park, "The colours are outrageously crude…badly matched, striped, fussed, overdone, loud, excessively numerous colours each swearing at the others…One sees purple or poppy-red silks, grass-green dresses decorated with flowers, azure blue scarves" (Blaszczyk, 2012, p. 40). Bright and bold colours were in great demand, however the government believed the chromatic discord needed to be addressed or controlled before it ruined society, specifically in regard to safety regulations developed during this period.

With all the new colours on the market, colour theory began to emerge as a viable field of study with writers such as Michel Eugène Chevreul (1786-1889), whose research began the formations of colour harmonies and universal colour systems still in place in current colour and art education (Blaszczyk , 2012, p. 34). Albert H. Munsell also contributed to the theories of colour systems, attempting to create practical, scientific formulas for understanding colour. It was during this time that the emerging field of psychology helped Munsell to express his key idea of colour creating psychological reactions within humans because colours were inside us and not outside (Gage, 1999, pp. 261-8). Numerous colour psychology experiments occurred at various universities during this time, including research on railroad signals and safety.

For example, in the wake of a series of train accidents with high fatalities caused by misreading signal light colours, the Railway Signal Association (RSA) in the United States decided to establish a set of codes for the industry. In a partnership of researchers, Yale professor Edward Wheeler, an expert on colour perception worked closely with specialty glass and light makers, such as Corning glass Works in upstate New York and Edison General Electric Company. They, along with railroad signal employees, improved lens colours that lead to higher contrasting lights for the signal employees to read. In 1908, the Corning- RSA colours created the informal industry standard with green for 'go', yellow for 'caution' and red for 'stop', which would later be used in conjunction with automobile traffic laws (Blaszczyk, 2012, pp. 98-9). Just as the standardization of colours was introduced on a local scale, it would quickly be put to an abrupt global scale challenge with speed and efficiency as the main concerns with the developments of World War I were formulated.

World War and Colour Consumerism

The major turning point of the use of colours in history in relation to laws and regulations occurred with the onset of World War I and World War II. By the early 1900s, much of the leading dye industry had been established in Germany due to the advancements in chemistry through corporate research laboratories and

production availability. In fact, half of the world's synthetic dyes were manufactured in Germany and the market for the dyes had grown by 90 percent (Steen, 1995, pp. 36-40, p. 47). As the First World War progressed, dye supplies to the Americas and Western Europe halted and the local governments took control of the domestic manufacturing of dyes. The shortage of colourants led to colour restrictions and helped establish the standard colour card for America, the DuPont Colour Company, and the Textile Color Card Association (TCCA) to control colour choices. The love of punch colours was replaced with 'national pride' colours such as "Made in America" labels and 'colour patriotism' in subdued 'wartime hues' of navy blue, khaki, cherry red, and sand. The capitalization of colours began to secure its place within the psychology of the public through such propaganda and media influences.

The colour regulations and control came directly from Herbert Hoover who asked his expert colourists, former camouflage painters from the war, to establish an efficient colour demand with the raw materials and dyes available. Similar colour controls by governments were enforced through the media in Great Britain, France, and Switzerland. The cheapest dyes to manufacture were indigo and madder derived from plant matter. These colours dominated the uniforms and fabrics of English, French, and United States forces during the war. By the end of World War I, the camoufleurs, previously abstract artists before the war who were utilized to create hidden or illusionistic distortions to confuse opponents, re-established themselves within the colour industry as colour experts. Colour became viewed as a capitalistic solution to the problematic under-consumption that was afflicting the mass-production economy. This means that colours were the panacea used to motivate populations to purchase new goods (which they did not necessary need) in order to improve the economy. People like H. Ledyard Towle, Faber Birren, and Howard Ketchum created new professions as colourist and researchers in the psychological effects of colour.

In the United States, industrial engineer Frederick Winslow Taylor and home economist Lillian Gilbreth helped popularize and propagandize notions of simplification, efficiency, and standards that would have worldwide influence on the use of colour (Blaszczyk, 2012, p. 10). New colour experts introduced

'functional' colours that were scientifically researched to provide a moral uplift and evoke positive emotions. Likewise, colours were 'engineered' to create ideal viewing situations and promote 'happy' workspaces. Examples from U.S. and European industry at the time are two-toned coloured cars and new appliances in avocado green and harvest gold hues. Fashion colour forecasting in Paris developed and would later carry influence into the global capital of colours. Standard ready-to-wear colours and sizes were created out of the restrictions from the dye industries placed upon them by the governments.

Research studies demanded by capitalization manufacturers in the United States, due to the unpredictability of consumer desire during the 1920s, indicated that women were 'by nature' more emotional than men and more sensitive to form, design, and colour. By anxious capitalization manufacturers, I mean companies such as the Du Pont Chemical Co., Industrial Potash Corp., and Court-Lill Chemical Co. who sponsored research. Paul T. Cherington, a market researcher, posited the notions of "Mr. Advertiser" and "Mrs. Consumer" in his book, *Advertising as a Business Force*. The links between female consumers and colour suggested that colours could trigger psychological reactions such as red to excite, blue to calm, and yellow to produce happiness. These tools became the cornerstone for controlling colours and colour consumption in post-war America and Europe (Blaszczyk, 2012, p. 140). Trade magazines and books such as *Good Housekeeping*, *Redbook*, and *The New Interior*, encouraged female consumers to purchase new colourful items for the home or be classified (i.e. victimized) as having a 'colorless personality'.

This demonstrates a strategic capitalization of colour using fear to control and establish colour behaviorism. Kitchens, bathrooms, and entire wardrobes were meant to match and be colour coordinated within this new media regulated colour system implied through social pressures and psychological desires for the new and upcoming. It created a change in the value systems of the time. Walter G. Baumhogger, vice-president of Montgomery, Ward & Company in 1929 stated, "Everything that people wear, everything they use, everything they surround themselves with, must have color. Here is a decided merchandising trend" (Blaszczyk, 2012, p. 159). This colour revolution was a modern approach to

increase demand, production, consumerism, and ultimately the incomes of those in power, otherwise referred to as an increase in the profit motive through a cultural framework of 'being good for the consumer'. Finally, it is worth noting that the United States government also commissioned the TCCA to create a series of 'dyed to match' textile standards applicable to all 24 military branches and intelligence offices called *The Old Glory* project (Blaszczyk, 2012, p. 129). This would have transatlantic colour forecasting for all governments worldwide, as the TCCA was referred to as a model for creating uniformity and patriotism within society.

Continuing Use of Colour in the Market Economy

As functional colours came into practice during and after World War II, architects and interior designers saw the possibility for expanding colour uses within hospitals, factories, offices, and schools. By colourizing interiors and 'enhancing mood conditioning', they claimed they were able to relieve eye strain, fatigue, accidents, and increase productivity through the 'correct' selection of colours (Blaszczyk, 2012, p. 215). H. Ledyard Towle and Faber Birren used colour theory to develop marketing programs for paint industries, like Dupont, that focused on colour as a solution for poor work efficiency, morale, and to lower accidents by increasing the contrasts in machines and the work place (Blaszczyk, 2012, p. 218). For example, in hospitals, colours such as light green, blue, and yellow were used to paint walls, dye hospital gowns, and fabricate medical devices which all contrasted with the flesh colours of their patients and therefore would relieve eye strain, allow for longer working hours (i.e., increased labor and profit) and could also allow the concealment of biological spills if necessary (Schmidt, pp. 681-8). Innovations in colour also led to breakthroughs in improved lighting conditions with the introduction of flametint lamps and daylight lamps, along with better glass and bulb-blowing machines from Corning and General Electric. In 1932 the first full-color movie, the cartoon *Flowers and Trees*, was produced in Technicolor by Disney (Thompson and Bordwell, 2009). Colour possibilities seemed to be exploding again, but under the tight control of the colour theorists, industries, and government regulations.

In 1934, a new group of colourants were discovered, the phthalocyanines, copper-based pigments, that provide high intensity blues and greens. By the eve of World War II, Germany was active in the dye industry producing up to 36% of the total world production of dyes. During the war and Great Depression in the United States, colours were once again restricted and controlled by the governments and media to promote wartime colours and to help the mentality of people fighting overseas. The end of the war signaled a return to reshifting consumers to purchase new goods in order to increase the sense of communities and consumer identities within the country.

With the influence of colours in factories and public shopping areas, such as Bloomindale's, administrators of public schools wanted to give students the same increased efficiency that occurred in the material realm of manufacturing. Classrooms changed dramatically during this period from white and gray rooms to areas being full of reds, yellows, and blues. The 1950s advertising campaigns for products brought about huge colour demands by consumers for telephones, cars (i.e. originally all black, model T-Fords could now have custom paint jobs in any colour the consumer desired), refrigerators, and washing machines in various shades of colours. The general public was encouraged to 'do it yourself' (DIY) and the use of home interior wall paint was encouraged instead of using wallpaper. Companies such as Philip Morris and Coca-Cola began to explore and use colour branding as a way of differentiating their products from others as having superior quality and contributing to the creative destruction often associated with capitalism.

However, the 1950s colour outburst was contained by an updated version of the efficiency project proposed by Herbert Hoover so many years earlier. With the increasing need to control costs, art directors, companies and factories began to control colour choices within a limited offering or limited edition selection of colours. From the 1960 to 1990s, colours were highly influenced and regulated by the fashion industry in a form of Thorstein Veblen's 'conspicuous consumption' (Veblen, 1899/1915). The spending of money on the acquisition of luxury goods and services to publicly display economic power was encouraged by the fashion industry (i.e., couture lines), the governments, and the media. Mod was replaced by multicoloured hippie styles and then transformed into the 1980s reactionary black

non-conformist styles, navy or taupe power suits, and neon colours. As Regina Lee Blaszczyk observed, "Colorists had to keep up with the growing influence of newspapers, magazines, movies, and TV on design, fashion, and taste. Celebrity tie-ins, special events, and anniversaries always spurred fads, but now one fad followed another at an accelerated pace- the signs pointed to a new phase in globalization, and the color revolution stood on the precipice of a major transformation" (Blaszczyk, 2012, p. 289).

Contemporary Colour and Capitalism

While innovations in technology have opened up colour research across a global spectrum as reviewed in the previous sections, there are also recent developments in the ownership and control of colours that need examination. In 1961, Yves Klein was able to secure his International Klein Blue (IKB) with a patent issued by the National Industrial Property Institute in France. Klein had developed the colour with chemists at the French pharmaceutical company Rhône Poulenc. He desired the colour to retain the same intensity and brightness of the dry pigment of ultramarine blue. This was achieved by adding a synthetic resin marketed in France during that time by Rhône Poulenc as Rhodopas M or M60A (Klein, 1955-1962). What was perhaps most unique about IKB was that this type of blue pigment cannot be reproduced exactly on screens or in print, but demands that the viewer experience the colour in the 'flesh' in order to see all of the intensity. This moment captures a shift in the history of colour from colours being produced and applied to objects, fabrics, and things to the development of colour itself being owned, created uniquely, and emerging as a commodity in its own right (See Fig. 1.6).

The idea of trademarking a colour was traditionally excluded from the World Trade Organization Agreement on Trade-Related Aspects of Intellectual Property Rights. A colour was not considered to be a distinctive 'trademark'. However, a number of court cases have emerged where this notion has been challenged, resulting in the World Trade Organization broadening the legal definition of trademark to encompass "any sign…capable of distinguishing the goods or

Figure 1.6 –Example of how colours are used in advertising.

Psychology of Colour in Logo Design. 2015. The Logo Company. Public domain image; fair dealing for review. https://thelogocompany.net/blog/infographics/psychology-color-logo-design/. (Accessed 25 November 2015).

services of one undertaking from those of other undertakings", article 15(1)
(Judgment of the Court, 2003). A colour trademark is now possible where at least
one colour is used to perform the trademark function of uniquely identifying the
commercial origin of products or services.

This type of graphical representation of a colour being trademarked is found in the
2012 court case of the High Court of Justice, Court of Chancery, in the United
Kingdom, Sociétè des Produits Nestle S.V. v. Cadbury UK Limited. The Court
held that a specific shade of the colour purple (Pantone 2685C) could be registered
as a trademark for the Cadbury Company, stating:

> Since single colours per se are, as a matter of European law, capable
> of being signs within Art. 2 ... then, to paraphrase a little the words
> Cadbury have used in the description of the mark, in judgment the
> colour purple (Pantone 2685C) applied to the whole visible surface,
> or being the predominant colour applied to the whole visible surface,
> of the packaging of chocolate, is capable of being a sign within Art.
> 2. ... Since on the evidence the public associate the colour purple
> itself with Cadbury's chocolate, Cadbury are entitled to a registered
> trademark for that colour on the relevant goods and that is the mark
> they have applied for. (High Court of Justice, 2012)

This decision does not stand alone, but rather is a part of a larger body of
trademark court cases that have been registered across the world. Dr. Ralf
Sieckmann, a German patent attorney, oversees a website of the non-traditional
trademark archives. His website refers to documents seeking to trademark smells,
sounds, holograms, colours, motions, aromas, and tactile surfaces. From 1995-
2007, over 500 cases were recorded seeking colours to be trademarked by
corporations, companies, and individuals, many of which are still under
consideration by courts due to challenges and appeals by other entities that use
similar or even the same colours in their logos or branding. For example, in 1995,
the U.S. Supreme Court 'colour case', Qualitex Co. v. Jacobson Prods. Co., issued
a landmark ruling starting the colour alone or colour per se could be registered as a
trademark, 514 U.S. 159, provided that it has acquired a secondary meaning in the
market, as per the Lanham Act.

The green-gold that plaintiff Qualitex Co. had used for dry cleaning pads was
registered as a patent under the U.S. Patent and Trademark Office (1991) and

could therefore not be used by the defendant Jacobson Prods. Co. In this case, Justice Stephen Breyer, writing for a unanimous court held that the Lanham Act was very broad in its definition of what a trademark could be. The definition section of the Lanham Act, 15 U.S.C., 1127, defines trademarks as including "any word, name, symbol, or device, or any combination thereof". Breyer reasoned that colors could constitute descriptive trademarks, because while colors do not automatically evoke a connection to any product by themselves, they could take on secondary meaning over time, in the course of use in the marketplace. In this way, a color could serve the chief purpose of trademarks, that of identifying the source of a particular product. It is in this very idea where colours are becoming a commodity within neoliberal societies such as the United States.

The trademarking of colours marks a shift in contemporary thought surrounding colours and consuming colours. Who has the right to the ownership of colours? What is being lost and/or gained and by whom? What types of psychological effects does the capitalization of colour have on the public and in public spaces? The following chapters shall begin to tackle some of these concerns by examining the power of colours in relation to biopolitics and issues of control.

SECTION II

CHAPTER III - LEGALITY OF COLOURS

"Power doesn't corrupt people, people corrupt power."

~William Gaddis (1976)

There has been a long-standing preoccupation with trying to own a colour. From Chapter I and II, the historiographical control of colours by ruling bodies or classes to the development of synthetic colours from coal-tar and William Perkins' patented mauve in the 1860s, illustrates the desire to own colours because of their influence and power. Legal cases in the United States attempting to own colours can be traced back to 1906 when Leschen & Sons Rope Company claimed rights to the red it had woven into their wire rope. This 'bill in equity', 201 US 166(26 S. Ct. 425, 50 L.Ed. 710) was denied by the Eastern District of Missouri court even though the plaintiff, Leschen, had obtained a trademark for the color red to be used in his ropes by the Commissioner of Patents in Dec. 4, 1900.

The outcome was based on another case, Hanson's Trademark, L. R. 37 Ch. Div. 112, stating, "It is the plain intention of the act that, where the distinction of the mark depends upon color, that will not do. You may register a mark, which is otherwise distinctive, in color, and that gives you the right to use it in any color you like; but you can not register a mark of which the only distinction is the use of a color, because practically, under the terms of the act, that would give you a monopoly of all the colors of the rainbow". Following their inaugural case, multiple court cases ensued regarding the control and ownership of colours including: Diamond Match Co., 1906; Coco Cola, 1920; Campbell Soup, 1949; Life Savers, 1950; Teweles Seed Co., 1963; Kraft, 1986; and NutraSweet, 1990 (Elliott, 2003).

The capitalization of colour is demonstrated through the contemporary state of the court cases that concluded Chapter II. In order to understand and clarify how this process has occurred and who the main stakeholders are, an in depth investigation

71

of the court cases is addressed in this chapter. As the developments unfold, a description of the different layers of organizations that are involved in this regulation process is also examined. Finally, a critique of the colour elite nexus from a biopolitical viewpoint is offered to begin to understand the implications of colour and control.

Colour Court Cases

Is the legality of colour far more important as a subject than has previously been given consideration? What are the connections between colour and capital? There is a rising link between colour and capitalism since the 1950s that is continuing to grow especially in contemporary society. In a recent study, the right shade of blue has been postulated to be valued as a multi-million dollar colour based on data that individuals prefer this particular shade of blue to other blues. Microsoft's research team discovered that a deep bright blue, specifically HEX #0044CC vs #2200CC engaged individuals the most and embodied a sense of power to the consumer (Morton, 2010). Their data analysis indicated a particular blue colour could generate anywhere from $80 million to $90 million in ad sales for the company Bing. Bing commissioned the study and is owned by Microsoft.

The Bing company found itself in a similar situation to the phenomenal success of Heinz EZ Squirt Blastin' Green Ketchup where more than 10 million bottles were sold in the first seven months following its introduction to the market. This colour change generated the highest sales increase in the brand's history with $23 million in sales (Simoncini, 2011). Between 2000-2006, green, purple, pink, orange, teal, and blue ketchup were available for purchase and targeted towards children's consumption through marketing and advertising. As colours and the economic market continue to intertwine, the legality of colour takes on even greater significance as a biopolitical formation. How did this all begin and where are the changes occurring?

The legality of colours became part of a global market as of 1994, when the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) was negotiated (Westkamp, 2003, pp. 827-859). The European Union, United States,

Japan, and other developed nations lobbied to create a program to address trademarking and copyright concerns. Campaigns of unilateral economic encouragement under the Generalized System of Preferences and coercion under Section 301 of the Trade Act played an important role in defeating competing policy positions that were favored by developing countries, most notably Korea and Brazil, but also including Thailand, India and Caribbean Basin states. The United States developed a strategy of linking trade policy to intellectual property standards that could be traced back to the Pfizer management in the early 1980s where maximizing intellectual property privileges became the number one trade policy in the US. From GATT, the establishment of the World Trade Organization (WTO) was formed. Within this organization, the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) was created to establish minimum standards for copyright rights, trademarks, patents, undisclosed and/or confidential information, enforcement procedures, and dispute resolution procedures (Braithwaite and Drahos, 2000).

There is a growing level of criticism concerning TRIPS as time elapses due to poor understandings of the implications of such global standards at the onset. Developing countries, academics, and non-governmental organizations have criticized the Agreement on Trade Related Aspects of Intellectual Property Rights as bad policy which has had highly negative effects especially in concerns of wealth and economy (i.e., moving capital from people in developing countries to copyright, trademark, and patent owners in developed countries). There is also a level and imposition of artificial scarcity on the citizens of the countries that would otherwise had have weaker intellectual property laws. Peter Drahos writes, "It was an accepted part of international commercial morality that states would design domestic intellectual property law to suit their own economic circumstances. States made sure that existing international intellectual property agreements gave them plenty of latitude to do so" (Drahos and Braithwaite, 2007, p. 38).

Daniele Archibugi and Andrea Filippetti argue that the importance of TRIPS in the process of generation and diffusion of knowledge and innovation has been overestimated by both their supporters and their detractors (Archibugi and Filippetti, 2010, pp.137-49). Claude Henry and Joseph E. Stiglitz also argue that the current intellectual property global regime may impede both innovation and

dissemination, and suggest reforms to foster the global dissemination of innovation and sustainable development (Henry and Stiglitz, 2010, pp. 237-51). What specific impact does TRIPS have on colour in regards to trademarks and capital?

Trademarks represent the first contact consumers have with brands and products. The Trade Marks Act 1994 defines a trademark as "any sign capable of being represented graphically which is capable of distinguishing goods or services of one undertaking from those of other undertakings" (Londesborough, 2008, p. 56). It acts as a distinction between objects and indicates the signification of a particular brand that provides the trademark with economic value. For example, it is estimated that in 1986, Coca-Cola was worth $14 billion, of which half of that figure represented the worth of the brand identity, embodied in the brand's trademark and the colour red (Drescher, 1992, p. 301). Thus, the protection of trademarks becomes necessary to protect both the sanctity of the idea of a brand and the associated economic interest. This economic interest may also represent the driving force behind the decisions of many trademark infringement cases – with the result perhaps being determined to provide the best economic outcome.

Much of trademark legality is derived from the Lanham Act of 1946, under the United States Patent and Trademark Office (PTO). The Act was intended to liberalize the traditional trademark laws so that they would conform to modern business practices (Carraway, 1995). Until 1985, the PTO and the Supreme Court excluded colour per se from the Lanham Act protection. The Owens-Corning Fiberglass Corporation filed for a colour trademark and won under the Federal Circuit Court that allowed for the colour pink as a trademark for insulation sold by Owens-Corning. The court analyzed the Lanham Act's text and legislative history, and concluded that nothing precluded the protection of colour under modern trademark law (Carraway, 1995). Colour could be protected if no competitive need for the colour existed in the industry and if the colour had achieved secondary meaning to the consumer. Owens-Corning established secondary meaning through quantitatively relaying on data which indicated their 35 year advertising campaign and the $42 million invested into it, along with a survey submitted to which 50% of respondents recognized Owens-Corning as the "source" of pink insulation, which proved to be highly compelling evidence for the court. This verdict affected

a change in the Lanham Act and changed the history of colour legality in the process.

In the 1995 Supreme Court case of Qualitex Company vs. Jacobson Products Company a similar allotment of colour trademarking occurred where the court held that a colour could meet the legal requirements for trademark registration under the Lanham Act. Qualitex Company manufactured and sold, amoung other laundry industry products, press pads for use on dry cleaning presses. To distinguish its pads from others, Qualitex dyed the press pad fabric a unique green-gold color that reinforced the trademarked name "Sun Glow" (See Fig. 2.1). Qualitex instituted a trade dress and passing off action under section 43(a) of the Lanham Act against Jacobson Products Company, which sold an inferior-quality press pad named "Magic Glow" with exactly the same green-gold shade. Before the action reached trial, Qualitex filed for and the PTO granted, registration of the green-gold shade as a trademark for its press pads. Qualitex then added to its action a claim that Jacobson had infringed the registered colour trademark, violating the Lanham Act's section 32(1). The court applied Owens-Corning, holding that the green-gold mark had acquired secondary meaning (Carraway, 1995).

This raises concerns to the global impact of colour trademarking. In the United Kingdom, Smith, Kline and French Laboratories Ltd vs. Sterling-Winthrop Group Ltd (Oxford Journal, 1976, pp. 511-40), the House of Lords held that colour trademarks can subsist as "the scheme of colouration from the coloured pattern presented to the eye" (Horton, 1989, p. 311), and that colours can constitute marks even where they cover the entire surface area of a product. By implication, this would seem to include individual colours. A contemporary case within the UK illustrates this concept with the contention between Cadbury and Nestle in regards to the colour purple which needs further unpacking to understand the capitalization of colour.

In 2004, the UK based chocolate company, Cadbury (later acquired by Kraft in 2010), filed for the trademark of the colour purple (specifically, Pantone 2685c, HEX #3B0084 or RGB 59-0-132). The colour purple, as shown in the form of

Figure 2.1 – Qualitex vs. Jacobson contested green-gold colour.
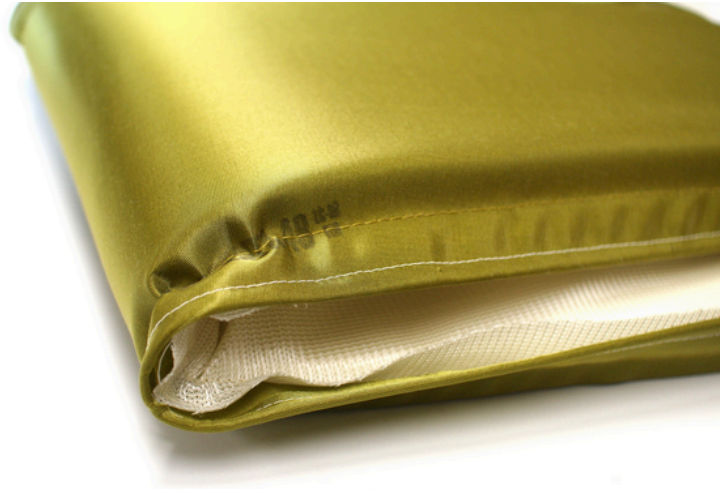
Green gold press pads covers. 1995. Public domain image; fair dealing for review. Website: http://www.museumofintellectualproperty.org. (Accessed 25 November 2015).

application, applied to the whole visible surface or "being the predominant colour applied to the whole visible surface, of the packaging of the goods [for] chocolate in bar and tablet form, chocolate confectionery, chocolate assortments, cocoa-based beverages, chocolate-based beverages, preparations for chocolate-based beverages, chocolate cakes" (Carraway, ibid). Swiss company Nestlé, Cadbury's biggest rival, opposed the trademark. Their legal argument was that the shade of purple had no distinctive character, had been granted for too broad a range of goods, and was applied for in bad faith, claiming that Cadbury never intended to use the mark for 'the whole visible surface' (See Fig 2.2 & 2.3).

Cadbury countered by proving that the colour was in use since 1914 (as a tribute to Queen Victoria who showed affection for the colour purple) and therefore had attained a secondary meaning to the chocolate consumer, stating that the British public has grown up with purple being linked to their product. Charles Russell and partner Mary Bagnall won the case for Cadbury at the Court of Appeal, instructing One Essex Court's Emma Himsworth QC. The team faced off against Wilberforce Chambers' Michael Bloch QC, who was instructed by RGC Jenkins & Co associate Joanne Ling to lead the claim for Nestlé.

The Court stated that Sections 1(1)(a) and 3(1) of the Trade Marks Act 1994 were intended to implement Articles 2 and 3 of the Trade Mark Directive which also correspond to Articles 4 and 7 of the Community Trade Mark Regulation. What this translates to is that the Court relied on a series of judgments from the Court of Justice of the European Union (CJEU). The judge concluded ultimately in Cadbury's favour. Rejecting Nestlé's appeal, Judge Colin Birss, in the high court in London in 2012 during the Société des Produits Nestlé S.A. vs. Cadbury UK Limited case stated, "The evidence clearly supports a finding that purple is distinctive of Cadbury for milk chocolate."

Upon the first ruling, Cadbury said in a statement, "We welcome the decision of the high court which allows us to register as a trademark and protect our famous colour purple across a range of milk chocolate products. Our colour purple has been linked with Cadbury for more than a century and the British public have grown up understanding its link with our chocolate." (Smithers, 2012). Similarly,

Figure 2.2 – Cadbury's purple coloured wrapper from the court case.

Figure 2.3 – Nestlé's purple coloured wrapper.

Paul Medlicott, head of FMCG at law firm Addleshaw Goddard, commented,
"Trademarks of names and logos are familiar to most businesses, but the high
court's ruling in favour of Cadbury shows the increasing importance of colour
trademarks. Cadbury sought to, and has succeeded in, trademarking its distinctive
purple colour used in relation to its products. It is now able to prevent its
competitors using that same colour. The challenge faced by Cadbury in getting the
colour registered as a trademark is evident when you see that their trademark
application was first filed in 2004." (Smithers, ibid). Cadbury had won the first
battle to secure its right over the colour purple, which was published in the Trade
Marks journal in 2008. However, it could not be registered because Nestlé opposed
it.

Subsequent to the 2012 ruling, Nestle appealed the decision again arguing that the
mark was not capable of being represented graphically and as such not able to be
registered as a trademark. In 2014, after two more years of debate, the Supreme
Court reversed the ruling and the chocolate maker was refused the chance to
register its iconic purple shade when Lords Neuberger, Wilson and Huges found it
did not raise an arguable point of law. The Court of Appeal under Lord Justice
Lewison, Sir John Mummery and Sir Timothy Lloyd ruled that Cadbury's
formulation did not comply with the requirements for trademark registration and
was attempting to register "multiple signs" involving the colour. Mummery said,
"The unknown number of signs means that the representation is not of 'a sign'.
The mark applied for thus lacks the required clarity, precision, self-containment,
durability and objectivity to qualify for registration." Cadbury had argued that the
issue should be referred to the European Court of Justice but the court said,
"Application is not necessary to request the Court of Justice to give any ruling,
because the question is irrelevant as the court's existing jurisprudence already
provides a sufficient answer" (Beioley, 2014).

With the appeal process in rejection, it seemed as if the case would be concluded;
however, the two companies are also engaged in other lawsuits concerning colours
and products like the Kit Kat bar. This case illustrates the importance and
significance of the capitalization of colours in the market. There are over 500 new
cases that have been filed since 2004 involving the use of colours and

trademarking. Monopolizing colour thus becomes a new marketing opportunity for corporations as well as a way of generating capital through the legal system. Many of these cases have proven successful in suing others for infringement within the last ten years including: UPS- Pullman Brown; T-Mobile- Magenta; Target- Red; Tiffany & Co.- Tiffany Blue; University of Texas- Burnt Orange; 3M- Canary Yellow Post-it Notes and Purple tape; AstraZeneca's Nexium- purple; John-Deere-Green & Yellow Scheme; Caterpillar Inc.-Yellow; University of North Carolina-Carolina Blue; and Veuve Clicquot's- Bright Yellow.

Another example that came to light in early 2016 concerns a new substance and controversy over a new colour- vantablack (**V**ertically **A**ligned **N**ano**T**ube **A**rrays black). It is composed of carbon nanotubes and is the blackest/darkest substance known, absorbing up to 99.965% of radiation in the visible spectrum (Surrey NanoSystems website, 2016). The controversy surrounding the colour is that the private UK company, Surrey NanoSystems who manufactures this substance, granted permission and exclusively licensed the rights to only one artist to use this material- Anish Kapoor, a decision that outraged other artists who are not able to use it (Blair, 2016; Hullinger, 2016; Griggs, 2016). As the company indicates on their website:

> Vantablack is generally not suitable for use in art due to the way in which it's made. Vantablack S-VIS also requires specialist application to achieve its aesthetic effect. In addition, the coating's performance beyond the visible spectrum results in it being classified as a dual-use material that is subject to UK Export Control. We have therefore chosen to license Vantablack S-VIS exclusively to Kapoor Studios UK to explore its use in works of art. This exclusive licence limits the coating's use in the field of art, but does not extend to any other sectors. (Surrey NanoSystems website, 2016)

Surrey NanoSystems gave Kapoor the exclusive rights to using Vantablack in "creative arts," which Steve Northam, a representative of Surrey NanoSystems, said translates into anything that is meant to be observed purely as a work of art (Hulinger, 2016). He stated that the company will continuously reassess this agreement, but as Vantablack is still such a new material, it makes sense that they would want to have some control over how it is being used. He concluded, "I do

understand that people would want to get their hands on this stuff, but I suspect many would not want to pay the prices for it" (Hulinger, 2016).

The company also states that vantablack is not a pigment or a colour, but is rather a "forest" of tiny, hollow carbon tubes which when light hits the tubes is absorbed and cannot escape, hence the absence of colour. However as this thesis highlights in the first section of this text, this claim relies upon outdated research that colour is the result of the way light is reflected off an object and into our eyes. The recent research on colour indicates that its far more complex than originally thought and is instead a dynamic relationship between light, eyes, environments, and brain waves. Therefore human eyes scientifically perceive vantablack as a colour regardless of the company's claim. Why try to defend their exclusive licensing to Kapoor in this manner? Because vantablack is expensive to make and even more complicated to package and distribute due to UK export control regulations custom laws (Surrey NanoSystems website, 2016; Griggs, 2016; Kooser, 2016; Hullinger, 2016).

This realm of owning colours, licensing exclusive rights to colours, and the legalization of colours all have implications of which contain far reaching effects on a global scale. Just how far reaching? The regulation and legalization surrounding colours is embodied inside multiple organizations seeking to dominate the world market in regards to colour. These court cases provide an excellent starting point for illustrating how colour is mediated and governed by a legal domain. What is potentially and significantly disturbing about the court cases is that the courts have ignored the implications of capitalism controlling colours, the actual meaning of the colours, and the affects of the colours on the consuming public. The cases clearly raise questions of how colour impacts the commercial landscape. By exploring the expansion and (re)interpretation of intellectual property law, the monopolies and organizations behind the creation of colour as a commodity begin to surface. In Kembrew McLeod's analysis in *Owning Culture*, 2001, he argues the myriad of ways that corporations use law to wield power over virtually all aspects of cultural production (McLeod, 2001). These organizations, termed within this text as the colour elite nexus, are involved with influencing, controlling, and creating the demand for colours on a global field.

CHAPTER IV – COLOUR ELITE NEXUS

Colour Elite Nexus

The economics of colour are controlled by multiple organizations that are involved with selecting, ranking, and channeling colours distributed in the world. In an attempt to control the capitalization of colour, as stated earlier, powerful ends in political, public, commercial, corporate, educational, social, and global arenas are at stake. As colour begins to function more as a commodity, it becomes problematic in regards to who is in control, who is regulating the colours of the world, and to what means. Who are the stakeholders? What are the consequences?

Colour standardization has become central to the contemporary material culture and market. Colour is now able to function as part of our informational infrastructure. For instance, the green logo of Starbucks is the same colour in New York, London, Tokyo, Italy, or elsewhere. The green shade is used globally to symbolize the product, service, and quality that consumers associate with the company. This type of network or nexus (i.e., a connection or series of connections) carries with it great power. Power that at its roots is being manipulated and controlled by organizations from behind the scenes. The colour elite nexus controls the cacophony of colours that the public views around them everyday.[1] By colour elite nexus, this thesis means the network of powerful colour organizations that carry influence to systems of government, corporations, and consumerism on a global scale. Colours that are powerful, which define, shape, and influence not only cultures, mindsets, and events, but also the overall human psychological realm of being in the world.

There has not been much written about the colour elite nexus as details on these organizations proves to be challenging and often impossible to gain access to.

---

[1] The colour elite nexus stems from the influence of C. Wright Mills and his scrutinizing of the political, military, and economic networks of the 'power elite'. C. Elliott wrote about the colour elite in her dissertation, however did not focus on the legality of colour, but rather the communication of colour. The term 'colour elite nexus' is something I created to describe the power formations I discovered in my research.
[2] In addition with my own experience as I attempted to gain access to information and was denied repeatedly.
[3] Numerous emails, phone calls, and written letters were never answered by the commission and no

After numerous attempts to contact the various organizations involved, the research presented here is only the beginning of a much longer process of future research. What is known about the colour elite nexus stems predominately from their websites, databases, articles, white papers, and historical accounts of the establishments from which they emerged to the powerful organizations they have come to embody.

The colour elite nexus is comprised of two areas: the first encompassing the control of the development and forecasting of colours and the second focused on the management of colours. By development and forecasting, this thesis means the ways in which colours are created within different industries (i.e., pigments, dyes, fabrics, plastics, metals, paints, etc.) and the processes of predicting and deciding the colours to be utilized within each area. By management of colours, this thesis means the way in which colours are regulated, standardized and pertain to sectors of governments, councils, and corporations (as well as the technical colour system that transforms data encoded for one device, RGB, into another device, CMYK, to produce the same/identical colours). The major colour forecasting trade associations are the Colour Marketing Group (CMG), the Colour Association of the United States (CAUS), and the International Colour Authority (ICA). The major colour management organizations are Pantone, the International Colour Consortium (ICC), and the International Commission on Illumination (ICI). This is not an inclusive list; it highlights the dominant, established and powerful players in colour. There are located various subsidiaries and smaller colour forecasting and management operations in cities across the globe and for the purposes of this research, the focus will be on the six largest and well established organizations. In order to better understand how these groups function, a brief but in depth explanation of each organization is undertaken.

Colour Forecasting Trade Associations

The colour elite nexus includes members of the Colour Marketing Group (CMG), the Colour Association of the United States (CAUS), and the International Colour Authority (ICA). All three organizations operate on an international platform with

members from around the world. These groups primarily focus on the manufacturing, development, label/name of colours, and colour forecasting (which although is assumed to have a clear definition, is much more complex than when it appears initially). In general the term forecasting means a prediction of colors that will become popular for a specific upcoming period of time. However, this leads to a series of questions about who is deciding such predictions and what are the motivations? For what purposes? Based on what information? For what aspect of industry? For what culture and what locations? These are questions that should not be taken lightly considering the far reaching implications of the forecasting and the entanglement with world markets and power relationships.

The Color Marketing Group (CMG)

"Color Sells and the Right Color Sells Better" is the slogan of the Color Marketing Group as located on their website and numerous white papers (CMG website, 2014). Founded in 1962 as a not-for-profit international association of colour professionals, CMG was established to provide a forum for the exchange of "non-competitive" information relating to all phases of colour marketing, colour trends and combinations, design influences, merchandising and sales, and education and industry corporations in regards to how colours apply to the "profitable marketing of goods and services" (CMG website, ibid). The purpose of the group is to "interpret, create, forecast, and select colors in order to enhance the function, salability, and quality of manufactured goods" with a disclaimer that the CMG's colour forecasts are "color directions not directives and are best interpreted by color professionals" based on their specific industries and products (CMG website, ibid).

Composed of nearly 1,000 members from 20 countries, the CMG is located in Alexandria, VA, near Washington, DC. The CMG develops and creates colour combinations and forecasts for multiple areas of industry, including Action and Recreation (sports, camping, hiking, etc.); consumer goods (plastics such as coffee makers, kitchen goods, ready-to-assemble furniture, etc.); technology, home (bedroom goods, bathroom goods, wall paint, organizers, etc.); visual

communications (cell phones, signage, posters, etc.); transportation; juvenile products (children's toys, clothes, room décor, cereal boxes, etc.); fashion; and environments for the office, health care fields, retail fields, hospitality and entertainment areas, and institutional and public spaces.

Although technically anyone may apply to become a member of the color marketing group, there is a selection process involved as well as membership fees and rules. The selection process is highly secretive, as directives found on their website indicate an individual must meet strict entrance requirements as designers, colour marketers, or academics of colour and must be either a) creating colours for manufactured products; b) applying colours to manufactured products or designing or marketing product colours, or c) teaching design and/or colour full time at an accredited university or college in a colour design or marketing related curriculum. As an example, an individual may apply and if selected would pay approximately $800 in fees for one year, whereas a corporation may apply and if selected or approved would pay $1000 for one year for up to 3 members from the company or $3,200 for 7 employees to be members. However, being a member is not the same as being part of the decision-making groups within the structure of the organization.

There are divisions of management, executive committee members, and boards of directors. Of particular interest is that the former president, Mark Woodman, also owns his own consulting firm called Mark Woodman Design & Color, while the current president, John West, owns J&J Marketing in McMurray, PA. All of the officers and executive committee members are from the USA and own their own companies or work for colour consulting agencies (EMD Chemicals, OBaby!, X-Rite, Pantone). There is an international board of directors who also hold prominent positions in other corporations such as Formica Corporation, Kelly-Moore Paint Co., NCS Colour AB, Merck KGaA, and numerous design studios. There are 300 industry insiders who convene at 13 sites around the world to share their observations about colours at conferences during the year. For example, the CMG hosts an Asia Pacific meeting, North American meeting, European meeting, Latin American meeting, a world color forecast conference, and a European summit on colour each year (the summit meeting decided the colour palettes for the year two years in advance and members are of the highest levels within the

CMG). It is interesting to note that the CMG maintain strict control over their meetings as they will not permit any outside non-member to so much as silently observe any of their workshops, classes, or seminars, even as an academic researcher (Elliott, ibid., p.88).[2]

In addition they organize multiple ChromaZone workshops, seminars for businesses, and participate in the London Design week. To attend the meetings, conferences, workshops, and seminars, fees are charged on top of membership fees. Finally, there is a monthly colour alert e-newsletter that members receive which informs them of the current colour of the month which are then archived on their website as the "color alert archives". The CMG is involved with social media sites such as Facebook, Twitter, Pinterest, LinkedIn, Google, and publish their own books on colour forecasting and provide lectures as requested.

The Color Association of the United States (CAUS)

In 1915, nine men from the most important sectors of business at the time (Frankel, Frank &Co., Gage Brothers & Co., Samuel Arc & Co., Leon Rheims Co., Cheney Brothers, Pelgram & Brothers, and National Ribbon Co.) formed together the Textile Color Card Association of the United States (TCCA) which would later change their name to the Color Association of the United States. After the industrial revolution the textile trade needed to predict and set the upcoming colours and style trends for the US and European markets. The CAUS were the first to implement such a standard and make recommendations to corporations and industries. Their mission is to issue colour forecasts twice a year, provide directions for color trends to the markets, enable different segments of the market to coordinate their products by offering the formulas for the production of each colour forecast, and serve as an information center for all kinds of color services, questions, and knowledge (CAUS website, 2014).

They helped regulate the colour manufacturing areas for colour consistency and organization amoung various trades to ensure colours remained true to the original

---

[2] In addition with my own experience as I attempted to gain access to information and was denied repeatedly.

pigment. By 1930 the association had established close ties to the military and US government. The CAUS (at the time, TCCA) played a major role in defining the colours and names for all manners of government such as uniforms, ribbons, medals, and flags. For example, the TCCA/CAUS helped establish the modern flag of the US with specific colour terms selected and named by them (Old Glory Red and Old Glory Blue) (CAUS website, ibid). In addition, they also helped establish the colour systems most colleges and universities use in the US. For example, Harvard's crimson and Yale's blue were established through the CAUS system. This system of establishing university colours has a controversial history due to outside pressure from colour organizations attempting to intimidate schools into 'locking in' a colour before another school selected it. By officially decree from a colour organization, mainly TCCA, a university could term a colour choice theirs and not allow another school to use to same colour schemes they had selected.

International companies joined the CAUS in the 1940s and 50s as the expansion of colour industry began to boom with the promotion of colour as "new" and "different" (New Deal, 2011). Each year between 8 and 13 carefully selected private members would meet to decide the colour forecast for the following year. These members were often referred to as the "color czars" because it was so exclusive and secretive. During the meetings the committee would hold debates about what colours should dominate the industry by selecting 44 colours as a consensus for their colour cards, which would then be offered for sale to other corporations. Membership is annual with dues for the corporate level starting at $1,500 to $750 for individual memberships. Being a member does not permit one to be a part of the "color czar" for that is an executive member meeting. General members are organized into 5 categories: Women's Fashion; Men's Fashion; Youth Fashion; Beauty; and Interiors/Environment. Each category has a chair and 8 to 12 selected members who also hold positions in such corporations as Calvin Klein, Estee Lauder, Laura Mercier, Saks Fifth Avenue, Converse, etc. They also have sponsorship from numerous design, fragrance, and beauty companies who contribute to the association.

The current CAUS continues to hold private meetings and offer e-learning classes, webinars, and customized workshops to the public for various fees in order to help others understand colour. They classify themselves as "color experts" on their

website and indicate that members are selected from 73 industries including branding and advertising, automotive, beauty, health, cosmetics, apparel, communications, electronics and include professionals from architecture, fashion, graphic arts, industrial product design, and interior design so that their "macro color trends" are able to "trickle down and influence" other sectors of commerce. The CAUS offers subscriptions (i.e., colour reports) that "not only contribute to an organization's color intelligence" as other associations do, but also "offer not just the 'what', but the 'why' and at minimal cost" to organizations interested in improving their markets. With a personal colour consultant, a company is able to develop a colour strategy that includes four major points to improve upon: 1) Branding (for distinctiveness), enhance brand position, affinity, and leadership; 2) Product portfolio for enhancement of colours and efficiency, differentiation, and overall value; 3) Competitive and comparative colour advantages for the assessment and adjustment recommendations, recalibration to meet trends, and competitive challenges; and 4) Colour scorecard development to measure colour effectiveness in alignment with overall colour strategy. Finally, they offer educational programs such as classes on colour fundamentals, colour psychology and consumer preferences, colour marketing and branding, and colour research and methodologies as customized workshops for companies.

International Colour Authority (ICA)

Founded and established in London in 1966, the ICA organization's motto is "Colour is not important- it's Vital" and the message is carried throughout the entire website (International Trade Forum, 2001). The ICA consists of colour panel experts comprised of mostly independent self-employed consultants or full-time specialized executives from well known global companies. Their online forecasting is available for purchase for £300 to £500 or complete bound books in various fields are also available from £325 to £525. They have an international newsletter called World Colour News that works with Pantone and Natural Color System (NCS) notations to ensure colour accuracy when communicating on the internet and in digital formats. The ICA Studios are located in London and offer personal colour consultants for industry and corporations. They have copyrighted

their name and the contents of their colour forecasting books and materials, but are willing to provide licenses to "worldwide bonafide publishers" for a fee. In addition, they offer self-published books on colour forecasting, and awards for their "Seal of Approval" which companies may display in their promotional materials if the ICA approves and appraises their colour ranges.

The ICA forecasts were launched in 1968. Since then, a panel of international colour specialists gathers twice a year in London to select the next colour palette. The selection is published 22 months ahead of the retail-selling season, thus constituting the earliest colour trend prediction available to the furniture design and textile industries. Nowadays the ICA is one of the leading colour forecasters for the industry, along with the Color Marketing Group. Their products are "high-quality forecast publications containing an abundance of accurate information on market trends", which ranks them amoung "the favourite publications of many professionals", according to an article published by the International Trade Centre (International Trade Forum, 2001). Sponsorship includes companies such as Azko Nobel, Formica, NCS, PPG and TFleet. Panel members are selected and invited to be a part of the organization. Memberships were not found to be open to anyone and the group is highly secretive in regards to providing any additional information on how colour palettes are determined and by whom.

Colour Management Organizations

Pantone

The complexity of Pantone is best understood as layers upon layers of powerful authorities acting within one major production. Pantone is owned by X-Rite, which is owned by the Danaher Corporation. To best understand Pantone, the other two organizations that oversee Pantone need to be addressed to unfold the intricacies of the multi-layers. In 1962, Pantone was bought by Lawrence Herbert (who had been working for the company part time since 1956) when he bailed the previous owners out of debt for $50,000. The colour matching system that Pantone is famous for had not yet been developed, however Herbert could already see the

prospect of these possibilities. He secured a loan from an anonymous female for the full amount and purchased Pantone. Lawrence Herbert was a graduate of Hofstra University with a double major in biology and chemistry. Since there were no standardizations for colours in his time, Pantone used over 60 different pigments in an inefficient trial and error method to mix colours for printing.

In 1963, Herbert was able to reduce the stock of pigments to a basic palette of just 12 from which a full range of colored inks could be mixed in response to the need to dye fabrics in similar shades for various industries (hats, gloves, tights, etc.). Herbert then wrote to 21 major ink producers and suppliers describing the Pantone Matching System and offering to license them as manufacturers of the system's basic inks. Within two weeks, all but one of the producers and suppliers agreed to the contract and paid a royalty to Pantone. In 1977 Herbert took the company private and the last recorded sales as a public company were about $2 million. Thereafter, no further information was divulged in regards to what the sales volumes were each year, however the Pantone trademark appeared on about $500 million works of art supplies, ink, and other art products marketed in over 50 countries (Pantone website, 2012).

Pantone, Inc. is headquartered in Carlstadt, New Jersey. The company is best known for its Pantone Matching System (PMS), a proprietary colour space used in a variety of industries, primarily printing, though sometimes in the manufacturing of coloured fabrics, paint, and plastics as well. The PMS is a standardized colour reproduction system that has been translated into 7 languages. By standardizing the colours, different manufactures in different locations can all refer to the Pantone system to make sure colours match without direct contact with one another. The first two numbers refer to the depth of the colour and the last four refer to the designated shade. Pantone C is for coated paper (ex. Pantone 199C Red), Pantone U is for uncoated paper, and Pantone M is for matte paper. Each colour is also given a name as well. There are over 1,757 colours on the standard Pantone solid colour palette; 3,000 colour variations for the CMYK process printing; 2,100 for the textile fashion and home palette (Pantone 19-2430TPX Purple); 735 transparent and 1,005 opaque colour chips for the plastic palette; and 2,058 for the Goe palette of chromatically arranged solid colours. The colours are all

trademarked by Pantone and use of the colours is available through licenses and trademark fees.

To obtain the colour chips and information, Pantone offers a selection of various books, both digital and hardbound for purchase between $1,575 and $3,295 depending upon area. However the digital and colour matching systems work within a software system that is available only through Pantone from their parent company, X-Rite. Pantone has also established an on-line retail shop called Pantone Universe that sells tabletop, kitchen products, home goods, lifestyle products, lights, rain gear, stationary, accessories and watches in various Pantone colours. In addition, Pantone continues to offer the Pantone Color Institute (i.e., in depth classes on colour), Certified Printer Program with Sotheby's Imprint Pantone Program, colour training services for private businesses thru X-Rite, e-learning, seminars, onsite training and media profiling, as well as the PantoneLIVE program (i.e., accredited program focused on packaging applications of branding, design, media, ink, and printing processes).

By 2001, Pantone was making approximately $19 million in sales and even more through the licensing contracts with other corporations (Pantone website, ibid). From 1977 to 2001, Pantone continued to develop new partnerships and licensing agreements with over 100 different companies and was able to expand its global presence to the point where the Pantone name become synonymous with colour management (Pantone website, ibid). Lawrence Herbert served as president since purchasing the company and his daughter, Lisa Herbert served as vice-president of consumer licensing, and many other family members were involved in the management of the corporation. By 2006, Pantone generated approximate revenue of $42 million. Later that year, Herbert was in negotiations to sell Pantone to X-Rite and in 2007, X-Rite completed acquisition of Pantone for approximately $180 million. The two companies had been working together for two years previously in software development for Pantones colour matching systems. The transaction was funded exclusively with cash, which was financed through new borrowings from Merrill Lynch, Fifth Third Bank, National City Bank, LaSallie Bank, and Golden Tree Asset Management, which combined to create a total debt package of $415 million to fund the transaction and refinance X-Rite's existing debt (Pantone Press Release Archive, 2007).

In understanding Pantone as an X-Rite subsidiary, a brief overview of X-Rite is provided. X-Rite is a global company with branches in North America, Europe and Asia. X-Rite has locations in Switzerland, Czech Republic, Russia, Germany, United Kingdom, Spain, Italy, France, China, Japan, Korea, Singapore, and India. The corporate headquarters are in Grand Rapids, Michigan. X-Rite is known for their expertise in the areas of colour measurement systems, colour software, colour standards and services. They service a wide range of industries including printing, packaging, photography, graphic design, video, automotive, paints, plastics, textiles, environmental/farming, dental, and medical areas. They also offer seminars, e-learning classes, webinars, "Ask a color expert" on-line chat, and professional training for businesses. Pantone became a part of X-Rite for five years and went through various restructuring (Herbert retired as president, etc.) and worked closely with X-Rite to develop new products focused on colour management.

Five years after the purchase of Pantone, X-Rite was acquired by the Danaher Corporation for $625 million in 2012 (Danaher News Release, 2012). Technically Pantone is still a subsidiary of X-Rite who is now a subsidiary of Danaher (Danaher website, 2012; Pantone website, 2012). X-Rite has also undergone restructuring and reconfiguration of its systems and management since the acquisition. The Danaher Corporation is a large North American global company headquartered in Washington, DC with over 66,000 associates worldwide. Since 1969, Danaher Corporation, known prior to1984 as Diversified Mortgage Investors, Inc., develops products in the fields of design, manufacturing, marketing, industrial and commercial (i.e., consumer based). Operations are divided into five segments: test and measurement; dental; industrial technologies; life science and diagnostics; and environmental. In 1984, Danaher acquired 12 companies as part of a strategy to enter the manufacturing business. From 2007 to 2014, Danaher continued to develop and acquire multiple billion-dollar ventures and businesses relating to design, molecular devices, engineering, etc (Danaher website, 2012; Pantone website, 2012). Over the last few years Danaher has acquired more than 400 companies, establishing itself as part of the elite.

Currently, Danaher is ranked #149 on the Fortune 500 list and during the past 20 years has witnessed its stock outperforming the S&P 500 index by nearly 2,800%

(Danaher website, 2012). The board of directors and committee members are appointed within the corporation and meet twice a year. Steven M. Rales is the Chairman of the Board, Tom Joyce is the president and CEO, while Dan Comas is the vice-president and CFO. The net earnings for the most recent quarter (June 27, 2014) ended at $674.4 million with revenues for the second quarter of 2014 at $5 billion, 5% higher than the $4.7 billion reported in the 2nd quarter of 2013. In 2013, they generated $19.1 billion in revenue and their market capitalization at year end exceeded $50 billion. Gross profit in 2009 was $5,070.00 million and in 2013 was $9,957.00 million with net sales in 2009 at $10, 516.68 million and in 2013 at $19,118.00 million, indicating a substantial growth for the company. X-Rite is a segment within the Industrial technologies division and Pantone is a subsidiary within that area.

International Color Consortium (ICC)

International Commission on Illumination (CIE)

The final two colour organizations that focus on colour management proved to be the most challenging to locate information on. Both the International Color Consortium (ICC) and the International Commission on Illumination (CIE) are international associations with privately appointed members and committees. The International Color Consortium was formed in 1993 by eight industry vendors in order to create an open, vendor-neutral color management system that would function transparently across all operating systems and software packages. The eight founding members of the ICC were Adobe, Agfa, Apple, Kodak, Microsoft, Silicon Graphics, Sun Microsystems, and Taligent. Since that time Sun Microsystems, Silicon Graphics, and Taligent have left the organization, and many other firms have become ICC members, including as of January 2011, Canon, Fuji, Fujitsu, Hewlett–Packard, Lexmark, Sun Chemical, and X-Rite.

At the beginning of 2014, ICC membership had grown to a total of 61, inclusive of founding, regular, and honorary members. Aside from members of the photography, printing, and painting industry, new members emerged from several different industries including MathWorks, Nokia, Sony Corporation, and

Signazon.com. Companies may apply for membership and if approved pay $2,500 in yearly fees to attend the various conferences and interest group meetings. The organization is divided into interest groups focused on: 1) Architecture; 2) Displays; 3) Graphic Arts; 4) ICC Profile Assessment; 5) Specification Editing; 6) Medical Imaging; and 7) Digital Imaging. The current ICC Co-Chairpersons are William Li of Eastman Kodak and Tom Liarza of X-Rite. ICC issues white papers on emerging research involving colour research and they grant licenses to other corporations to use their colour management systems.

The International Commission on Illumination (usually abbreviated CIE for its French name, Commission internationale de l'éclairage) is the international authority on light, illumination, colour, and colour spaces. It was established in 1913 as a successor to the Commission Internationale de Photométrie and is today based in Vienna, Austria. Membership to other companies is available at various levels of support (National, Associate National, Associate, and Supportive). Their primary purpose as an organization is to advance the knowledge and provide standardization methods to improve the lighted environment of the world. They seek worldwide cooperation and exchange of information on all matters relating to the science and art of light and lighting, colour and vision, and photobiology and image technology. Unfortunately, this commission is also the most secretive and protective of what happens behind their doors and further information proved exceedingly difficult to locate.[3]

---

[3] Numerous emails, phone calls, and written letters were never answered by the commission and no further information was located. The intense investigation lasted more than half a year in 2014 and no replies were ever sent to address my inquires.

CHAPTER V – BIOPOLITICS OF COLOUR

The Biopolitics of the Colour Elite Nexus

In this chapter another objective is to illustrate how the colour elite nexus relates to the production, regulation, and use of colour through the concept of biopolitics. The core argument that helps facilitate this contribution is situated within the term biopolitics as used by Michel Foucault (Macey, 1995; Malette, 2009). Therefore, a close analysis of Foucault's ideas will be addressed in order to support an argument about the use of colour. This thesis is less concerned with avowing, repudiating, or appraising Foucault's biopolitics as it is with understanding the entanglement of the colour elite nexus' usage of colour conditioned by a capitalistic society through Foucault's text. It will illustrate how not only these generative opacities enable various usage of colours within the biopolitical turn but also how they retain the potential to exceed it from within.

Biopolitics

Biopolitics is a multi-faceted concept that has been used and developed in social theory to examine the strategies and mechanisms through which human life processes are managed under regimes of authority over knowledge, power, and the processes of subjectivation. As Timothy Campbell and Adam Sitze argue in the book, *Biopolitics*, there is a proliferation of events or crises that have begun to illustrate the use of biopolitics, so much so that, "taken together, these crises have produced a context in which there is a demand for scholarly theories that illuminate the relations between life and politics" (Campbell and Sitze, 2013, p. 3). For it is through biopolitics that one is able to begin the process of a fundamental rethinking of history and for this thesis- the history, legality, and implications of the usage of colour.

In order to discuss biopolitics a clear definition is needed. Biopolitics is an intersectional field between biology and politics that is attributed to Rudolf Kjellén in his view of the state functioning as a "super-individual creature" to study "the

95

civil war between social groups" from a biological perspective (Esposito, 2008, p. 16; Liesen and Walsh, 2011). In Kjellén's "Outline for a Political System", he proposes this concept:

> This tension that is characteristic of life itself…pushed me to denominate such a discipline as biopolitics, which is analogous with the science of life, namely, biology. In doing so we gain much, considering that the Greek word *bíos* designates not only natural and physical life, but perhaps just as significantly cultural life. (Kjellén, 1920, pp. 3-4)

Just as Kjellén proposes that biopolitics is related to social life, Michel Foucault denoted the term biopolitics as the style of government that regulates populations through biopower which is the application/impact of political and social power on all aspects of human life (Foucault, 1990; Foucault, 2008). Foucault's first analysis of "biopolitics" appeared in the text, "Right to Death and Power over life" which formed the final sections of his 'An Introduction' or *La volonté de savoir* from 1976. His location of the relationship between life and politics was closely linked to his understanding of knowledge-power.

In order to discuss Foucault's biopolitics in greater depth, it is imperative to uncover the layers to which he created this understanding through the terms of power and governmentality. In Foucault's lectures at the Collège de France, he defined governmentality as the "art of government" in a broad sense (i.e., "government" is not limited to state politics alone, but included a wide range of control techniques and could be applied to a variety of objects from one's control of the self to the "biopolitical" control of populations). The state is an organized community living under one government; may be sovereign, federal, or stand in contrast to civilian institutions. States may be classified as sovereign if they are not dependent on, or subject to any other power or state. Through Foucault's concept of "governmentality", he develops a new understanding of power.

Power is not only a hierarchical, top-down process, but may also include forms of social control and forms of knowledge that enable individuals to govern themselves. Foucault stated, "The ensemble formed by the institutions, procedures, analyses and reflections, the calculations and tactics that allow the exercise of this very specific albeit complex form of power, which has as its target population, as its principal form of knowledge political economy, and as its essential technical

means apparatuses of security" (Foucault, 2008, p. 35). Therefore the relationship between power and life becomes much more complex upon examination. In the "Order of Things", Foucault provides the foundation for biopolitics as he discusses the relationship of power to life:

> Power would no longer be simply with legal subjects over whom the ultimate domination was death, but with living beings, and the mastery [*la prise*] it would be able to exercise over them would have to be applied at the level of life itself; it was the taking charge of life [*la prise en charge de la vie*] more than the threat of death, that gave power its access even to the body. (Foucault, 2008 pp. 142-3)

Foucault was arguing in the above quote that power seizes living beings and differs from an earlier power that exercised power over life without being able to take hold of it; a power he referred to as 'sovereignty'. Specifically, by knowledge-power he meant that power was not a unified system, but rather "power is everywhere" and "comes from everywhere" (Foucault, 1998, p. 63), it is diffused and embodied in discourse, knowledge, and "regimes of truth"; it is enacted rather than possessed, discursive rather than purely coercive, and constitutes agents rather than being deployed by them. The "general politics" and "regimes of truth" (results of scientific discourse and institutions) are reinforced (and redefined) constantly through the education system, the media, and the flux of political and economic ideologies. In this sense, the "battle for truth" is not for some absolute truth that can be discovered and accepted, but is a battle about "the rules according to which the true and false are separated and specific effects of power are attached to the true"… a battle about "the status of truth and the economic and political role it plays" (Foucault, 1995, p. 45).

On Foucault's account, the relation of power and knowledge is far closer than in the familiar Baconian engineering model, for which "knowledge is power" means that knowledge is an instrument of power, although the two exist independently. Foucault's point is rather that, at least for the study of human beings, the goals of power and the goals of knowledge cannot be separated: in knowing we control and in controlling we know (Foucault, 1995; Paul, 1991). Power is all embracing, everywhere in everything as different manifestations. Power is not a thing, to have or have not, it is always being exercised in all parts in any relation. Power is not

simply applied externally to relationships, economics, sex, or knowledge. It is inside these relationships that determine the internal structure. Power does not simply come down from above and not all power relationships are ruler/ruled model. Power is a complex network found in all levels of society.

Resistance is a part of power, not external to it (Foucault, 2003, pp. 242-3). This is what creates power dynamics and the "matrices of transformations" where power relationships shift over time. It links governmentally to be analyzed as relationships and not one thing or source, but rather an "analytical grid for these relations of power" (Foucault, 2008, p. 186). Power is not just in the form of law, but works on multiple levels and in multiple directions. Power is similar to the weather as it shifts over time and is everywhere, but one cannot point to it and say there it is. It is a dynamic relationship from within. It is both external and internal. Resistance and repression are within power and are irregular, unpredictable. Finally, power is both repressive and productive (Foucault, 2003, pp. 242-3). All these concepts of power lead Foucault to using 18th century European history as a source from which to draw his ideas on knowledge-power. He wrote, "In the space for movement thus conquered, and broadening and organizing that space, methods of power and knowledge assumed responsibility for the life processes and undertook to control and modify them" (Foucault, 1990, p. 48). This idea, that life could be seized by a state, institution or by knowledge-power was the heart of what would later become Foucault's *The Birth of Biopolitics*.

Foucault's biopolitics intervened in a prescient fashion into the disparate strands of philosophy and theory that had been on going, such as work by Friedrich August von Hayek, Ludwig Heinrich Edler von Mises, Milton Friedman, George Stigler, Gary Becker, and the Mont Pelerin Society (Peck, 2010; Peck, 2008; Mirowski and Plehwe, 2009). Foucault's 1978-79 distinctive research preceded the launch for a critical appraisal of neoliberalism that occurred with Margaret Thatcher in Britain in 1979 and the Reagan presidency in the United States from 1980. Foucault stated, "bio-power was without question an indispensable element in the development of capitalism" (Foucault, 2013, p. 45). He addressed how the old pastoral power provides an inheritance to neoliberalism so it may accomplish the political aims of the usage of biopolitics. By producing a population of human beings who conduct

themselves as "entrepreneurs" of themselves, neoliberalism offers them "salvation" (Foucault, 2008, p. 226) through "metaphorizing the market as a game, by metaphorizing the state as its umpire, and by metaphorizing individuals and populations as players for whom all choices are in principle possible- with one exception of the choice not to play the game of the market at all" (Foucault, ibid., p. 20).

In a similar argument, Christian Fuchs posited that "the capitalist nation-state has been transformed…into a neoliberal competitive state" of which the consequences include "on the one hand the extension and intensification of economic colonization – the commodification of everything, and…the extension and intensification of alienation – the almost entire loss of control over economic property, political decision making, and value definition…in all realms of life" (Fuchs, 2008, pp. 108-9). As society loses a value system, it can be replaced by a market value system of neoliberalism. In critiquing Foucault, Thomas Lemke comments:

> …capitalism and other assorted forms of neoliberalism, entire populations (of donors, of consumers, of persons) come into existence whose effect is to send its members scurrying to learn how to survive individually. We survive without existing – or, better, we survive individually having forgotten how to exist collectively…And yet this existing as part of a population and surviving solely as an individual undoubtedly has another effect...for a privileged few, the pleasures of being alive. Paradoxically, the more that populations become "unnecessary" or "superfluous" for capitalism, the more capitalism reifies the sensations of aliveness itself as a "scarce commodity" that's "in demand". (Lemke, 2011, p. 17)

By using scarcity as a weapon of fear upon populations, control over society is maintained. In Foucault's Lecture Six, Feb. 14, 1979, on neoliberalism, he stated that there were profound changes in the system of law and the juridical institution:

> For in fact there is a privileged connection between a society orientated towards the form of the enterprise […] and a society in which the most important public service is the judicial institution. The more you multiply enterprises, the more you multiply the centers of formation of something like an enterprise, and the more you force governmental action to let these enterprises operate, then of course, the more you multiply the surfaces of friction between each of these enterprise, the more you multiply opportunities for

disputes, and the more you multiply the need for legal arbitration.
An enterprise society and a judicial society, a society orientated
towards the enterprise and a society framed by a multiplicity of
judicial institutions, are two faces of a single phenomenon.
(Foucault, 1979, pp. 149-50)

This is the transition and link from biopolitics to neoliberalism that will occupy
Foucault's writings and provide grounding for the understanding of rethinking the
use of colour in contemporary society. Foucault was outlining the complexities of
the neoliberalistic society. As David Harvey indicated, "Margaret Thatcher kept
insisting there is, 'no alternative'" to neoliberalism (Harvey, 2007, p. 40). It is here
that the paralyzing conundrum of biopolitics is located. Foucault questioned the
nature of contemporary social orders, the conceptualization of power, human
freedom and the limits, possibilities and sources of human actions that were linked
to the notion of "governmentality", capitalism, and neoliberalism (Foucault, 1984,
1990, 2003, 2008). Just as it was significant to define and unpack biopolitics, as it
is with the concept and understanding of neoliberalism in brief.

Neoliberalism

The term neoliberalism has been one of the leading academic growth concepts of
recent years as indicated by Taylor C. Boas and Jordan Gans-Morse through
content analysis as the term's usage exploded in the 2000s to the point where it
appeared in over 1,000 social science academic articles between 2002 and 2005,
which stands in a stark contrast to a limited handful of references on the 1980s.
(Boas and Gans-Morse, ibid.). Neoliberalism can be defined in multiple
approaches as a theory, government, ideology, market, and/or various other
approaches (Gerber, 1994, pp. 25-84; Foucault, 2008). Although Friedrich Hayek
and Milton Friedman are identified as the 'fathers' of neoliberalism, the term as a
philosophy originated from the German Freiberg School and is associated with
such economists as Eucken, Röpke, Rüstow, and Müller-Armack. Hayek did serve
as an editorial board member and was a frequent contributor to their journal *Ordo*,
which Foucault referred to in his discussion of ordoliberalism in his critique of
biopolitics. The popular definition within the philosophy of neoliberalism is the
Marxist one, as developed by David Harvey:

> A theory of political economic practices that proposes that human well being can best be advanced by liberating entrepreneurial freedoms and skills within an intuitional framework characterized by strong private property rights, free market, and free trade. The role of the state is to create and preserve an institutional framework appropriate to such practices. (Harvey, 2007, p. 2)

In this sense, neoliberalism can be understood as a global ideological project with its foundation in the United States and Great Britain that aimed to shift power and resources to corporations and wealthy elites through the privatization of public assets, removal of 'public interest' regulations over large corporations, and tax cuts targeted towards the highest income earners. The World Bank and the International Monetary Fund advanced such principles throughout the global system. The neoliberal globalization as defined by Jan Aart Scholte came to be known as "an economically driven process that should proceed on first principles of private property and uninhibited market forces', and where 'other economic rules and institutions are reduced to a minimum" (Scholte, 2008, pp. 1471-1502).

Neoliberalism functions for Harvey and Scholte as an ideology imposed by the dominant class and corporate interests through their control over the state and public policy. According to David Harvey, this meant that neoliberalism, in short, is the "financialization of everything" (Harvey, 2007, p. 33). The later work of Michel Foucault echoes such ideas by understanding neoliberalism through a synthesis of neoMarxist critiques of political economy on governmentality and liberal political rationality (Foucault, 2008). It is through this type of critique that Foucault's ideas of biopolitics and neoliberalism shed light on Harvey's contemporary analysis.

Neoliberalism is a mentality of rule because it represents a method of rationalising the exercise of government, a rationalisation that obeys the internal rule of maximum economy (Foucault, 1998, p. 74). A mentality of rule is any relatively systematic way of thinking about government. It delineates a discursive field in which the exercise of power is 'rationalised' (Lemke, 2001, p. 191). Neoliberalism blends the principles of freedom and regulation together. It is through these techniques of power that social hierarchization, segregation, domination, and effects of hegemony come into being which Foucault ascertains led to the formations of liberalism and neoliberalism.

The more mass populations are made the object of political strategies that call their very existence into question, the more blissfully alive the privileged few feel. Neoliberalism characteristically develops indirect techniques for leading and controlling individuals without being responsible for them. The main mechanism is through the technology of responsibilisation. This entails subjects becoming responsibilised by making them see social risks such as illness, unemployment, poverty, etc., not as the responsibility of the state, but actually lying in the domain for which the individual is responsible and transforming it into a problem of "self-care" (Lemke, 2001, p. 201) and of 'consumption'. The other area for the purposes of illustrating the importance of the use of colour by the colour elite nexus that needs to be considered is the technology of the market.

The technologies of the market can be understood as the technologies of desire and identity through consumption. It is a mechanism that induces desires which the market creates often without concern for the environment, sustainability, or human well-being. This is accomplished by creating artificial needs through advertising goods, experiences, and lifestyles that seek to convey the sense of individual satisfaction brought about by the purchase or use of a product (Rose, 1996, 1999). The markets use research from psychology as the basis for their market segmentation to more effectively appeal to each individual demographic (Rose, 1999). This in turns leads to the power of consumption to shape identities since commodities are imbued with values and meaning that is reflected upon those who purchase it. All of these various technologies are underpinned by Foucault's governmentality that seeks to transform us into free, enterprising, autonomous individuals, which is part of the idea of neoliberalism. At present, upon defining and opening up the discourse around biopolitics and neoliberalism in contemporary society, a shift back into the usage of colour by the colour elite nexus is addressed.

CHAPTER VI- PERCEPTUAL HUMANISM

Biopolitics of Colour

Biopolitics functions as a spur for the rereading of the history of colours in order to draw out the colour elite nexus' biopolitical valences and refocus them into a narrative for understanding the present condition of colours. The color elite nexus use this idea of politics to ascertain the inability of human beings to decide the importance of colour within their lives, as to create a mystical, emotional, financial, and social class structure to the importance or contemporary, or in vogue moment of a colour as evidenced in the descriptions of their organizations and publications. It is through the colour elite nexus' insight of colours that unravel a decisive narrative to help the multitudes change the conditions of our own non-existence living into the living and the now. The effect of which is to heighten for a privileged few the pleasures of being alive since as 'aliveness' is itself a scarce commodity that is in demand. The capitalization of colour is apparent in both the Qualitex vs. Jacobson and the Nestlé vs. Cadbury court cases that demonstrate the contemporary state of the argument. By describing the different layers of organizations that are involved in this regulation (i.e., colour elite nexus), it is important to reframe the current state of colour through critical social theory and bring in Foucault's concept of biopolitics to shed light on some of the problems and consequences which are in need of awareness and reflection.

By critical social theory, I mean the form of reflective knowledge involving the theoretical explanations with an aim to reduce entrapment in systems of domination or dependence through challenging, critiquing, and changing society as a whole. Max Horkheimer's argument of critical social theory is "to liberate human beings from the circumstances that enslave them" (Horkheimer, 1972/2006, p. 244). Critical social theory for research and practice is grounded on five fundamental assumptions: (1) People are the creators of their social world, and as such, can change it if they wish. (2) All scientific knowledge about the social world is socially constructed, and as such, cannot avoid being infused with 'value orientations', because all social constructions are value laden. Value orientations

can be identified in both implicit and explicit forms of ideology held by the researchers. (3) Reason and critique are inseparable. As Marcuse explains: reason means the capacity to understand the existing social world, to criticize it, and to search for and present alternatives to it. Reason here is to be understood in the Hegelian sense, as the critical faculty, which reconciles knowledge with change toward the goal of human freedom. It is through critical reason that the inherent distortions of the social affairs can be reconstructed and understood. (4) Theory and practice ought to be inextricably interconnected, because the task of critical social theory is seen as that of reconciling knowledge with the satisfaction of the human need for self improvement. (5) Critical social theory must be reflexive: that is, it must concern itself with the validity conditions of knowledge and change that it produces. Therefore, researchers following this approach must collaborate with those who will be affected by it, opening it up to public debate and critical reflection (Marcuse, 1968).

By biopolitics, I mean the complex interconnected ways of how power is exercised in culture and society (Foucault, 1998). The most coherent definition of biopolitics made by Foucault is located in *The History of Sexuality*, in which Foucault detailed 21 pages upon the change of a sovereign's right (the absolute power which resided in the king) over life and death becomes modernized as a change in which the ways power is exercised in contemporary culture and society. The concept of biopolitics changes to become an intimate relationship with the concept of power (Foucault, 1998, pp. 326-48). The modern conceptualization of life (biopolitics) turned the focus on how to "maximize life" through proper administration of the population and the shift in government from discipline and punish to one of intervention and control.

Mapping the connections between colour and those who develop, create, manage, forecast, and control it gives pause to consider the relationship between colour and power. Returning to the Nestlé vs. Cadbury court case that involved the legality of purple and its association with chocolate in the UK, colour circulates as a type of commodity and information within a colour functions as a form of cultural language. When a precise shade of a colour purple is used by Cadbury to symbolize goods or services it becomes part of a global infrastructure of

information. This infrastructure is controlled by the nexus of colour elites who create the colour codes, terms, and ability to reproduce exact colour matches and management between systems worldwide. The CMG motto of "Color Sells and the Right Color Sells Better" echoes support by research that indicates that up to 90% of a human's first impression of an object or thing comes from color alone (Gaskins and Mahnke, 2007; CMG website, 2012).

Under the established colour elite nexus there is a powerful relationship between capitalism and colour. Inside these organizations that predict the present and future of colours to be utilized in everyday objects, things, fabrics (etc.) is a power being backed by legislation and governments as part of what Foucault could argue is a biopolitical landscape (Foucault, 2008). Standardization, trademarking, branding, forecasting, and expert "colour intelligence" allow the colour elite nexus to maintain tight control of colours across the globe. Aspects of lived experiences that define cultural mindsets and moments of life are encoded, predicted, and regulated by the colour elite nexus. Take for example the use of holidays being associated with colours. There are strong cultural ties in the United States towards colour biases of holidays, such as Halloween being associated with orange, black, white, and purple. This is enforced through products that contain these colours (i.e., candy corn, costumes, and decorations) and media (i.e., cards, children's TV cartoons, story books, and advertising). Individuals are raised in environments where colours are surreptitiously implanted into their minds from youth by corporations such as Danaher that control the means of output through Pantone's copyrighted colour system. Halloween is a classic example of capitalism having influence and power over colours. What started as a celebration of fall harvests before All Saints Day quickly became a commodification of costumes, decorations, and candy as a means of profit for the powerful elite (Rogers, 2002, p. 76; bannatyne, 1998, p. 9).

Another example is found in the colours associated with life events such as birthdays, births, and deaths. Specifically with the colours of birth, there has developed in the last century a strong influence from the colour elite nexus of providing blue for a boy and pink for a girl in terms of colour choices for items related to nurseries and baby products. For centuries children wore gender-neutral white clothing as a matter of practicality as it could be bleached and cleaned easily.

The notion of blue for a boy and pink for a girl arrived in the U.S. just before World War I and took time for the corporations to manipulate consumers into the idea. Manufacturers and retailers such as Filene's, Halle's, Marshall Field, and Sears helped to establish a change in the value of clothing colours by promoting in advertisements, TV commercials, and billboard signs that pink was considered delicate, soft, and feminine whilst blue was strong, durable, and masculine (Paoletti, 2012). Then in the middle 1980s prenatal testing created a large development in gender biased clothing, as parents were able to learn the gender of their unborn child and could shop for sex-appropriate merchandise. Sophisticated and pervasive advertising created and then reinforced social conventions concerning colours' role in birth and childhood. This type of biopolitics is a powerful force that has ripple effects across consumerism, governmental control, values, and culture.

Foucault argues that rational judgment, social practice, and biopower are not only inseparable, but are co-determinant (Foucault, 2008). It is in this view that the understanding of the colour elite nexus is formed not as separate colour associations each doing their own business of consulting, forecasting, and management, but as a complex stratified power structure within capitalism. Returning to the colour elite organization's administration areas, the members who serve on the executive committees and in other offices, such as president, also hold positions within companies that benefit from the control and regulation of colour. For example, Tom Lianza who serves as co-chairman of the International Color Consortium also holds a top position in X-Rite, the company that owns Pantone via Danaher Corporation. If the colour elite nexus is composed of industry insiders who would desire to see their own profits continue to grow in the current market, then how do consumers place their trust in such organizations that clearly do not have the best interests of humans, the planet, or the future in their directives? If power is not one "source", but is comprised of an "analytical grid for the relations of power", then the colour elite nexus is part of their own grid of power functioning with another grid of power, the market, functioning with another grid of power, the society, and so on (Foucault, 2008).

How did this all come to be and where is the evidence of it? To answer these questions, there is a need to go back to the first chapter of this thesis. In the

historiography of colours, there was a clear and present influence of exterior powers acting upon populations as seen in early examples from China where the colour yellow was reserved for the 'powerful' ruling class and the masses were forbidden to wear it. How does society fit into the colour nexus of power? Perhaps in two ways with the first encounter being an understanding that society is an ideology dominated by a small number of interconnected elites who control the conditions of life of the masses, often by means of persuasion or manipulation according to McQuail, 2005, in *Mass Communication* (McQuail, 2005). Victor Lebow, a retail analyst, in 1955 described a new paradigm which he saw developing as 'draft consumption' in the ways to which mass advertising and mass production were going to create a self-feeding orgy of artificially created desire supplied by cheap and shoddy goods designed to rapidly wear out and require replacement, in addition to being presented with irresistible displays on overwhelming temptations of colours.

He stated, "Our enormously productive economy…demands that we make consumption our way of life, that we convert the buying and use of goods into rituals, that we seek our spiritual satisfaction, our ego satisfaction, in consumption…we need things consumed, burned up, replaced and discarded at an ever-accelerating rate" (Lebrow, 144/1955). Lebrow was trying to bring awareness to the shift from the industrial revolution to modern society; a shift from individual business owners to corporations and to the mass manufacturing of goods for mass consumption. With over 3,000 advertisements and media messages (i.e., internet ads, TV, billboards, bus signage) in the public sphere on a daily basis, the average consumer is hit by about half that number (1,500) every 24 hours (Britt, Adams, and Miller, 1972, pp. 3-9). The rise of the colour elite during this time period is not a coincidence, but is rather a determined and controlled group of organizations that were birthed from the formation of a capitalistic society.

The rise of mass manufacturing and government initiatives such as Lyndon B. Johnson's Great Society that used the New Deal as inspiration allowed for dramatic expansions of liberal programs with a focus on economic growth and the promotion of capitalism (Andrew, 1998). For example, the Color Association of the U.S. from the colour elite nexus became involved with universities and colleges for establishing a system of colours that could be used as 'branding' for

the schools. They contacted nearly 500 universities and colleges in Canada and the US in the early 1920s requesting that the schools register their official colours for standardization by the Association or risk being left out of their upcoming publication of colour cards. This is an example of social pressure and implied power bring exerted over the control and capitalization of colours.

In a similar act, CAUS also targeted the government and created 'authoritative' bases of hues for use on uniforms, ribbons, decorations, and flags, as well as standards for sanitary wares, bathroom, and kitchen colour accessories (CAUS/TAAS-1921/1929, website, 2013). The director, Margaret Hayden Rorke, made note of the Association's growth and the importance of colour cards they were using at the time to distribute their colour forecasting. She noted in her annual report of 1928:

> Color in industry needs organization. Mass production demands temperate and economic employment of color, which can be done only by coordinated effort. America's greatest organizing powers are exemplified in her trade association movement – a movement bound closely to that great economic movement which so vitally affects all business and government. Our faculty for constructive organizing has made possible the organizing of industrial color. It has unified color thought and coordinated its promotion. (CAUS archives, 2013)

Rorke finished her annual report noting, "...to those untrained and unfamiliar to its industrial application, color can be dangerous when not held in restraint" (CAUS archives, 2013). Such a report from an organization in 1928 carries weight even into the contemporary market place. Batchelor's *Chromophobia*, 2000, echoes the same idea, "colour is dangerous" (Batchelor, 2000, 2014).

The colour elite establishing from the very beginning that colour was something to be careful of and controlled, that colours needed to be standardized and registered to protect society, were acting with a form of biopolitical consciousness. The CAUS refers to their members as having "color intelligence," as if it is unattainable to those outside of their organization (CAUS website, archives, 2013). The CMG refers to their "color professionals" as having "tremendous validity" to their colour forecasting based on years of experience in the field (CMG website, archives, 2012). The International Colour Authority awards a "Seal of Approval"

to those companies who use them as consultants to appraise and approve their colour ranges (ICA website, archives, 2013). Colour has been promoted by these organizations as being dangerous to the public in order to maintain a secure structure of control in terms of how, when, where, why, and for what reasons colours are used in society.

Consider, then, two books set forth by the colour elite nexus. *Pantone: The 20th Century in Color* by Leatrice Eiseman and Keith Recker (2011) and *Colour Forecasting for Fashion* by Kate Scully and Debra Johnston Cobb (2012) in relation to the discussions of biopolitics and notions of manipulating and controlling the populations through coercive and even direct strategies of scarcity.

The first is a self published book by Pantone for the understanding of the entire 20th century use of colours through the eyes of using Pantone's Color Matching System creates a central example of how Pantone is able to maintain tight control over colour and over society. In the publication, Leatrice Eiseman, Pantone's Executive Director of the Pantone Color Institute, and Keith Recker, a Pantone colour trend consultant and founder/editor of HAND/EYE magazine, collaborated to create a visual tour of 100 transformative years of colour complete with large glossy color photographs and Pantone hues with numbers and names for reference. Over 200 "touchstone" works of art, products, décor, fashion, and films are dissected and deconstructed to become part of the Pantone colour palettes. As the description on Pantone's website states, "This vibrant volume takes the social temperature of our recent history with the panache that is uniquely Pantone" (Pantone website, 2014).

The colours cannot hide the problematic imbalance of presenting such a piece of propaganda as a work of literature or even historical documentation. Eiseman and Recker do not disclose how the images were selected, why they were in charge of selecting them, what makes them authorities on colour, or anything close to allowing the reader to understand the book as anything but eye candy. The images are stereotypical clichés of time periods that capture an ideological version of reality that is removed from the everyday. Some images are blurry or soft and some of the Pantone colour matches seem overly simple with the colour selection contrived to make the image more complimentary. There is no information or

account given to justify the use of the Pantone system or even how certain colours were selected over other colours in the images. Finally, Pantone was not created until 1963, and the book takes the reader through a journey of Pantone color matching since the 1900 Universal Exposition in Paris citing the Pale Gold (15-0927 TPX) and Almost Mauve (18-1248 TPX) when clearly those names and numbers did not even exist during that time, nor did Pantone.

This leads to a question, who is this book written for? Upon discovering the book in the library, as a small experiment, the book was shown to friends, colleagues, students, and strangers to randomly gage reactions. The feedback was excessively positive with comments such as, "I always wondered where those colours came from" and "It's nice to finally know the names of those colours from that time period" (Private conversations, Goldsmiths College, University of London, Spring 2014 term). Pantone has created a book that will increase the belief that their colour matching system is the basis of all colours in the world since the beginning of the 1900s. The agreement could be made that Pantone created this book not for the present, but for the future as other art, design, and fashion students are exposed to this archive and believe it to be factual (since nothing disputes the PMS used) and propagate the Pantone dominance in the field of colour even more.

A similar argument can be made against another text, *Colour Forecasting for Fashion* by Kate Scully and Debra Johnston Cobb. The book begins with the sentence, "Colour is a powerful selling tool" and continues to encourage the use of colour as a means for manipulating consumers into purchasing new items they do not need. Written by Scully, a senior lecturer at the University of the Creative Arts in Rochester, and Cobb, a consultant in textiles, the book is aimed at students entering into the field of fashion forecasting as an educational resource. What is questionable is the ethics behind such a book and the information presented within as part of a neoliberal mindset of consumerism. The authors ask, "Would consumers continue to buy yellow T-shirts or purple sweaters if they already had versions of these garments hanging in their wardrobes in the exact same colours? In all likelihood, consumers would purchase the same colours over again only if the garments were on sale, or if their old garments were worn out" (Scully and Cobb, 2012, p.10). It continues, "The right colour can make a product fly off the

shelves – while the wrong colour can be a very costly mistake, resulting in loss of sales, mark-downs and returns to the manufacturer" (Scully and Cobb, ibid., p. 12).

They attempt to make an argument for why colour forecasting is a necessity in the contemporary market, but there is no attempt to question the ethics behind such thinking in the first place. In fact, the authors point out, "Unless clothing no longer fits or is worn out, most consumers do not purchase new clothes out of necessity, but because they want to be stylish or on-trend; the fashion business survives because consumers feel the need for something new. Colour, of course, is an important point of differentiation that helps designate an item as new or fashionable" (Scully and Cobb, ibid., p. 92). They continue with a simplistic discussion of German sociologist Georg Simmel's theory of the trickle-down society stating that fashion is divided into higher and lower classes and the lower classes attempt to emulate the higher classes. This stimulates the higher class to buy into new fashion in order to differentiate themselves from the underclass.

For an example in contemporary society the film *The Devil Wears Prada*, 2006, highlights the amount of weight given to colour in contemporary society. The young assistant laughs at her boss who is deciding between to belts of the same colour, but with different buckles. The assistant comments that everything is fine, she is just still learning about this "stuff". Her boss replies:

> This... stuff'? Oh. Okay. I see. You think this has nothing to do with you. You go to your closet and you select...I don't know...that lumpy blue sweater, for instance because you're trying to tell the world that you take yourself too seriously to care about what you put on your back. But what you don't know is that that sweater is not just blue, it's not turquoise. It's not lapis. It's actually cerulean. And you're also blithely unaware of the fact that in 2002, Oscar de la Renta did a collection of cerulean gowns. And then I think it was Yves Saint Laurent...wasn't it who showed cerulean military jackets? I think we need a jacket here. And then cerulean quickly showed up in the collections of eight different designers. And then it, uh, filtered down through the department stores and then trickled on down into some tragic Casual Corner where you, no doubt, fished it out of some clearance bin. However, that blue represents millions of dollars and countless jobs and it's sort of comical how you think that you've made a choice that exempts you from the fashion industry when, in fact, you're wearing the sweater that was selected for you by the people in this room from a pile of stuff. (*The Devil Wears Prada*, 2006)

Scully and Cobb refer to this as "aspirational fashion" deeming that consumers seek to imitate the new royalty such as celebrities or famous individuals. Thus it is common practice to provide 'swag' (i.e., free merchandise) to celebrities in hopes that they will wear the item and generate big profits. This is an interesting viewpoint that leads back to the control of colour by the elite and the purpose behind their activities.

If the colour elite set themselves to be the ultimate colour authorities, then the second way that they have formed a power network within contemporary society is through the manifestation of capitalism on a global scale. To begin with, the whole history of the use of colours and the subsequent turn to the neoliberalization and biopolitical processes upon populations by the colour elite nexus needs to be considered and visualized. It has been effectively disguised through sophisticated strategizing on the part of the colour elite nexus to construct an overwhelming reliance on scarcity and power. The secrecy and tight reins of control over histories, members, and the production of colours by the nexus is illustrative of the lengths to which the elites will go and the authoritarian strategies they are prepared to deploy in order to sustain their power.

David Harvey's research on what he termed class warfare begins to open up some of the dialogue surrounding the powerful elites. Harvey questioned the 1970s wealth crash as corporations were hurting and neoliberal shifts in mindsets took hold as a jumping off point for a deliberate political project involving a new politics of inequality (Harvey, 2005). This political project restored class power through the financial markets and created a tremendous concentration of wealth and power for the capitalist class. What does this have to do with colour? The colour elite nexus is a part of the one percent who are profiting from this neoliberal mindset that continues to grow exponentially. Danaher Corporation that owns Pantone had a net profit over 20 billion dollars in 2013. The top executives at the colour forecasting associations and management organizations hold major positions in high ranking businesses across the globe. The colours generated for consumers are attained from executive meetings behind closed doors by individuals who already have a stake in the market. Is it ethical to have these people in such powerful positions as the ones who determine, create, and manipulate the masses into propagating consumerism?

Noam Chomsky argues that there is no escape from capitalism and there is no need to escape from it. Instead he proposes to unlock the neoliberal mindset and create change from within (Chomsky, 2013). This thesis is not only presenting how the colour elite nexus have played a major part in turning colours into a commodity, but also how they enable the various delineations of the biopolitical landscape from education to consumerism. By asking ethical questions and considering possible changes from within, there stands a chance to exceed this neoliberal mindset. Opportunities exist for consumer society to change into a society of conscious consumerism, educated and informed about where colour dyes come from for garments and how the colour elite are generating 'trends' and 'demand' for a supply chain that is increasingly encompassed by inequality and damage to the environment. Which leads to the next section, the implications of all this research.

Consciousness and Unconsciousness of Colour

In an attempt to understand the relationship between capitalism and colour whilst utilizing Chomsky and Harvey's frames of references of locating forms of change from within neoliberal mindsets, the following sections offer new perspectives on the complexities existing around the current approach to colours. David Batchelor argues that there is a fear of colour, but this thesis holds that it is more complex than that. There is not a fear of colours present in society, rather there is a lack of knowledge; there is an inability to comprehend the power and influence of colour within the everyday held by the capitalist class. The gap is not because of a lack of research on colours; quite the opposite. Yet the research conducted has not focused on roots of power and control to better understand where, why, and how the utilization of colour has been perceived as hesitant or even hindered.

It is within perception that the very essence of the problem resides. Colour has a consciousness and an unconsciousness relationship with humans. By consciousness, this thesis means a state of awareness or of being aware of the external and internal presence. As Max Velmans and Susan Schneider articulated in *The Blackwell Companion to Consciousness*: "Anything that we are aware of at a given moment forms part of our consciousness, making conscious experience at

once the most familiar and most mysterious aspect of our lives" (Schneider and Velmans, 2008). Throughout history philosophers have struggled to comprehend the nature of consciousness (See Descartes, Locke, Kant, as well as Western philosophers such as Arthur Schopenhauer, Baruch Spinoza, Gottfried Leibniz, Johann Gottlieb Fichte, Georg Wilhelm Friedrich Hegel, Søren Kierkegaard, and Friedrich Nietzsche). Perhaps a logical way of understanding it is proposed by Ned Block, noted for presenting the Blockhead argument against the Turning Test, as well as major contributions in research to consciousness and cognitive sciences (Block, 2015).

Ned Block proposed a distinction between two types of consciousness that he called phenomenal (P-consciousness) and access (A-consciousness). P-consciousness, according to Block, is simply raw experience: it is moving, coloured forms, sounds, sensations, emotions and feelings with human bodies and responses at the center. These experiences, considered independently of any impact on behavior, are called qualia. A-consciousness, on the other hand, is the phenomenon whereby information in human minds is accessible for verbal report, reasoning, and the control of behavior. Therefore when a person perceives, information about what is perceived is access conscious; when one is introspective, information about the thoughts are access conscious; when one remembers, information about the past is access conscious, and so on (Block, 1998, pp. 375–415). The unconscious mind (or the unconscious) consists of the processes in the mind that occurs automatically and is not available to introspection. It includes thought processes, memory, affect, and motivation (Drew, 1999, pp. 1061–1106). Specifically, the unconscious - the part of the mind that is inaccessible to the conscious mind yet affects behaviour and emotions. Even though these processes exist well under the surface of conscious awareness they are theorized to exert an impact on behavior.

Colour has a conscious and unconscious relationship with the world (Bennett, 2010). Colour is alive and in process. Colour is dynamic and consequential. Colour is a complex, interwoven consciousness and unconsciousness, affecting all other colours and undergoing constant modification and transformation. Humans are inextricably enmeshed in colour at all times through their perceptions and being in the world. The consciousness of colour has two distinct areas, utilizing Block's

concept of P-consciousness and A-consciousness. In colour, there is the raw experience. The colour comes first to the eye (P-consciousness). Then there is the perception; the colour comes into focus to the brain (A-consciousness). To make matters more complex, the unconsciousness of colour is also present and although not necessarily perceptible, does carry tangible significance. Under the surface of awareness, the unconsciousness of colour is located in the background of dyes, materials, gases, chemicals, and compositions. It is situated in the history of colour production, pollution, environmental damage, human labor, and ethics. The unconsciousness of colour has no voice unless it is given one.

Consider for example, carbon monoxide (CO) is a colourless, odorless, and tasteless gas that is toxic to humans (in concentrations around 35ppm) and is virtually undetectable to human vision in gas form (Food and Water Watch, 2008). CO is toxic because it sticks to hemoglobin, a molecule in blood that usually carries oxygen, even better than oxygen can. In exposures to higher levels of CO, the gas takes the place of oxygen in the bloodstream and wreaks havoc. Milder exposures mean headaches, confusion, and tiredness. Higher exposures mean unconsciousness and death, and even those who survive CO poisoning can suffer serious long-term neurological consequences. As an urban pollutant, carbon monoxide comes from the exhaust of internal combustion engines (i.e., vehicles, portable and back-up generators, lawn mowers, power washers, etc.), but also from incomplete combustion of various other fuels (i.e., wood, coal, charcoal, oil, paraffin, propane, natural gas, and trash).

Carbon monoxide has another interesting property, it can be used on meat and fish to make them look fresher and more appealing: the CO molecules delay the discolouration of the flesh that would otherwise indicate the decomposition and feculent nature of the meat. It could be argued that there is a small benefit in gassing as it kills some potential parasites, yet the toxins in the gas are still absorbed by the consumer. For example, Tilapia, can be frozen, shipped halfway across the world, and then, when thawed, be put on display and appear 'just caught'. The meat industry is estimated to lose approximately $1 billion every year to meat that looks unappetizing (Tarte, 2009). The unconsciousness to the 'red' of the meat is literally directly in front of the consumer and yet has no voice or clear history to inform the person of his or her selection (See Fig. 2.4 & 2.5).

Figure 2.4 – Example of meat untreated and treated with carbon monoxide.
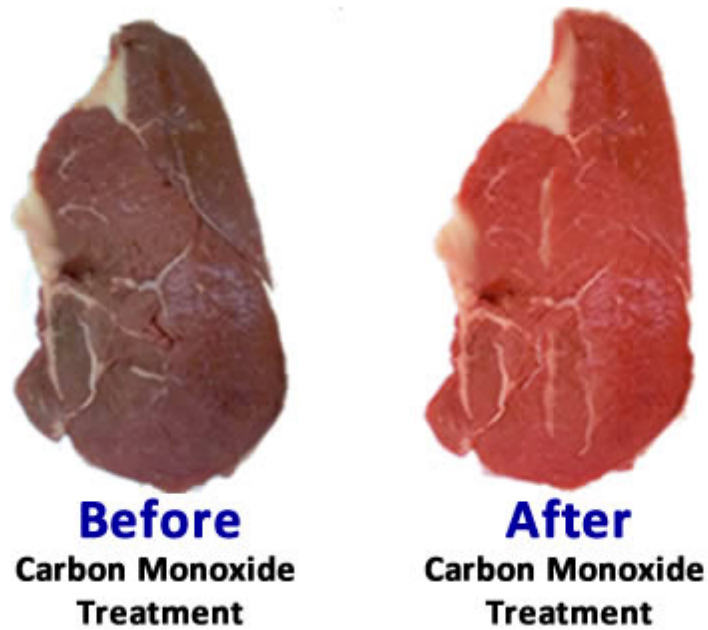
Figure 2.5 – Example of an orange treated with red dye to make it look more appealing. Oranges are actually yellow-orange in colour.

If ingesting harmful colour was not abysmal enough, consider the fact that it is more toxic to have a shot glass full of colour chemical based paint on your skin than it is to drink it (i.e., lead, nonylphenol ethoxylates or nonylphenols (NPEs), phthalates, perfluorinated and polyfluorinated chemicals (PFCs), petrolatum, coal-tar, and formaldehyde). Andreas Schimkus states, "The most dangerous way for a toxin to enter the body is not through the digestive systems, but through our skin" (Australian Government Department of Health, 2012). Human skin is only 1/10 of an inch thick, highly permeable, and the body's largest organ (approximately 10 sq. ft. if placed flat). The porous membrane is highly vulnerable to toxic chemicals. So much so that whatever humans put on their skin affects their health more than what they are putting into their mouths. The carcinogens from dyes and fabric treatments create greater cancer risks than eating contaminated food. This is due to the fact that chemicals that are swallowed are detoxified to a degree by enzymes in the human liver. The daily exposure to colours on human skin is far more damaging than at first understood. The prolonged exposure provides increased opportunity for absorption directly into the bloodstream and through the entire body with unpredictable toxic cumulative effects (Schettler et.al, 2008).

The clothing and dye industry is a 7 trillion dollar market that has managed to circumvent political, environmental, and health discussions over the years in order for increased profits. Garment production involves chemicals at every step of the process. Dyes have been used for centuries and dye pollution was originally a huge problem in Europe and the United States. The burden has largely shifted to more developing countries such as China, India, and Bangladesh. This neoliberal focus on what this thesis would call questionable global dealings concerning the lack of differential laws in different countries has helped aid in the gaps of knowledge for the consumer in terms of making an educated choice about their clothes and the dyes used on them. By pairing neoliberalism and colour together, the two subjects share a mark making that has something to do with how value is established in colour and society. Just as neoliberalism is understood as a process and is realized through distribution and application; colour can be understood as a process and colour is unavoidable. No one can avoid colour because it is everywhere in both natural and produced realms. Neoliberalism is everywhere because there is "no

alternative" (Harvey, 2005, p. 40). In the current neoliberalistic situation, the paradox exists that we live in a time of enormous wealth and a curious insistence on the idea of scarcity. There are ways of rethinking what has been a naturalization of scarcity (an idea often used as an excuse for the elite's class warfare). If one is to rethink the world as already abundant, how do humans start to make a claim on that wealth (being the natural resources) to be able to rethink the production of colours and the dye industry?

Corporations are using extremely complex, dangerous chemicals and hazardous dyes for the single purpose of reflecting light off a certain wavelength. This is analogues to using a giant cube of radioactive uranium just for the light it provides. It is inefficient, unnecessarily dangerous and an overly expensive method of achieving the goal of creating a certain colour. However, it is what humans know how to do right now. Therefore in the neoliberalistic mindset this is cheaper and easier than investing funds, energy, and time into finding new ways of producing colours that could possibly be safer, more natural, and brighter, as well as more responsive or calming to human brains and potentially less harmful to the environment. By suggesting the use of labels for all clothing, similar to the labels used on foods, perhaps there is an alternative. The consumer has a right to understand what is being placed on their skin, just as they have demanded a right to know more about where their food comes from and how it is grown. Where does the fabric in our clothing originate? What is it made from (i.e., plastic, petroleum, cotton) and is it organic or treated with pesticides? How is it dyed? What processes? What chemical dyes? Reading the labels to discover that most of the clothes are highly toxic for human bodies could stimulate change in the rethinking and re-education of the consumption of colours.

Areas of Resistance - Perceptual Humanism

The area of resistance to this particular colour research is found in the reaction of individuals as they become aware and begin to understand both sides of colour consciousnesses. Initial reactions occurred centered around a defensive stance of not wishing to give up a colour due to deeper understandings of the chemicals and hazards. This reaction is similar in vein to "we already know this is bad for us, but

we do it anyway". For example, upon reading over this thesis research on colour, one person commented, "I am not giving up my deep red nail polish by Dior"; another said, "Colours are everywhere now…if I want a pair of yellow socks, I just get on the internet and order a pair"; and finally, "I may not understand how my dress was dyed a certain colour and frankly, I am okay with not knowing as it doesn't hurt me at all" (Conversations held with faculty and students on campus at Goldsmiths during the period from 2011 to 2015; used with permission). On the one hand, the reactions seem to be taking the research personally and on the other hand, there is something more at stake. It seems to be that consumers do not want one last terrain of non-thinking, innocent enjoyment taken away from them.

Perhaps it is here within the area of resistance where the hidden biopolitics of the research is discovered. The mindset produced from living within a neoliberalism process guides humans to believe they have a choice of 'this colour or this colour' and within that choice there is a belief of making a personal decision. William James posited that the self is characterized as a source of permanence beneath the constant shifting of lived experiences. The permanence is often related to the construction of narratives that weave together threads of temporally disparate experiences into a cohesive fabric. To address this construction he viewed the self as having the 'me' and the 'I' variances. The Jamesian theory of the self is divided into the "me" self (i.e., individual's experiences of material, social, and spiritual ways of being; changing) and the "I" self (i.e., soul, mind, or core; constant). Within the 'me' is an area of material self that consists of things that belong to an individual or that the individual belongs to, such as the body, clothes, automobiles, money, or family. The social focuses on how individuals change how they act depending upon the social situation and the spiritual is an intimate inner self of values and consequences. The 'I', or pure ego, is the thread of continuity between past, present, and future selves or what James termed the "stream of consciousness" (James, 1892). The consumer therefore believes that the colour choices they make define them in regards to social status, cultural values, and even satisfaction with the self (i.e., me and I).

On the other side of innocent enjoyment there is to consider colours' role in consumer choices as the arbitrary element that makes a commodity 'your choice' or 'just to your liking'. This is where colour and the thresholds of the senses meet.

There is a sense to which humans attend to the perception of colour and not so much the imperceptible effects of colours or colours' unconsciousness (i.e., chemical compounds, environmental, societal consequences). This subtle form of privileging the limits of human senses that is about upholding an amplified image of agency in a consumer's decision and needs a name: perceptual humanism.

To be clear, this thesis is not addressing the actual senses of perception, specifically visual neurological synapsis. For clarification purposes, perception is the organization, identification, and interpretation of sensory information in order to represent and understand the environment. This thesis is not concerned with the signals from the nervous system or the processing of sensory input (Schacter, 2011, pp. 598–601; Bernstein, 2010), pp. 123–4; Fechner, 1860; Calvert, 2010, pp. 33–7; and Pomerantz, 2003, pp. 527–37). It is addressing the epistemology of perception to question the nature of consciousness involving colours. Any philosophy of perception is concerned with the nature of perceptual experience as it relates to beliefs and knowledge of the world through ontological or metaphysical views. Humanism and its emphasis on the internal perspective relates directly to the learning process as well. It is through the acquisition of information and the personalization of information as subject matter is organized and presented that learning occurs according to Arthur Combs. Combs states, "To understand human behavior…it is necessary to understand the behavior's perceptual world, how things seem from his point of view. This calls for a different understanding of what the 'facts' are that we need in order to deal with human behavior; it is not the external facts that are important in understanding behavior, but the meaning of the facts to the behavior. To change another person's behavior, it is necessary somehow to modify his beliefs or perception. When he sees things differently, he will behave differently" (Combs et al, 1976, p. 492).

By ontological, this thesis means the philosophical study of the nature of being, becoming, existence, or reality. Metaphysics means a branch of philosophy concerned with explaining the fundamental nature of being and the world that encompasses it (i.e., ultimately, what is there and what is it like) (BonJour, 2007). What is of great importance is the higher-level information processing of knowledge that is connected with an individual's consciousness that influence perception, particularly in regard to colour.

Specifically, there is a gap in our experience of colour, a gap humans fail to recognize. The failure to recognize it stems from the discontinuous phenomenon of an apparent continuous perception. As Alva Noë articulates, "We are all victims of an illusion of consciousness" (Noë, 2004, p. 54). The problem of perceptual humanism is that it forces us to confront the illusion, to become perceptually aware, of being uninformed to that which society has not made important. This is not a call to see beyond the horizon, but rather to see (quite literally) into the very fabric of our colours. To hopefully better understand the chemical compositions, the bioharzards, the unethical and questionable processes involved so that each choice a consumer makes is informed and carries with it the potential to improve not only their lived experience, but also those with whom they share the planet.

Alva Noë writes about visual perception in a similar way to how this thesis is proposing perceptual humanism. He posits:

> I would like to suggest that the popularity of the orthodox strategy stems from the implicit assumption of the snapshot conception of experience. Many thinkers implicitly assume that when we see, we represent the whole scene in consciousness all at once. I have argued us to admit that this assumption is wrongheaded, that it amounts to a distorting misdescription of our phenomenology. (Noë, ibid., p. 62)

In this manner, Noë describes the inability to see a whole cat as part of a virtual way of seeing. If one can only see part of the cat's body, the viewer reconstructs the rest of the cat to be there in their mind. He argues that the sense of the perceptual presence of the detailed world does not consist in our representation of all the detail in consciousness, but rather it consists in our access to all the detail and to the knowledge that is available in this access. For vision, the knowledge is the mastery form of the rules within sensorimotor dependence. It is here where perceptual humanism has a similarity, for each colour we see, there is a perceptual presence to the history, chemical composition, development, and environmental presence that is as important as viewing the colour itself. Yet this is an epistemological change in our way of being to be able to approach the world with such consciousness. This returns the research to the claim on colour; that all colours have a consciousness and unconsciousness.

Colours have a presence that is relational to our way of being. Individuals approach colours as per what type of utilization or function can the colour play or serve in their lives. When consumers purchase a new article of clothing, they know the garment was dyed at some point to achieve the colour on the fabric. Yet there is a lack of knowledge of where the dye was created, what chemicals went into the dye, how the dye was adhered to the fabric, what chemicals were used to adhere, how the animals were treated, how the humans were treated, how the environment was treated, etc. The relation to the colour is focused on what it can do for the consumer at that point in time- how it will satisfy the need for a particular function in their lives and not how it has affected others.

It would appear that if the colour of an object was green, yellow, or orange that it is just another option based on what the consumer likes/dislikes or what ultimately produces increased profits. Yet there is a difference in the process of how each colour comes into production. One problem is that even though an individual does not visually experience the dye process, the relation of the process is no less meditated by one's being in the world; meaning the unconsciousness of colour trickles into everyone's lives by way of health hazards, cross contamination, environmental issues, and psychological effects. There is unaccountability in the colours existing around the world. There is also strong resistance to understanding the unconsciousness of colours from the human perspective, as it requires one to unlearn that which has been taken for granted, the ability to not care (i.e., "I don't have to care if it doesn't affect me").

As with the difference between organic/local and commercial/global produce, so does colour contain hidden dimensions. For example, the slow food movement was founded in 1986 by Carlo Petrini as an alternative to the fast food corporation take over of farming and livestock. As a reaction for using local ecosytemic food sources, the movement has expanded globally to over 150 countries (Petrini, 2003). Similarly, the slow fashion movement, a term coined by Kate Fletcher in 2007 at the Centre for Sustainable Fashion, UK, advocates an alternative approach by means of rejecting all mass-produced clothing for only clothing made by hand. It encourages education about the garment industry, environmental impacts, depleting resources, supply chains, trends and seasons, promotes quality over quantity and recycling (i.e., buying secondhand or vintage clothing) (Cline, 2012).

Perhaps the need for a slow colour movement with a focus on natural and alternative dyes to the chemical processes is on the rise.

The relation to a colour is not only perceptual because it is not object-dependent or visually dependent. It is not enough to know that our relation to the environment is mediated by knowledge, but further understandings of the unconsciousness needs to be brought into being; there is a need to allow for easy access to this information. Part of the solution is to demand for corporations to inform consumers of where colours are produced and how. There is often no access to this knowledge and in some cases even the corporations themselves do not know what chemicals are being used in their production lines. Another part of the solution is rethinking perceptual humanism in relation to the objects and colours around the world. There is a need to recognize that human experience of a colour is not the only experience that matters. In this regard, the unconsciousness is overlooked in favor of immediate gratification. Yet it is here that one can begin to break the cycle of neoliberalism and capitalism- to give voice to the unconsciousness of colour- to begin to re-educate the human population not just as conscious consumers, but also as conscious colourists.

This is controversial because people feel threatened to have to give up one more area of perceived freedom, that is the ability to choose without consequence. Yet this premise is in itself already a fallacy. Humans often only give consciousness to the world they immediately know and not the world as it actually is in a larger sense. Knowledge is active. If one does not acquire new knowledge, one becomes stagnant in their understandings. The immediate perceptual world does not change, however the larger reality of the world is in constant flux.

When humans interact with a colour it does not represent the whole scene in consciousness all at once. When an individual is presented with a colour, they are in contact (i.e., visually) with the colour. As Noë writes, "You are in the world, and through skillful visual probing, what Merleau-Ponty called 'palpation with the eyes', one is brought into contact with it" (Noë, ibid., p. 40). Only by discerning its structure is an individual able to, in a sense, represent it. Vision is touch-like. Like touch, vision is active. A person perceives a scene not all at once, but rather in a series of flashes. They move their eyes around the scene the way someone would

move their hands about a bottle to gain an understanding of the whole. As in touch, the content of visual experience is not given all at once. Perceptions gain content by looking around just as one gains tactile content by moving their hands. One is able to enact a person's perpetual content through the activity of skillful looking. By demanding more knowledge, more reading, more understanding, and bringing into light the unknown areas of colours, one is able to gain a new perceptual way of being that breaks the perceptual humanism of current colour understandings.

Understanding the Gap of Perceptual Humanism

The problem is not that individuals do not think or consider the moment beyond their perception, rather it is that they do not rethink and reconsider which is part of the reason this thesis utilizes critical social theory for advancing the emancipatory function of knowledge. There is an assumption that what is seen in colour represents the whole sense of consciousness. A paradoxical way into understanding the gap of perceptual humanism is that individuals are mistaken in their assessment of how things seem to be. The unconsciousness of colour is just as present in any colour human beings encounter on a daily basis.

There can be a perceived inconvenience to understanding the distorting misdepiction of this phenomenology. By deconstructing the binaries of perception as only focusing on the habit versus pure, perceptual humanism helps to attune the complex world of the consciousness of colours enmeshed within. The claim presented is to build upon the Bergsonian ideas (described below) of perception to address the contemporary situation of capitalistic thought habits (i.e., separate, sovereign, autonomous, passive) to expand the threshold of perceptual humanism by articulating the history of colour, politics of colour, and power of colour in contemporary society.

Henri Bergson argued that an individual's creative evolution holds great potential to expand rather than contract. He noted that most human responses are automatic and grounded in convention and habit. For Bergson there are two types of memory, habit and pure. Habit memory is the result of becoming habituated in the environment by learning a deterministic response and respond to situations. For

Bergson, memory is the preservation of the world in images. It is subjective or personal in the sense that each of us has a different encounter with the world, but it is not subjective or personal in the sense of being a property of the subject's imagination. Whereas pure memory is the unconscious or the 'zone of indetermination' that results from the development of complex perceptual systems to allow for the possibility of a non-habituated response. He posits in the third chapter of *Matter and Memory:*

> If you abolish my consciousness…matter resolves itself into numberless vibration, all linked together in uninterrupted continuity, all bound up with each other, and traveling in every direction like shivers. In short, try first to connect together the discontinuous objects of daily experience; then, resolve the motionless continuity of these qualities into vibrations, which are moving in place; finally, attach yourself to those movements, by freeing yourself from the divisible space that underlies them in order to consider only their mobility – this undivided act that your consciousness grasps in the movement that you yourself execute. You will obtain a vision of matter that is perhaps fatiguing for your imagination, but pure and stripped of what the requirements of life make you add to it in external perception. Reestablish now my consciousness, and with it, the requirements of life: farther and farther, and by crossing over each time enormous periods of the internal history of things, quasi-instantaneous views are going to be taken, views this time pictorial, of which the most vivid colors condense an infinity of repetitions and elementary changes. In just the same way the thousands of successive positions of a runner are contracted into one sole symbolic attitude, which our eye perceives, which art reproduces, and which becomes for everyone the image of a man who runs. (Bergson, 1988, pp. 208-9)

Just as Bergson compares the image of a running man to a single snapshot effect, so too does perceptual humanism interact with our ability to see colours both on the conscious and unconscious level. Furthermore, Bergson's zone of indetermination is a temporal gap or interval where an individual is able to come into contact with more unconscious levels of time and memory. It is here that Bergson introduces the "automatic recognition" to "attentive recognition" (Bergson, ibid., p. 101). The automatic response "prolong our perceptions in order to draw out from it useful effects and thus take us away from the object perceived" and the attentive response brings perception back "to the object, to dwell upon its outlines". The attentive recognition strengthens memory and perception as it "draws into itself a growing number of complementary recollections" and thus

"truly involves a reflection, in the etymological sense of the word, that is to say the projection, outside ourselves, of an actively created image, identical with, or similar to, the object on which it comes to mold itself" (Bergson, ibid., p. 102).

If on the one hand automatic response subsumes differences to generalities, than attentive response allows for an ever-widening series of comparisons and contrasts. However this only occurs when an individual is able to counter the "rhythm of necessity" to discover in an object "a growing number of things". As Bergson posits, primary qualities might be known "from within and not from without" if only we are able to "disengage...from the particular rhythm of duration which characterizes our consciousness". (Bergson, ibid., p. 69). This thesis contends that there is a need to recognize perceptual humanism and there is a need to break the habit of this reliance in order to begin to see again the unconsciousness of colour and it's affects upon what seems to be a simple choice.

Bergson's *Matter and Memory* concludes that it is viable "to seek experience at its source, or rather above the decisive turn where, taking a bias in the direction of our utility, it becomes properly human experience" (Bergson, ibid., p. 184). In addition, he writes, "The relativity of knowledge may not, then, be definitive," but rather, "by unmaking that which these needs have made, we may restore to intuition its original purity and so recover contact with the real" (Bergson, ibid., p. 185). It is through this process that the possibility exists to liberate perception from the force of habit. This, Bergson argues, is the role of philosophy (and art): to free perception "from the contraction that it is accustomed to by the demands of life." Indeed, he states, "This conversion of the attention would be philosophy itself" (Bergson, 2002, p. 253).

Bergson's ideas help make the connection of perceptual humanism and colour meeting at a crossroads. To first become aware of our limitations and second, to begin to understand colour as more than just what is presented and perceived. This chapter sought to help articulate a better understanding of how to address perceptual humanism by providing detailed information about colours and biopolitics in such a way as to help others rethink what they originally considered. The next section will offer contemporary case studies of how colours have been utilized in various forms by artists, artists turned government officials, and

governments to better illustrate the effects of the dynamic relationships with colours and power in public space.

SECTION III

CHAPTER VII - COLOURS AND PUBLIC SPACE

"The starting point is the study of colour and its effects on men."

~ Wassily Kandinsky (1912/1977)

The main purpose of this section is to investigate the use of colours within the transformation of public space in modern society. More specifically, the section aims to demonstrate that, whilst colour and capitalism form a complex interplay with each other, so too does colour interface with the structural transformation of public space. It touches upon a very important notion that the lines between colour, consciousness, unconsciousness and public space are blurred. There is a silent and neglected battleground between colour as an institutional apparatus and its power to immerse and dramatically alter landscapes. Colour becomes performative as a form of resistance or catalyst for change. The gradual differentiation of social life and biopolitics manifests itself in the proliferation of multiple public spaces.

A critical theory of colour in public space needs to confront the ideological complexity of the polycentric nature of colour as artists, designers, policy makers, and governments (etc.) utilize it. With the aim of showing this, the final section is divided into four chapters. Chapter VII elucidates the sociological meaning of public space through Habermas's theory of the public sphere as a foundation. Lefebvre and other philosophers then contribute to a greater understanding of the subject as to contextualize the use of colours in such spaces. Chapter VIII illuminates the key use of colours within public space by examining the relationships between the intentional use of colour by artist Olafur Eliasson to illustrate the perceptible and imperceptible colours in public space. Chapter IX explores the use of colour by governments within public spaces through artist and politician Edi Rama's *Clean and Green* project in Tirana and finally, Chapter X addresses a government's use of colour with the Glasgow LED blue light case study.

To Understand Colour = To Understand Public Space = To Understand Power

The concept of public space has a number of different meanings depending upon the historical, cultural, and contemporary applications. For the purposes of this research, it is both possible and useful to develop an analytic framework that allows the complexity of the use of colour within the public space of modern society to be unpacked. The perspective of understanding public space is grounded historically in the philosophical works of Jürgen Habermas, Hannah Arendt, and Henri Lefebvre, whilst the contemporary perspective can be situated in the works of Don Mitchell, Chantal Mouffe, and Rosalyn Deutsche. Assuming that theories of public space are largely known, their concepts shall not be described in detail, but rather summarized to help shed light on the applications of colour to public spaces and the implications to society. To this end, it is necessary to depart from the theoretical colour discussion in this area, on one hand turning to the political theory of where the concept of public space is initially approached, and on the other to the recent focus on public space becoming increasingly inextricably linked with theories of capitalism.

Jürgen Habermas used the term 'public sphere' to describe a discursive form of public space embodied with ideas, opinions, and debates about issues of public interest. In his book, *Structural Transformation of the Public Sphere*, Habermas presents a detailed social history of the development of the bourgeois public sphere. He covers the time from its origins in the 18th century salons up to its transformation as small societies grew into mass publics in the 19th century where ideas became commodities assimilated into the economics of capitalist-driven mass media consumption. Thus, the public sphere provides individuals opportunities to engage in political participation through discussions to identify societal problems with the potential to influence political action. For Habermas the public sphere was the space of discursivity that is produced by political desertion. For him it was not simply a physical space, but also a space of dissemination, which prompted his interest in newspapers, magazines, media, etc. and also fueled his concerns about developments in communication.

The terms public sphere and public space have commonly been exchanged without differentiating between the two. However space commonly refers to the social and

typically physical entity that is generally open and accessible to all people. For example, public squares, parks, benches, roads, pavements, libraries, and some government buildings. Public sphere generally refers to the socio-political entity and has recently become a touchstone in critical theory as it is often used to mean other areas such as gathering places (i.e., commons) or social spaces (especially within online/internet culture).

Thus, public sphere is not merely physical or figurative, but is constructed discursively and is essentially spatial. Habermas's concept of the public sphere describes a space of institutions and practices between the private interests of everyday life in civil society and the realm of state power. His notion of the bourgeois public sphere is ultimately one of transformation from a space of rational discussion, debate, and consensus to a realm of mass cultural consumption overseen by corporations and the dominant elite. For Habermas, the transformation indicates the interconnection between a sphere of public debate and individual participation. It has been fractured and transmuted into that of a realm of political information and spectacle, in which citizen-consumers ingest and absorb passively entertainment and information. Citizens become spectators of media presentations where discourse shapes and influences public opinion. According to Habermas, "Inasmuch as the mass media today strip away the literary husks from the kind of bourgeois self-interpretation and utilize them as marketable forms for the public services provided in a culture of consumers, the original meaning is reversed" (Habermas, 1991, p. 171).

In a similar type of comparison, Hannah Arendt in 1958 used the term 'public realm' to describe a space facilitated by both discussion and action where individuals not only build consensus, but also engage in political collective action to pursue mutual goals. In her book, *The Human Condition*, she articulates the public as "the common", what is seen by everyone and "the private" as that which cannot be seen; holding the private as the true opposite to the social. Arendt's book focused on a tripartite division amoung the human activities of work, labor, and action, as well as exploring the relationship between the political and social through the realms of the public and private. Public spaces that are stabilized are the realization of institutionalized freedom through the interactions with other people. The idea expressed is that the individual is only able to realize their

freedom in action by experiencing the world in a public nature. Arendt argued that such public spaces were fragile and endangered. She viewed the decline in interest in public life and the political as due to the alienation from value and dignity. The relative descent within value of action verses value of labor and work (which she felt were destructive to public life) correspond to the significance of a person's individual existence (Arendt, 1958, p. 52). Therefore, according to Arendt, a fulfilled human existence cannot be situated in the private realm alone, but must involve the public realm.

In an additional attempt to understand another perspective on public space, Henri Lefebvre's phrase 'the production of space' captures the conceptual element of this discussion by encapsulating the individuals' basic rights of access not only to physical public spaces allowing gatherings and interactions, but also to discursive public spheres of political participation that co-create such sites in the first place (Lefebvre, 2009). Lefebvre's writing on the urban, the everyday life, and on spatialization provide a means of understanding the significance of space. Specifically in *The Production of Space*, Lefebvre focuses in on the 'trialetic' or 'spatial triad' of space as a social force that informs time and history between the everyday practices and perceptions (le perçu), the representations or theories of space (le conçu), and the spatial imaginary of the time (le vécu). Shields, 1991, pp. 50-8).

According to Lefebvre, space is a "double illusion" that comes into focus as two mutually-reinforcing forms as the "illusion of transparency" and the "realist illusion" (Lefebvre, 1992, p. 29). On one side, the "illusion of transparency" highlights the totalizing, philosophical realm whilst downplaying the environment of social and physical realms. It is a mental space detached from material and social space. On the other side, the "realist illusion" privileges "things", such as materialism, over the 'subject' via thoughts and desires. It is a mental and social space that is subordinate to physical space. The "realist illusion" is a mask for the capitalistic regime that demarcates, parcels out, and attempts to commodify the world. Lefebvre states,

> (Social) space is a (social) product [...] the space thus produced also serves as a tool of thought and of action [...] in addition to being a means of production it is also a means of control, and hence of domination, of power. (Lefebvre, ibid., p. 26)

131

Both understandings of space highlight Lefebvre's main concept that space is in essence, a social product, omnipresent while paradoxically invisible. Lefebvre termed the 'production of space' to the significance space has to changes in organizations and accumulations under late capitalism (Lefebvre, 2009, p. 285). Since production is not an independent unit within space, but rather occupies vast spatial networks, the 'production of things in space' gave rise to the 'production of space'. Lefebvre referred to capitalist space as 'abstract space' and 'dominated space' that served multiple functions, thus accentuating the importance of Foucauldian power networks since individual cities no longer function in isolation, but rather are networked into relationships across various locations, both geographically and virtual. In this realm it could be argued that the point of critiquing space into such detail is to say spatial design ultimately is a form of social control (Gottdeiner, 1985; Soja, 1980, pp. 207-25; Saunders, 1986).

For Lefebvre, capitalism creates a distinctive and multivalent space that "is not only supported by social relations, but…also is producing and produced by social relations" (Lefebvre, 2009, p. 286). Space is multivalent in that it encompasses so much at once by being subordinate, dominant, observed, surveyed, consumed, viewed as property, and viewed as production. Space is not black and white, not cut and dry, but rather it is produced by multiple people, places, and interactions that create fluidity between the physical, natural, and mental spaces Lefebvre is writing about. Lefebvre's triad of space seeks to illustrate a continuum of the physical, natural, and mental spaces as they overlap in a complex relationship. By using Lefebvre's triad of space as a device to unpack the significance of colour in public space, it is necessary to review briefly the three spaces of Lefebvre's *The Production of Space* (for clarity, the terms perceived space, conceived space, and lived space shall be used).

Perceived Space (i.e., spatial practice) encompasses production and reproduction. It indicates the spatial practice of how space is conceived of as well as how an individual within a city or a nation-state within an area 'lives'. Spatial practice often includes the physical transformation of the environment. Lefebvre utilizes an example of this practice by describing the roads of medieval Europe and expounds upon the socio-economic forces that divided the rural town and urban city.

Conceived Space (i.e., representations of space) adjoins the relations of production with that of 'order' (i.e., social, natural). It is here that the 'representations of space' emphasize knowledge, signs, and codes (i.e. urban planning) to impose a structure that may or may not naturally 'emanate' from the other two spatial elements. The examples here are numerous as they "make" up the everyday world: buildings, roads, subdivisions, etc. Lived Space (i.e., representational spaces) outlines the unaddressed role of the social and symbolic space that interplays multiple space perspectives but remains often unseen. Lefebvre cited examples of painting, writing, architecture, and other works of art as encompassing lived space. It is within the last space that the idea of the thirdspace by Edward Soja is considered as picking up where Lefebvre left off (Soja, 1996, 2009, pp. 49-61). Based on Lefebvre's work, Soja argues that there is another understanding of the 'lived space' as a thirdspace to which humans give meaning. This radical open space is a rapidly, continually changing space in which everyone lives.

Soja articulates his own interpretation of Lefebvre's work as embodying a first and second space. First space is the mapping and compartmentalization of space that offers a wide, rational perspective. Second space is the conceptualization of first space by representing the lived space through art, historical markers, advertisements, etc. The thirdspace encompasses the first two spaces and focuses on the actual lived experiences of the people who provide the meaning to the area. To offer an example of the thirdspace by Soja, take for consideration a local farmer's market. The first space would view the farmer's market as a geographical area in the centre of town. The next space would view it as a place where goods are sold and purchased or exchanged. The thirdspace would view it as a place where people come together to socialize, gossip, people watch, and purchase local produce. The humans give meaning to the space by socializing and living in the space. There is not one universal meaning, as each human would experience it in another way.

The thirdspace accommodates that which the firstspace and secondspace can no longer augment with how the world works according to Soja. Within this thirdspace, there are different aspects of multiple categories that displace some of the original values and perspectives set up in the first two spaces. It is here that the thirdspace may explain concepts that have been excluded such as the complexity of

poverty, social exclusion and inclusion, race, and gender, as well as additionally helping to understand the socio-economic impact of colours in public space.

In recent texts, some have argued that due to the fact that humans live increasingly private lives and spend more time in private rather than public spaces, there has been a significant decline in political engagement (Sennett, 1972; Putnam, 2000). Furthermore, exclusion is a significant theme in literature surrounding public space. One of the strongest and earliest cases comes from Nancy Fraser in her 1991 critique focused on 'the liberal model of the bourgeois public sphere'. She attempted to expose the effects on public opinion of inequality within civil society by highlighting the social and class bracket differentials that exist within societies. She argued that social equality is a necessary condition for political democracy and the creation of 'subaltern counterpublics' could enhance the participation of subordinate strata in stratified societies (Fraser, 1991, pp. 109–42).

Fraser commented on the idea of "revisionist historiographies" that problematized Habermas's account of the historical development of the public sphere by addressing the exclusion of gender and classes (Fraser, 1995, pp. 287-312). Fraser advocated movements such as feminism to help re-draw the boundaries between public and private. It is interesting to note that many years later, Fraser would write in another article that she felt her critique did not go far enough. She criticized her own lack of thinking outside the Westphalian state and not succeeding in addressing the social-theoretical underpinnings of *Structural Transformations* enough, however she did begin the dialogue which has opened numerous other criticisms and interpretations of Habermas' book.

Another example of the contemporary questioning of public space is found in Don Mitchell's account of the long-lasting confrontation of how the University of California sought to exclude nearly everyone except students and professionals from the People's Park in Berkeley (Mitchell, 1995, pp. 102-16). Mitchell's book, *The Right to the City: Social Justice and the Fight for Public Space*, is about the right to inhabit and participate in a city or urban space as an ongoing project of creation, production, and negotiation. Mitchell opens with a theory of social justice and urban space while progressing to the tensions of legal decisions supporting "public order" over "rights". What happened in the People's Park (and continues to

the present time) is a public struggle over 2.8 acres of land in San Francisco. Established as a free open park, the People's Park has functioned mainly as a daytime sanctuary for Berkeley's large homeless population causing controversy due to the university wishing to turn it into student housing and the more affluent citizens wishing it to be rid of the homeless population.

Historically, in May 1969, the Southside neighborhood was the site of a major confrontation between student protesters and police. The "Bloody Thursday" situation came about when a rally turned to protests resulting in the death (by shotgun) of a student, James Rector (an innocent bystander, not protester) and over 110 people being injured and taken to local hospitals. For an additional 17 days afterwards, National Guard troops patrolled Berkeley with bayonets and guns in hand as ordered by the then governor Ronald Reagan. In the aftermath, the park has been the center of multiple protests, demonstrations, and concerts for various movements. The notion of going "green" or being "green" came about from the many conflicts surrounding the park. It is currently co-managed by the university and various community groups. Controversies continue to plague the park with the most recent 2011 university bulldozing of the west end area tearing up the decades old community gardens and plowing over mature trees in an effort to "provide safer and more sanitary conditions" for the park. Students at Berkeley accused the university of doing this against their wishes as the action was carried out over the winter holiday when most students were gone for the break.

By utilizing case studies such as the Berkeley Free Speech movement and People's Park, Mitchell creates a close analysis of several arguments and dissents within case law focusing on labor, the public forum doctrine, and anti-homeless laws. Mitchell is particularly engaged with the legal circumscriptions governing homeless people as those who "are needed [as a byproduct of capitalism], but are not wanted" (Mitchell, 2003, p. 174). The extensive list of the discourses, policies, bylaws, and legal decisions that disenfranchise the homeless in whatever ways to serve local political circumstances characterize the importance for Mitchell that homeless is the most tangible manifestation of the libertarian ideology of an all-privatized social order. He posits:

> The anti-homeless laws being passed in city after city in the United
> States work in a pernicious way: by redefining what is acceptable

behavior in public space, by in effect annihilating the spaces in which homeless people *must* live, these laws seek simply to annihilate homeless people themselves, all in the name of re-creating the city as a playground for a seemingly global capital that is ever forced to engage in its own annihilation of space. (Mitchell, 2003, p. 167, original emphasis)

Mitchell argues that the myriad elements that synthesize to create and maintain the construction of 'public order' is due to wealthy cities that are being refashioned for global neo-liberal restructuring, leading not to an "annihilation of space by time", but rather a collapse of public space itself through the "constant production and reproduction of certain *kinds* of places", that is, locations that uphold the "disneyfication" of public space, allowing unencumbered passage for social elites but criminalizing and/or eradicating the homeless (Mitchell, 2003, p. 165, original emphasis).

Mitchell's writings aim to examine how negotiations over the ownership, control, and 'peopling' of public spaces are central to the development of publicity, citizenship, and democracy in urban areas (Staeheli and Mitchell, 2008). Public space has long held an important position in democratic societies. The Greek word *agora* referred to "the place of citizenship, an open space where public affairs and legal disputes were conducted…it was also a marketplace, a place of pleasurable jostling, where citizens' bodies, words, actions, and produce were all literally on mutual display, and where judgments, decisions, and bargains were made" (Hartley, 1992, pp. 29-30). Habermas's discussion of the public sphere focuses on the normative nature of the sphere to include all manner of social formations in the structures of power within a society.

Just as much as common spaces, open areas, and marketplaces were spheres of freedom, interaction, and trade, they were also areas of exclusion and regulation. Habermas views the public sphere as a universal, abstract realm in which democracy occurs, whilst public space constitutes the actual site, place, or ground within which political activity flows. Through the interplay between property and people, Mitchell focused on the 'right to exclude' different individuals and people to understand the role public places play in shaping democratic possibilities. Using examples such as the struggles around homelessness in the contemporary United States or the controversy around People's Park in Berkeley, Mitchell indicates that

public space often plays a role that is far more central and essential in politics than can be conveyed by despatialized concepts such as public sphere. Elaborating on Lefebvre's terminology, Mitchell argues public space is a "space for representation". Public space in this sense corresponds more or less to what is designated as public by authorities. A public space is created through the presence of struggle. Similar to Arendt's view of public spaces being fragile, public spaces are not simply given; they do not consist simply of places designed or planned to be 'public', but they must be fought for, created, and established through conflict. Mitchell posits:

> The undercurrent of radical activism that shapes space in and against "regimes of justice" that regulate it should not be underestimated or dismissed, no matter how often such activism is either defeated or co-opted. Where I see hope is in exactly those moments when radical activist movements have arisen- again and again- to take back the city and to make into something better, movements that "rethink the exclusions" of the past….and that struggle to *remake* the city in a more open and progressive light. (Mitchell, 2003, p. 10, original emphasis)

Claiming a space and making it public through conflict can achieve public visibility for disadvantaged groups (Mitchell, 2003, p. 35). The idea expressed is that politics, in an emphatic sense, arises only when humans visually appear in places where they were not meant to be and stake their claim in a manner that upsets a given order at present. Other researchers have posited similar exclusionary actions against marginalized ethnic groups, such as the writings of James Duncan, Lisa Law, Ali Madanipour, Mike Davis, and John Michael Roberts (Duncan, 1978, pp. 24–34; Law, 2002, pp. 1625–45; Madanipour, 2004, pp. 267–86; Davis, 1992). Roberts argued that although public space is the primary locus of discursive activities in the public sphere, these same locations that serve as spaces to express dissent through protests and rallies are often designed and monitored for the ability to impose governmental control when necessary (Roberts, 2008, pp. 654–74). Recently research indicates the trend towards privatization of formerly public spaces that could be argued as the most extreme form of control by governments to effectively remove the disposition of public space and thus the ability for public discussions and consensus building (Kohn, 2004; McKenzie, 1994).

By combining these various perspectives, key insights into how public space functions are revealed. More importantly, by providing multiple perspectives, ideas that might have been obscured, are considered in new light, such as how colour is used in public spaces. The main difference between to the two terms of 'sphere' and 'space' is that public sphere (as a socio-political entity) is considered to have followed a trajectory of increasing inclusivity and gradual expansion. Whereas public space (as a physical entity) has followed a different trajectory with recent decades witnessing a tightening of controls and surveillances that have made public space more inhospitable and exclusive. This divergence of trajectories is part of the background to the fact that public space today seems to attract more radical energies than the idea of a public sphere. The purpose of providing such detailed background on public space is to allude to the concept that colour has a dynamic relationship with space and consciousness, highlighting the importance of considering the implications of the use of colour in societies. Ultimately this chapter is establishing the argument that public space is an area of conflict and dissent that shall be expanded upon in the following chapters. This begs the question, returning to the use of colour in public space, where is public space conflictual and how do colours participate relative to the pacification, control, or activation of populations within such spaces?

CHAPTER VIII – MAKING THE UNCONSCIOUSNESS OF COLOUR CONSCIOUS

Olafur Eliasson

How is colour utilized with the challenge of contemporary and complex forms of public space? Colours retain a remarkable ability to bring attention to areas of public space that could be considered outside of every day collective consciousness. Public space may be activated into the conflictual realm via means of colours. When Olafur Eliasson treats public space as the site of political and cultural change rather than as a universal domain, he significantly redirects mainstream discourse about public space and perceptions of colour. Eliasson, born in 1967, is a Danish-Icelandic artist known for sculptures and large-scale installations of art. He studied at the Royal Danish Academy of Fine Arts and established Studio Olafur Eliasson around that same time as a laboratory for spatial research. For the purposes of this thesis, The *Green River Series* will be explored in relations to colour being used by an artist in public space.

Eliasson first conducted a test run of the *Green River Series* in the Spree River during the 1998 Berlin Biennale[4] by scattering a handful of red-orange chemical powder called Uranine/Sodium Fluorescein (Uranine is water-soluble dye often used to test ocean currents) from a bridge near Museum Island. This powder turned the river a bright florescent yellow-green colour because of the chemical reaction between the substance and water. After the Berlin Biennale, Eliasson carried out a number of unannounced immersive interventions in six different locations using the same chemical reaction technique to raise awareness of the environment and awareness of human perceptions. The locations were: Breman, Germany, 1998; Moss, Norway, 1998; The Northern Fjallabak Route, Iceland, 1998; Los Angeles, California, 1999; Stockholm, Sweden, 2000; and Tokyo, Japan, 2001. These immersive interventions heighten the experience of public space by creating

---

[4] The Berlin Biennale (Berlin Biennale für zeitgenössische Kunst, Berlin Biennale for Contemporary Art) is a contemporary art exhibition held in Berlin, Germany. The Biennale is underwritten by the German government through the Kulturstiftung des Bundes (Federal Culture Foundation), and is the second most important contemporary arts event in the country, after documenta. The first interdisciplinary exhibition occurred from 30 September to 30 December 1998 and was curated by Klaus Biesenbach, Hans-Ulrich Obrist and Nancy Spector. Several unknown artists who would later become famous (Franz Ackermann, Jonathan Meese, Thomas Demand and Olafur Eliasson) were included in the 70+ artists who participated.

aesthetic environments in which spectators encounter other forms of agency: those of the world and those of the intimate things surrounding spectators. Immersive interventions transform ways that spectators perceive space and trigger critical and creative thinking situations concerning their environments. To clarify, by immersive, I mean to cover, engage deeply, or completely absorb oneself or creation into the world (virtual or real) of the social spatialization. By intervention, I mean an interference or systematic process of planning employed to alter or perform a process, often from conflict with the environment at hand. Eliasson stated:

> One Friday at half past one there I was on the bridge with Emile and a bag full of red powder and people starting to stare at us. I hesitated for a moment then emptied the bag out over the parapet and the wind whipped up this enormous red cloud. I could literally feel people in cars slowing down, the cars went all quiet. And there was this cloud, floating over the river like a layer of gas. When it came in contact with the water, all of a sudden the river turned green, it was like a shock wave. There was a crowded bus ten metres a way and everybody was staring at the water. I told Emile we should maybe move on, as if everything was perfectly normal, then I carefully put the bag in a trashcan, as if colouring the centre of Stockholm was the kind of thing I did every day. I went down to IASPIS and when I came out again my heart started jumping up and down like mad: the whole length of the river was completely green and all these people had stopped to look at it. Next day it was all over the front page of the papers: "The river turned green". The colorant was absolutely harmless and there was no pollution whatsoever. (Eliasson and Obrist, 2008, p. 20)

It is here that the mingling of late capitalism's models of control and surveillance are brought back into the perception of public space. The immersive intervention by Eliasson fosters alternative modes of experiences that invite spectators to engage creatively and critically in the experience within a public space that blurs the lines between the world and consciousness through colour to create a tension, an interplay of new ways of being together. Eliasson's website represents the *Green River Series* as photographs with words displayed behind the images as one scrolls down the page. The words are: density, flow, ephemeral, green, intervention, moving water, public space, river, and transformation. The words evoke a similar interplay and engagement to that which the work embodied during the performance and in documentary images.

Eliasson's artwork intentionally overwhelms spectators with streams of sensory data that activate both rapid magnocellular processing systems in the brain and the slower parvocellular ones (the first being intuitive and the second being reflective) (Eliasson and Arnault, 2015; Eliasson and Ursprung, 2012). His complex research, technical experimentations, and layers of representation in the work become evident only upon a second slower taking in of the colour. The physical materialization of the colour in the river relies upon the service of experience feeding tensions of production and perception. Just as the river was axiomatic (micro) in one moment, it is reborn and made visible (macro) in the next by the bright yellow-green colour traveling throughout the city's waterways. The colour travels as if it is walking through the streets with flashing coruscating lights grabbing the attention of viewers nearby within the public space (See Fig. 3.1 & 3.2).

The understanding of the experience of public space in macro and micro scales can be drawn from Michel de Certeau's allegory of experiencing the view point of 'God' at the top of New York City's World Trade Center. In his introduction to *The Practice of Everyday life*, section III, "Spatial Practices", de Certeau establishes a parallel between fantasies of control and the fiction of an abstract urban development as experienced by a bird's eye view from the observation deck of the twin towers. For de Certeau, the regulations of the city create an abstract form of knowledge. The spatial practices of the population within the city become transformed into the invisible as the macro vision of the landscape is revealed. De Certeau uses this allegory of vision to illustrate how apparently insignificant everyday practices are taken for granted and tactics to escape from the panoptic vision of control imbue the energy of the consciousness. His main argument in this collection of essays is that city dwellers are not passive consumers alienated by a capitalist urban environment, but rather that their creative everyday practices may trigger the dictates of control and surveillance in small but effective ways. Resistance, for de Certeau, occurs in the smallest of details of everyday life, such as walking over private property or choosing to not wait for a stoplight to change before walking across the street.

Figure 3.1 – Olafur Eliasson's *Green River Project*. Berlin, Germany.

River Olafur, Berlin. 1998. Public domain image; fair dealing for review.
www.germany.dailysecret.com/berlin/en. (Accessed 23 November 2015).

Figure 3.2 – Additional view of *Green River Project*. Stockholm, Sweden.

The River is Always Greener on the Other Side. *Genetology Research.* 2000. Public domain image; fair
dealing for review. www.genetology.net. (Accessed 25 November 2015).

De Certeau posits walking as a creative practice of linking fragments of public space together through a complex trajectory of temporary borrowings, similar to games of syntax in language (i.e., synecdoche or asyndeta). By walking through space, the dweller is embodying the city by juxtaposing fragments of it together until the whole is visualized. It is part of an embodied experience of a spatial form of communication. In one passage of "Spatial Practices", de Certeau describes the experience of walking in the city as traversing a series of locations or 'rented spaces' that do not belong to anyone and are passed over:

> Surveys of routes miss what was: the act itself of passing by. The operation of walking, wandering, or "window shopping", that is, the activity of passers-by, is transformed into points that draw a totalizing and reversible line on the map. They allow us to grasp only a relic set in the nowhen of a surface of projection. Itself visible, it has the effect of making invisible the operation that made it possible. These fixations constitute procedures for forgetting. The trace left behind is substituted for the practice. It exhibits the (voracious) property that the geographical system has of being able to transform action into legibility, but in doing so it causes a way of being in the world to be forgotten. (De Certeau, 1984, p. 97)

Walking in pubic space is to dwell in the connections between the people and events that pass through them without claiming ownership. It is to recognize the fluidity of space and its essence as public property. For de Certeau, walking resists the hegemonic capitalist project of the privatization of space because it is an ephemeral practice of borrowing and sharing experiences that are elusive. It becomes a form of improvised resistance within the act. For Eliasson's case, the dynamic diaspora of yellow-green colour into the rivers flowing throughout public spaces of Berlin provokes the questioning of what or who is in control of the river's path and how do colours activate or cause dissent, or even resistance, simply by being introduced into the landscape. Perhaps it is colour that evokes the Lefebvrian 'new production of space' for the dissent in this instance; awakening the viewers from their lassitude of the everyday.

Taking advantage of the bridge systems in Berlin, Eliasson was able to utilize a matrix of river ways covering many square meters and deriving the benefits of the water's movement through the city. On either side of the river, platforms, rail lines, roadways and pavements created a complex infrastructural node that held an average population of 30,000 individuals, indicating that 10% of those coming into

the city's downtown core each day passed over and around the interruption at any given moment in daytime hours. The river connected a nexus of public spaces that the yellow-green fluorescent colour would ignite and energize. The yellow-green rivers would be problematic by nature, and so, accretive and opportunistic. As a consequence of this strategy, the cumulative experience of the core of the yellow-green river series offered a concatenation of surprises and anomalies, both spatial and material. The river is part of a system; it arrives directly upstream and departs quietly downstream by the same flow as waves spilling into the ocean.

Yet, there is another level and processing of space through which one could be swept along towards any of the many destinations of twists and turns, smaller pathways and bridges. The conglomeration of the river through the city crafts pauses of cosmopolitanism and life force of bygone eras. The accretive green colour unified all elements of the city and waterways, great and small, as though they were simply part of a single continuous yellow-green river. The river becomes a form of improvised resistance within the act as an ephemeral practice of flowing and sharing experiences that resist the hegemonic capitalist project of the privatization of public space. Yet at the same time, it also built the potential of Eliasson's artwork as being something of a commodity in itself.

In *The Production of Space*, Lefebvre expresses concern with the idea that each society attempts to establish its authority by producing its own representation of space. He argued that the first step to investigating a change in society is to understand the production of space. Although capitalism attempts to homogenize space by excluding differences, it never entirely succeeds due to the complexity of the dynamics of producing space. Lefebvre developed a system by which a conceptual triad of the production of space was activated. As previously touched upon in the section concerning public space in this thesis. First by a dominant authority in the establishment of 'representations of space' (i.e., system of signs); second by individuals who hijack and make creative productions in representational space; and third by users who activate space in the 'practice' of it. He argued that the process of the production and practice of space is the combination of the perceived (phenomenological), the representation (abstraction) and the lived (subjective).

144

These localized moments of the embodiment of social space are first and foremost lived, conceived, and perceived by social bodies. Just as for Lefebvre, Eliasson's work contains no separation between the conceptualization of space and the embodiment of it, but rather it posits space as a single phenomenon within the production of it. The triad of spaces created by Eliasson's work are not locationally positioned, but rather offers the suggestion that they could all be happening at the same time. As the river flows, it is experienced by different people who have different uses of the spaces, but it still might be the same space. So space is not located in a traditional sense of the word, but rather is a productive element, hence the continuous production of space found in Eliasson's river series.

Certain characteristics of spatial practices reinforce the dominant representation of space (such as a pedestrian's pathway created by constant foot traffic). However it is here that other spatial practices can also provide an alternative representational space that disrupts the dominant system of signs. In Eliasson's work, the lived space becomes living as the spectators process the dominant representations of space against the newly interjected colour. Colour becomes the reactive and creative moment of spontaneous performance. It is here that Lefebvre's 'absolute space', the relationship between reality and fiction of lived space begin to be embodied and inclusive of difference. The absolute space becomes an embodied utopian experience outside of the self in a hidden forbidden space, a space in-between. In a similar manner, Elizabeth Grosz in *Architecture from the Outside*, 2001, defines in-between spaces as places for becoming through experiencing the 'outside', "the in-between, formed by juxtapositions and experiments, formed by realignments or new arrangements, threatens to open itself up as new, to facilitate transformations in the identities that constitute it" (Grosz, 2001, p. 94).

Using colour in increasingly complex forms rather than dedicated to any single use may rely upon iconic forms to announce their presence and give them a sort of identity, but it is the transformation that enables the unfolding of their contents, subduing their irregularities and the confusion that arises with their complexity. By confusion, this thesis refers to the disorientation and transformation that occurs not only in the consciousness of the viewer, but also of the artist, the local wildlife and the environment. These colours are no longer conceived as a succession of discrete

145

spaces. Rather, they are thought of as a continuum of overlapping or adjacent zones of being both within public space and the eye of the viewer.

It is a space that embodies a condition of altered consciousness. The axiomatic world disappears; the viewer is in a potentially endless environment that offers perpetual itinerancy and an illusion of freedom from which there is no escape. To dye rivers yellow-green, to use colour as a way that implies a viewer's own liberation from convention, allows the bleed or drift to occur within consciousness. The viewer can drift across terrains, within the riverbed, flowing unhindered across boundaries and territories, connecting with a plethora of unknown outcomes and interactivity. The viewer is not aware at first of the subtle movement or change in the colour of the river. Perhaps it is a reflection or coruscating yellow-green colour given off by interplays with the sun or light sources that bring it into focus. As the rivers are given over to the colour, they are given over to the spectacle, performing as frameworks for the artist's and the public's apparatus and representations, recombined in the process of being prepared for visual consumption. The public space before the intervention is re-articulated in a spatialization of conflict and possibilities.

Lefebvre's absolute space is similar to Foucault's concept of heterotopia. Foucault uses the term heterotopia to describe spaces that have more layers of meaning or relationships to other places than immediately meet the eye (Foucault, 1971). A utopia would take place in the 'real' world where there would be a rupture in the system of the dominant order that is described as a homogeneous system of control. Foucault defines the concept heterotopias as a site juxtaposing multiple spaces and temporalities that are at once contested and represented- spaces of crisis, transitions, and myth. Both Foucault and Lefebvre envisioned such spaces of resistance that would highlight radical differences and hold potential to disrupt and transform the homogeneous, transparent space of control and order. In this idea, frontiers are blurred between the interstitial spaces where spectators are connected and separate at the same time in a paradoxical embodied space of potentialities.

Lefebvre discusses space as an instrument of individual and collective agency as well as one of globalized dominations and control. Within this theory exists the potential for conflicted elements to coexist while revealing the existence of the

production of space. It is a space where change happens, a space of shifting realities where parallel worlds connect within the real world. The river's fluorescent yellow-green glow elicits a response within human perception and overall sensory data. In turning the rivers yellow-green, Eliasson transforms it into a critical object. Although not the first artist to use colour in this way, Eliasson's work raises awareness of perceptions, environmentalism, representation, and questions surrounding our consciousness.[5] The uncertainty of reading, of understanding that which is directly before the viewer and yet unseen or unnoticed until a change, an interruption, or a dissent, is bestowed upon the senses. It is this moment for Eliasson that the habits of perception are brought into existence and given voice and reflection.

Uncertainty is where the origin of potential responses are unleashed and limits change to possibilities. The river is at once unnoticed and functional, but then elevated, unconditional, and unpredictable. A temporal territory, a duration, during which restricted and conditioned behavior is lifted, normal expectations are suspended, and a refrain is introduced. Public space becomes activated by the colour and in doing so truly becomes public as spectatorship abounds and differences are theatrical in the experience of the space. The outside commentary provides a disclosure as it raises awareness to notions of engagement through disruptions of normalcy. A change in consciousness results from the disruption, and however fleeting, still occurs and leaves a track or mark upon those that view the yellow-green river. The bright yellow-green bleeds into the river body like watercolour paint can bleed onto canvas or ink bleeds into the fibers of paper. Brian Massumi, in his book *Parables for the Virtual: Movement, Affect, Sensation*, refers to the bleed as a change in the ordinary world resulting from an exemplary event. He states, "...change is expressed as a bleed between the exemplary event

---

[5] Nicolás García Uriburu, born 1937, is an Argentine contemporary artist whose work is aimed at raising consciousness about environmental issues such as water pollution. He was invited to the Venice Biennale in 1968 where he used fluorescein (a pigment which turns bright green when synthesized by microorganisims in the water) in the water ways of Venice to raise the issue of pollution on a wider scale. Between 1968 and 1970, he repeated the feat in New York's East River, the Seine in Paris, and at the mouth of Buenos Aires' polluted Southside Riachuelo. He continued the series on diverse waterways cross the world and was eventually included in the 1981 Kassel documenta 7 exposition where he dyed the Rhine river green and was joined by Joseph Beuys in planting 7,000 oak trees.

and ordinary world, a bleed between the two. The bleed occurs in a moment of prolonged suspense" (Massumi, 2002, p. 56).

The incorporation of colour and art in public space brings to mind Rosalyn Deutsche's book *Evictions: Art and Spatial Politics.* Throughout the book, Deutsche combines critical aesthetic theory concerning the social production of art with critical urban theory and the social production of space to expose how ideologies invoke congenial images of space that conceal and justify exclusions. She opposes the belief that democracy's survival demands the recovery of a unified public sphere, instead advocating for conflict as a prerequisite for the existence and growth of public space. Particularly of interest to colour research is the last essay in the book, "Agoraphobia" where she proposes new theories of "radical and plural democracy" into the public art discourse. In this idea, public space emerges with the abandonment of the belief within an archaic notion of an absolute social unity. By this it means that the premise of 'public' is in fundamental opposition to what it means to be within a culture. It limits and restricts the availability to what the true potential of the space could be by requiring a base or a social cohesion that in reality is the result of temporary articulation, often political in nature.

Therefore, when combining the understandings of the various notions of public space together with colour, public space does not emerge where consensus has been found, but rather where consensus breaks down or is dislocated, as is the case of Eliasson's *Green River Project*. In areas of dislocation, the temporary structural systems are rearticulated over and over again to support public space. Thus indicating that public space is not an area of agreement, but rather one of dissent generated through conflict and uncertainty. Deutsche articulates:

> Urban space is the product of conflict...In the first place, the lack of absolute social foundation - the 'disappearance of the markers of certainty' - makes conflict an ineradicable feature of all social space. Second, the unitary image of urban space constructed in conservative discourse is itself produced through division, constituted through the creation of an exterior. The perception of a coherent space cannot be separated from a sense of what threatens the space, of what it would like to exclude. Finally, urban space is produced by specific socioeconomic conflicts that should not simply be accepted, either wholeheartedly or regretfully, as

evidence of the inevitability of conflict but, rather, politicized - opened to contestation as social and therefore mutable relations of oppression. (Deutsche, 1996, p. 278)

The yellow-green river created an awareness of the "mutable relations of oppression" even if for a short time by igniting and drawing interest to a neglected and taken-for-granted aspect of city development. Eliasson's immersed interruption of the rivers elicited a sense of wonderment and community with the viewers engaging in an overwhelming way within their own perceptions through the use of colour. The reaction of the viewers varies from location to location, however Eliasson commented, "People did not idly stand by and stare, but were provoked to interact with not only the water by reaching out to touch it, but also with each other as if to confirm what their own eyes were seeing" (Eliasson and Ursprung, 2012, p. 45). The work contrived to create a sense of awe and exploration that would show up later in Eliasson's work such as *Your Space Embracer*, 2004, *Your Black Horizon*, 2005, and *Your Uncertainty of Colour*, 2006. The river broke down the invisible barriers to human connectivity and opened up possibilities of exploration within the space.

The smallest displacement of colour convokes a qualitative difference as it beckons a sensation, a feeling of resonance interfering and mutually intensifying over and over in action, often unpredictably. Change is present, felt and perceived. The yellow-green river is meant to alter the way viewers perceive their relation to one another and the surroundings. Differences of intensities permit bleed to occur and effect change in normal perception. The refrain can transform an already delimited territory and critique existing habit formations. Within this system of relationships is the hidden biopolitics of this research that is not black and white, but rather it is beginning to tackle something that is much less apparent. It is important to show how this research is much more ambiguous and ambivalent. It forms a different modality of thinking. Colour is both the perceptual and imperceptible. Colour has unconsciousness just as much as it has a consciousness in regards to human perception.

CHAPTER IX – COMPROMISE IS GRAY

Edi Rama

> For 11 years, I was mayor of Tirana, our capital. We faced many
> challenges. Art was part of the answer, and my name, in the very
> beginning, was linked with two things: demolition of illegal constructions
> in order to get public space back, and use of colors in order to revive the
> hope that had been lost in my city. But this use of colors was not just an
> artistic act. Rather, it was a form of political action in a context when the
> city budget I had available after being elected amounted to zero comma
> something.
>
> When we painted the first building, by splashing a radiant orange on the
> somber gray of a facade, something unimaginable happened. There was a
> traffic jam and a crowd of people gathered as if it were the location of
> some spectacular accident, or the sudden sighting of a visiting pop star.
>
> The French E.U. official in charge of the funding rushed to block the
> painting. He screeched that he would block the financing.
>
> "But why?" I asked him.
>
> "Because the colors you have ordered do not meet European standards,"
> he replied.
>
> "Well," I told him, "the surroundings do not meet European standards,
> even though this is not what we want, but we will choose the colors
> ourselves, because this is exactly what we want. And if you do not let us
> continue with our work, I will hold a press conference here, right now,
> right in this road, and we will tell people that you look to me just like the
> censors of the socialist realism era."
>
> Then he was kind of troubled, and asked me for a compromise. But I told
> him no, I'm sorry, compromise in colors is gray, and we have enough gray
> to last us a lifetime. So it's time for change. (Rama-TEDx, 2012)

This transcript from Edi Rama's lecture about changes he implemented during his
time as mayor of Tirana highlights the importance colours have had as both a
political role and an artistic role. Rama's *Clean and Green Project* provides a
platform from which to understand the power of colours.[6] Rama, born 1964, is an

---

[6] Rama is often cited as being the first artist turned politician to use art and colours to transform a
city, however another individual, Antanas Mockus, an artist-politician, philosopher, mathematician,
and a former university dean, also utilized artistic mechanism to introduce change into a city. As
Mayor of Bogotá, Columbia (1995-1998; 2001-2003) he employed what he called "sub-art" in his
political practice. Columbia in the mid-1990s was a period of hostility, bloodshed, and narco-
trafficing. He created a nonviolent, performative politics utilizing subversiveness, irony, and
unpredictability as his tools. For example, he hired 420 mime artists to make fun of traffic violators
because he believed Columbians feared ridicule more than being fined. By doing so, he cut traffic
fatalities by more then 50 percent.

artist, politician, writer, and current Prime Minister of Albania since 2013. Rama began his art career in Tirana and later moved to Paris where he had several solo art exhibitions and groups shows with Anri Sala. At the time of the communist regime's collapse, Rama was a professor at the Albanian Academy of Arts. In 1998, Rama was asked by Prime Minister Fatos Nano to become Minister of Culture. Two years later, Rama ran in the political race for Mayor of Tirana as a Socialist Party candidate and won. He assumed the position as Mayor over a city whose infrastructure had collapsed, laws had become meaningless, and the city's public parks were crammed with illegal buildings. Rama stated, "The city was like a train station where everybody was looking how to avoid staying there; where everybody was trying to leave this train station by any means; where everybody was taking care only of their own place and not of their surroundings. So, building a new consciousness was a big deal." Rama's solution involved a combination of his role as an artist and as a political figure by centering on utilizing colour as a force for change.

In 2000, Rama designed a radical project to return many of Tirana's inner city buildings and the Lana River back into their original forms under his *Return to Identity Project*. He said he wanted to give citizens of Tirana back their city and make it place not to flee from, but a place to stay or even become a destination for tourists. He became known for this action and was harshly criticized for demolishing hundreds of illegal tenement houses that were constructed on municipal lands such as pavements, local parks, and the banks of the Lana River. He received support from the new Prime Minister, Ilir Meta, who channeled numerous funds from the central government to the local authority of Tirana to enable Rama to implement the cleaning-up master project (Budini, 2009).

In addition to tearing down buildings in an effort to return Tirana to the citizens, he also authorized the bulldozing of private properties to enable the city to widen streets and have them paved (some streets were dirt roads). His 2001 *Clean and Green Project* resulted in the production of 96,7000 square meters of green land and parks in the city and the planting of nearly 1,800 trees and was assisted by the United Nations Development Programme for funds and support. As part of this project, he ordered numerous buildings around the city to be repainted from their dull gray and drab off-white colours from Communist rule to brilliant colours of

bright pink, yellow, green, and violet, which would later become known as 'Edi Rama colours' (See Fig. 3.3 & 3.4). Rama's efforts aim to create a sense of pride and identification with the city of Tirana. He stated, "After communism and the events in 1997 people were lacking a sense of belonging to the country. There was a rage against everything that was a state building because it was perceived as property of the enemy...We are trying to make people understand that what is public is also yours" (European Stability Initiative Report, 2005).

Since space is a politicized and ideologically constructed formation, it is important to not brush aside the political implications of space as characterized by the power relationships existing within it. Chantal Mouffe in her book, *The Democratic Paradox*, posits that the political is formed on the idea of power relations that are inherently conflictual. Mouffe states that democracy is a regime that organizes the politically human co-existence of liberalism and popular sovereignty. Included within this concept are the other ethico-political principles such as liberal-conservative, social-democratic, neo-liberal, radical-democratic, and so on (Mouffe, 2000, p. 104). She challenges the idea of deliberative and/or consensus-based democracy because it removes precisely that which makes something political – the conflict. According to Mouffe, the identities in politics between the left and right have become blurred, apathy has risen, and religious, nationalistic, or ethical lines are now dominant forms of political identity. Instead of acknowledging the ineradicability of conflict, the current regime tires to eliminate it.

Yet it is through conflicting ideologies, experiences, and identities where politics is able to retain the struggle for ideas through the distinction of 'us' and 'them'. Mouffe argues that this concept of 'us' and 'them' has pivotal consequences for democratic politics and as such, the spaces existing around capitalism and commerce. She states, "the aim of democratic politics is to construct the 'them' in such a way that is no longer perceived as an enemy to be destroyed, but as an 'adversary', that is, somebody whose ideas we combat but whose right to defend those ideas we do not put into question" (Mouffe, 2000, pp. 101-2). By searching for a conclusive, rational, and permanent solution to anything deemed of public interest, any conflict is removed from the decision-making. Mouffe is critical of

Figure 3.3 – Edi Rama's *Clean and Green Project*, Tirana, Albania.

Dreaming with Colour. 2004/2014. Public domain image; fair dealing for review.
www.mynewcupofcoffee.com. (Accessed 25 November 2015).

Figure 3.4 – Additional buildings from *Clean and Green Project*, Tirana.

Color is a Key to Transforming a City. 2011. Public domain image; fair dealing for review.
www.sustainableideas.it/2011/11/color. (Accessed 25 November 2015).

John Rawls approach of bridging divisions through consensus. Although consensus is necessary, Mouffe states that dissent is equally important. Rama reintroduces conflict with his actions in Tirana by painting the façade of dull grey buildings with bright vibrant colours.

Herein is found the paradox of modern democracy. If it is based on the struggle between liberalism and the ideas of individual liberty, the protection of rights, and on the democracy of collective sovereignty and equality, they can never be perfectly reconciled but only negotiated in different ways. Hence, the paradox is that the idea of perfect liberty and perfect equality are never fully attainable. In Mouffe's analysis of Carl Schmitt's work in the 1920s, Mouffe does not conclude with the same outcome that he did in terms of a failing democracy.[7] Rather, she argues that the conflict between liberalism and democracy produces a space that allows for the political society to be possible. Conflict allows for the interactions of society to be engaged and not sequestered through complaisance where nothing changes. Mouffe posits that "what we need to do is precisely what Schmitt does not do: once we have recognized that the unity of the people is the result of a political construction, we need to explore all the logical possibilities that a political articulation entails" (Mouffe, ibid., pp. 55-6). It is here in the struggle that the space of contestation is opened and Mouffe argues for agonism over antagonism.

Agonism, according to Mouffe, is the political theory that emphasizes the potentially positive aspects of certain forms of political conflict. Agonism is the struggle between adversaries that is different from antagonism, which is the struggle between enemies (Mouffe, ibid., pp. 102-3). Mouffe believes that there is an urgent need to re-establish conflict and disagreement back into the political. She suggests that in a pluralist democracy conflict would be considered "legitimate and welcome" (Mouffe, ibid., p. 113). By limiting tensions and conflicts, one eliminates the potential for growth and development. Since pluralism can be viewed as dangerous not only because it is more time consuming, but also because

---

[7] In Schmitt's book, *The Concept of the Political*, 1927, Chicago: University of Chicago Press, the irreducible minimum on which human political life is based is the friend/enemy distinction. Schmitt believed in a failed democracy because it is grounded on contradictory principles that are democratic equality and particularism and liberal freedom and universalism. His conception of politics tends to radically dissociate democracy from liberalism and, more controversially, from the constituted, rule-bound practices of popular election and parliamentary legislation that characterize the ordinary workings of modern democracy.

it establishes the dissolution of certainty, Mouffe articulates that it is this very reason of certainty that holds back change and development. Rama was able to quiet literally wipe away the neutrality of gray by adding colours to the landscape. Colours that stirred in the citizens mixed feeling of support, confrontation, confusion, and a thirdspace to articulate the changes their country was going through.

A short sixteen minute film, *Dammi i Colori* (*Give Me the Colours*), 2003, was created by Rama and Anri Sala which documents the painting of buildings and the reactions of citizens as changes unfold within the city. Rama's voice narrates much of the film whilst the footage consists of scenes of the city in transition, often full of high contrast with colourful buildings against dark gray skies and muddy brown streets reflecting the mood and tone of the landscape after the fall of communism. Rama's voice is interwoven with silence and incidental sounds as daylight is framed by darkness in the images. The piece was first shown in 2003 at the Venice Biennale as part of the *Utopia Station* exhibition, however Rama has insisted it is not such a vision of utopia as much as it has been a catalyst for hope and change in his country. He stated, "I wanted to show images from a place where speaking of utopia is actually impossible, and therefore utopian. I chose the notion of hope instead of utopia. I focused on the idea of bringing hope in a place where there is no hope... It is about dealing with the reality where the luxury of time and money is missing" (Godfrey, Obrist, and Gillick, 2006, p. 133; Godfrey, 2006, pp. 38-47; Boym, 2005).

Critics from this time claim he focused too much attention on cosmetic changes without fixing the major issues of contaminated drinking water supplies, ineffective sewage systems, and lack of electricity throughout the city. Sophie Arie in 2003 wrote a short piece about Edi Rama entitled "Regeneration Man". She stated, "Around 80% of Albanians approve of the facelift Rama has given their capital city, according to polls", but that he also had sharp criticism from opponents to the changes within the city (Arie, 2003). However, the public was overall highly supportive. The symbol of the new colours helped to clear away the old atmosphere of the gray, worn down, communist remnants. As Michael Geller observed:

> The country seems to have overcome its years of Communist rule
> by painting buildings in the most unimaginable colour combinations.
> They are purple and orange, chartreuse and burgundy, and bright
> green and red. And these are not just individual houses. An eight-
> story apartment was painted a vivid yellow with green stripes and
> blue and red squares up the side. New high rises were equally
> colourful, often painted in five or six different colours… (Geller,
> 2007)

It was not just cleaning up the city or re-invisioning a new landscape of colours throughout the environment, but it was also re-introducing citizens to their art and culture. An article from the time highlighted some of the smaller achievements he was able to accomplish:

> Any idea of the artist as impractical dreamer is shattered by Edi
> Rama's achievements so far. He claims still to be an artist first and
> most of all, and activities in public service are an extension of his
> aesthetic sensibility into the realm of action and life. He shrewdly
> appraises the legacy of communism as a cultural and social toxin
> that cannot be eliminated except over time, and perhaps a very long
> time. But he is helping restore Tirana society's immune system and
> positive attitude by, for example, the Return to Identity Programme,
> ruthlessly razing the haphazard and, often, environmentally
> seriously damaging outlaw buildings of all kinds in order to
> produce a clean slate on which urban planning can occur that will
> meet the needs of present and future generations. (Swift, 2015)

The quote above both illustrates the importance of the act and uneasiness that the city faced due to Rama's decision to use colours as part of his larger project of reform. It is within the very action of applying paint onto buildings where public space becomes perceivable through conflict. Herein lies the paradox of modern democracy that Chantal Mouffe writes about in *The Democratic Paradox*. Due to the cleaning up and paintings of the buildings, Rama introduced a form of gentrification to the area. The renovation caused increases in property values and displacement of lower-income families and small business to have to relocate. This population migration provides an opportunity for capital reinvestment in the surrounding environment as 'stabilization to a previously struggling community' (Lees, Slater, and Wyly, 2010). The problem with gentrification is the lack of a moral obligation to address the adverse effects that the process has on local residents and businesses. Rebecca Solnit states, "Gentrification is just the fin above the water. Below is the rest of the shark: ... [an] economy in which most of us will

be poorer, a few will be far richer, and everything will be faster, more homogenous and more controlled or controllable" (Solnit, 2002, p. 24).

In the dialogue that began this section with the suggestion about compromising the painting of the buildings, Rama stated that compromise is gray, signaling the rising apathy and blurred lines between forms of political identity. By painting the buildings bright colours without any permission, Rama re-introduced conflict through his own decision-making, which according to Mouffe, is part of placing the political back into society. Mouffe states:

> …social objectivity is constituted through acts of power. This implies that any social objectivity is ultimately political and that it has to show the traces of exclusion which governs its constitution. This point of convergence - or rather mutual collapse - between objectivity and power is what we meant by 'hegemony'. This way of posing the problem indicates that power should not be conceived as an external relation taking place between two preconstituted identities, but rather as constituting the identities themselves. Since any political order is the expression of a hegemony, of a specific pattern of power relations, political practice cannot be envisaged as simply representing the interests of preconstituted identities, but as constituting those identities themselves in a precarious and always vulnerable terrain. (Mouffe, *ibid.,* p. 99)

In this sense, Rama is igniting the flame of conflict with a point of convergence by painting buildings outrageously bright colours and drawing attention to areas that had once been neglected and forgotten. Colours serve to stir conversations around the city, engaging the public in dialogues and controversies. It re-awakens the identity of the people by allowing the city to reflect the changes in government, art, and culture within the colours, yet it displaces those same residents through gentrification. Rama reached out to other artists, including Olafur Eliasson, and asked them to select a building within Tirana and to create a colourful design to be placed upon the façade. Including Rama, about ten artists and collectives helped design a new Tirana with the idea of reflecting a new way of being within the city. Rama creates in these actions the dynamic space of agonism that Mouffe articulates in her book, providing the basis of 'us' and 'them' as a bridging of the government and the artist within himself and the city landscape.

He established Mouffe's idea of a 'dissolution of certainty' and created a public space where colours function at the heart of the debate and change. Yet at what

cost with the outcome of gentrification and increased capitalism affecting the area. As reflected in Mouffe's statement, "by 'pluralism' I mean the end of a substantive idea of the good life, what Claude Lefort calls 'the dissolution of the markers of certainty' (Mouffe, ibid., p. 18; Lefort, 1989). This is why colours are so dangerously complex when tied with capitalism. There is no simple binary opposition of good or bad, but rather a questioning and examination of what happens and what are the things that need to be considered before using such colours.

Rama conducted polls throughout the city about the colours on buildings and discovered that even if people were not pleased with the colours selected, they wanted the painting to continue. At the risk of emanating a propitious tone to Rama's actions, it is important to address some implications of his power. It is questionable to decide to paint an entire section of a city without consent or even input from the civilians who reside there. Furthermore, upon viewing the buildings, they are only painted on the surface or the façade facing the public space. There was no apparent attempt to address colours within the back courtyards or within the hallways of the buildings. These areas were left rotting and decrepit with a long list of safety issues raised by those residing within.

Yet Rama was able to address the outside façade of the public spaces in an attempt to bring change to the city. The provocative key theory of Mouffe and Ernesto Laclau's book, *Hegemony & Socialist Strategy*, argues that space is referred to as a closed, non-dislocated totality without a constitutive outside and is therefore never attainable, and as such, society is no longer able to occur or function. Chantal Mouffe and Ernesto Laclau's book H*egemony and Socialist Strategy: Towards a Radical Democratic Politics*, highlights the importance of hegemony as a destabilized analytic which avoids the traps of various procedures to constitute a foundational flaw in Marxist thought, mainly the essentializations of class identity, the use of a priori interpretative paradigms with respect to history and contextualization, the privileging of the base/superstructure binary above other explicative models (Mouffe and Laclau, 1985). The term 'society' is generally used in this sense of space as an undeceivable point of view that knows no outside. This makes society unattainable since space and time can only be analytically

separated as ontological principles and the principle of space as totality is never attainable without inclusions and dislocations of time.

Ultimately indicating that spaces and societies are not pre-existent, but must rather be continuously constructed through spatialization. By spatialization, this thesis refers to the spatial forms that social activities and material things, phenomena, or processes acquire to create an overall sense of social space that is located within a contextual culture and place. They can be virtual or material, they can be within discourse as frames through which problems are understood, they can be part of the everyday practice, the imagination of spatial worlds, and even institutionalized representations just as long as, following Foucault, they are cultural formations relevant at multiple levels to form hegemonic regimes that are in continuous flux to reflect humanity's ongoing performative actualizations (Lefebvre, ibid.; Shields, 2003). These spatializations are the synthesis of cultural values and important social meanings that change over time.

In current Tirana, the colourful buildings have become a sightseeing attraction and helped to increase tourism in the area. Yet, as there is more traffic in the area, there is also increased capital and speculations about where funds are going and to whom are a rising focus. Some people have decided to paint over certain areas to express their own criticality of the government. As tourism increases, there are concerns about maintaining their cultural values and protecting their identities. The use of colour becomes complex in this case because at the same time it inspires and helps create a national identity for the people of Tirana, the colours also are attracting more and more tourists who alter and change the landscape through capitalism and development. Rama said of his time as mayor, "Being the Mayor of Tirana is the highest form of conceptual art. It's art in a pure state." In addition he stated, "I'm not sure I am a politician. I would say that I am still an artist, and I'm trying to use politics as an instrument for change" (Rama-TEDx, 2012). In June 2013, Rama was named the Prime minister of Albania and amongst his first tasks he has focused on restructuring the domestic security infrastructure in hopes to tackle the rising crime problem in his country.

CHAPTER X – REGULATED COLOUR

Glasgow Blue LED Lights

As articulated, colour has been controlled, manipulated, and regulated within public spaces by authoritative powers to psychologically influence human populations both intentionally and unintentionally. The first two case studies focus on ways an artist and an artist/politician have used colour in public space. This last example examines how a government has approached using colour in public space. A concern for the psychological effects of colour in public spaces has predominately been overshadowed by a concern for capitalization and 'energy efficiency'. At what cost does 'energy efficiency' come if the plans and actions of governments involving the use of colour fail to protect public health? What are the implications of colours in public spaces deliberately placed there by governments? This section, therefore, investigates the psychological effects of colour in light and public space which is suggested to occur in multiple locations by various forms of authority thereby addressing a growing concern within literature as to the effects of colour systems and humanity's well being.

Public colour is not confined to pigment based objects, but rather is found all around through the utilization of coloured lights and atmospheric conditions. All visible light contains a hue or tint of colour that the human eye interprets for vision. This section claims that colour is closely linked to the psychological composition of human perception and that the use of colour in public spaces greatly impacts society as a whole and should not be ignored. Specifically, it addresses the relationship between colour and city government by examining Glasgow's recent legislative installation of blue light-emitting diode (LED) lights without addressing the concerns of Blue Light Hazards in public space.

In the last 10 years there has been a push toward older yellow orange incandescent streetlights being replaced with blue LED lights across the globe. An increased concern for energy efficient resources has led to initiatives by governments and businesses to help change the landscape. An example of such a measure involves

the Merchant City and the Glasgow City Council. A recent change in lighting has occurred in the city of Glasgow brought on by incentives to update current living conditions and businesses. The "upgrading of lights to white lights" by using blue LEDs was encased as a proposition to decrease energy consumption and provide for more 'environmental friendly' technology. However, research exists that contests the notion of "white lights" being environmentally friendly. Before reviewing the research and literature there is a need to unpack what exactly is 'white light'. All light contains colour along the electromagnetic spectrum. Even if the human eye is not consciously aware of viewing colour in light, it is still present and still affects the eye and brain (Colormatters website, 2014). The white lights the Glasgow City Council installed are actually high-intensity blue LED lights. This is due to the blue LED lights being the brightest and most efficient light technology. By placing phosphor casing over the blue LED, the light will illuminate what appears to be white light, however it is still read as blue to our eyes on a molecular level. What the eye perceives as white is actually yellow-green output and unabsorbed blue combined.

Starting in 2000, the traditional yellow/orange sodium-vapor street lighting in Glasgow was replaced with blue LED lights along the major pedestrian public areas (See Fig. 3.5 & 3.6). The change was noticeable to the human eye and recorded with unaltered photography. The blue glow from the new LED lights created a dynamic effect within the culture and permanently altered the overall experience of the cityscape. A student of Design and Digital Arts, Ivana Dankova, at Edinburgh Napier University completed her graduate degree in part by researching the new blue lights in regards to how they have helped the city. "People react positively and the atmosphere is unique, more peaceful and calm, as if everything is moving slower", stated Dankova (Blue Light- Safety at Night website, 2012). However, Dankova's research did not address the hazards of blue LED lights or the problems facing the world as the use of the lights increase. At the same time, without outside, independent longevity studies, these types of statistics are highly questionable.

 Attributing a change in crime related activities to any single factor raises questions of criticality, ethics, and generalizability. The blue LED lights are speculated to

Figure 3.5 – Glasgow blue LED lights, after installation and before.

Blue lights after and before. 2015. White Spaces. Public domain image; fair dealing for review. www.unclutteredwhitespaces.com/2015/04/blue-light/. (Accessed 25 November 2015).

Figure 3.6 – Additional view down Buchanan Street, Glasgow.

Blue lights street scene. 2011. Public domain image; fair dealing for review. www.safe-growth.blogspot.com. (Accessed 25 November 2015).

162

create a new and unusual atmosphere causing the pedestrians' behaviour to be more cautious because blue light is sometimes suggestive of police or govt. force. Note- Tokyo, London, New York, and Los Angeles are implementing installations of the blue LED lighting in public spaces also. Instead, her research focused on how as a result of the installation of the blue LED lights, current city sponsored research statistics indicated a noticeably decreased number in crimes in the areas where blue lights have been installed (Blue Light- Safety at Night website, ibid).

There is limited empirical evidence to suggest that the colour blue is calming other than research derived from colour experiments in the late 1880s and early 1900s performed mostly on Caucasian males between the ages of 20-40 in the United States, England, and Germany (Gage, 1999, p. 264; Galton, 1883; Fechner, 1900) To note, in these studies, a blue coloured chip was used which was not similar to the blue LED lighting effects and therefore compromises the notion that the lights are in fact 'calming'. The colour blue to the human eyes may actually have the opposite effect to our brains. Instead of being 'calming', research indicates that it creates an imbalance between naturally occurring melatonin levels and serotonin levels within the neurological functions of the brain.

Without getting too caught up in the technical perspective of understanding how white light is actually high intensity blue LED that is light damaging to the eye, the important point that is at stake is the effect this blue light has on human populations and the environment overall. By returning to the introduction of this chapter and the questioning of colours in public spaces, there may be ways to begin to unpack the colour blue and the understandings of how it might be affecting the public with the governmental introduction of blue LED lighting.

Since eyes have photoreceptors that are only sensitive to blue light, research indicates that there has been an increase in the physiological effects of using blue LED lights over time. New research conducted within the last ten years is shedding light on how the brain is actually wired to receive and transmit colour data. In 2002, a major development occurred where a new type of photoreceptor cell for the colour blue was discovered within the retina. Blue is more sensitive to the eye through a process known as chromatioaberration. This is where wavelengths of light refract at slightly different angles as they pass through the lens of the eye.

Blue scatters more widely inside the forea centralis causing partial inability to see detail or focus the eyes in blue light conditions. There is an evolutionary force behind the eyes seeing blue referred to as the pupillary reflex. Dr. David Sliney, U.S. Army expert on the physiological effects of LEDs, lasers, and light sources, states, "the pupillary reflex is the signal to the muscles in the iris to close down upon seeing blue". He explains that is because blue LED light can cause long term photochemical damage to the human retina. The eyes close due to an evolutionary response to protect the retina and guard against molecular degeneration. Because of this blue photoreceptor cell, the retina is 100x more sensitive to blue light than other colours due to its shorter wavelength and the increased ability for the colour blue to penetrate tissue and scatter through the photoreceptors and into the neurons feeding brain information (Appliedbiophysicsresearch/light/blue website, 2014; Brown, 2002).

The retinal ganglion cells provide signals to the suprachiasmatic nucleus (SCN) or "the brain's master clock" which infuse a myriad of human physiology including regulation of melatonin. Researchers have shown that blue LED light influences hormone secretion, heart rate, alertness, sleep propensity, circadian rhythms, body temperature, and gene expression (Harvard Health Publications, 2014). Blue light is not merely a colour visible to eyes on conscious and subconscious levels, but it is able to easily penetrate skin tissue. The Purkinje Shift is a condition that occurs at night when blue appears brighter to human eyes due to the sensitive monochromatic light detector rods (Frisby, 1980). The brightness affects not only the eyes, but also the human tissues inside the skin. Eyes cannot focus sharply in blue LED light due to an intensified halo effect and blue is also brighter in peripheral vision causing difficulties with seeing objects. Permanent damage to the retina occurs without pain or warning symptoms and is cumulative over time. "There is mounting medical evidence that prolonged exposure to blue LED light may permanently damage the eyes, contribute to the formation of cataracts, and to the destruction of cells in the center of the retina" states Nancy Quinn, Registered Nurse and expert on blue light emissions (Kitchel, 2014).

Blue Light Hazard is known in the scientific community and the damage blue LED light causes to eyes are numerous according to a Harvard Medical School publication outlining the dark side of blue LED lights (Harvard Health

Publications, 2014). Blue LED lights used during night time hours have been shown to have an effect on the increase of cancer (prostate and breast), diabetes, heart disease, and obesity (Harvard Health Publications, ibid). The effects on ocular health are permanent damage to the retina in the forms of pre-cataracts, slower pupillary function, and chronic dry eyes. They can alter or have a diminishing effect on the perception of the colour green and make it significantly difficult for the eyes to focus and see details. Furthermore, LEDs contain lead and arsenic, in levels that according to California regulations, render all except low-intensity yellow LEDs hazardous in the production and destruction of the lights; raising questions of just how environmentally friendly the lights claim to be. The opinion of the French Agency for Food, Environment and Occupational Health & Safety (ANSES) in 2010, suggested banning public use of LED lamps which are in the Risk Group 2 (the lights in theory can cause temporary blindness) especially those with a high blue component in places frequented by children.

Similarly, Dan Roberts, founding director of Macular Degeneration Support, contends the blue LED light is toxic to our eyes. Although human vision requires light, accumulation of lipofuscin (cellular debris) in the retinal pigment epithelium (RPE) make the retina more sensitive to damage from chronic light exposure. Human eyes have a natural yellow tint that increases with age to help filter blue light. Unfortunately, staring into computer screens, iphone screens, and being surrounded by blue lights on streets increases the damage to the eyes because the visual cycle is reversed. A normal visual cycle allows light to interact with the blue photoreceptors in the eye, the cell bleaches and becomes useless and then is recovered through metabolic processes. Blue light reversal of the process is responsible for aging the eye before it is ready causing permanent damage as higher oxidative level's increase drusen is formed that hinder photoreceptors to wither and die (phototoxic).

The problem is that there are no standards to address the blue LED light hazard. There are standards to protect against extremely bright light and UV radiation, but because the use of LED lights is relatively new, the long-term health effects are unknown and potentially have implications far beyond current understandings. In addition, the ecological effects from the blue LED light pollution have major

impacts on flora and fauna, as well as implications for wildlife. In New York City about 10,000 birds are injured or killed because of migratory confusing caused by light pollution. Across North America the annual range of bird deaths attributed to light pollution is a range from 98 million to 1 billion. Birds are not the only species impacted by lighting at night. Endangered sea turtles, frogs, bats, moths, and 80% of nocturnal marsupials and 20% of nocturnal primates are facing life-threatening consequences. The number of potential fatalities are expected to increase as blue LED lights give off more light pollution than traditional sulfur based lights.

To digress to issues concerning colour and public space, there is a link between biopolitics and governments using blue lights to 'calm' and 'control' public space. In a Foucauldian sense, by replacing the older yellow-orange lights with blue lights that have been established to have psychological affects upon human and even animal populations, governments are in effect controlling and subduing public spaces through their eyes. They are creating environments where colour becomes a tool for control in the cloak of being 'better' and 'safer' for the public. The unconsciousness of colour in this instance is extremely difficult to become aware of since light is often taken for granted as a device for adding in sight and not typically a health concern.

Rather than merely condemning the use of such colours in public spaces, this thesis argues the importance of bringing awareness to these new emergences as an opportunity to evaluate the possible effects of such colour operations by asking if it is possible to ascribe potential understandings that are instead activated by the occurrence rather than acquiesced by the commodification of colour in society. With over-illumination accounting for 40% of commercial electricity use and leading to an increase in headaches, fatigue, stress, anxiety, and sexual dysfunction, the time is ripe for new research and theories on the utilization of blue LED lights. George Brainard, professor of neurology at Jefferson Medical College, Thomas Jefferson University in Philadelphia, argues that architectural lighting must be redesigned to account for its biological and behavioral impact on humans. Brainard researches how blue lights in controlled laboratory studies show that exposure to blue LED light during night time can disrupt circadian and neuroendocrine physiology thereby accelerating tumor growth leading to higher cases of breast and prostrate cancers in workers. Artists, city planners, architects, light industry, and

clinical chronobiologists need to work together to improve energy, learning, and performance.

Other options for addressing concerns about blue lights include providing accurate and complete specifications or descriptions for educational comparisons to the public. Include warnings about potential blue LED light hazards with the purchase of every light bulb. Establish a system to begin to explore ways of conserving the nocturnal wildlife and ecosystems. The protection of human health should be a priority and not come at the expense of saving money for the governments under the umbrella of being 'energy efficient'. Raise public awareness about light pollution. Dim lights in response to changing daylight availability thorough the use of sensors or timers to regulate needs of artificial lighting. Promote responsible legislation, public policy, research, and standards in a professional, scientific, and open manner. Consider an extensive review of how blue lights are used in city development by examining spectral distribution, energy codes, controls, time-of-night sensors, and dimmer options to decrease densities. Finally, seeking alternative forms of lighting through examples such as Daylight Harvesting to offset amounts of electric lighting used and to reduce energy consumptions. Solar lighting is weaker and not as bright but is much more energy efficient.

Colours' Influence on Societal Value Systems

In the beginning of this section, ideas surrounding public space and public sphere were articulated to bring colour into contextualization with the concepts of control and power. To open up and reconsider the relationship of colour with public space, this chapter provides a critical analysis of colour in relation to lived space, thirdspace, and values. Returning to Lefebvre's 'spatial triad' for a moment to understand the connectedness of the three case studies is necessary, as well as to articulate the 'so what' of the original contribution to this research. By introducing a spatial problematic into his concerns for everyday life, alienation, and the urban condition, Lefebvre theorizes that social relations embody the production of space. His analysis of the State and its growing control over space, knowledge, and power

167

echo that of Foucault's concept of biopolitics, as discussed in Section II. Space, for Lefebvre, is simultaneously subjective and objective. Lived space becomes an area of domination and experience where social practice is in action and not passive. It is similar to Soja's thirdspace where imagination and the real are intertwined together.

The utilization of colour in public space touches upon this thirdspace interaction as moments of resistance. Olafur Eliasson used yellow-green colour in rivers to create the conflict or break necessary for the opening up of a new space for dialogue concerning the environment, sustainability, and human perceptions. Edi Rama used vivid colours of orange, pink, yellow, and purple to create a new social identity for the people of Tirana and an epistemological shift in forms of resilience. The Glasgow government used blue lights as mechanisms for control and change. It is within the thirdspace where the beginnings of how the utilization of colour carries significant implications. It is here in the reconsideration of the history of colour, capitalism, and public space where the break down of perceived and conceived space occurs. As Soja posits:

> Inspired by the breakdown of totalizing modernist political epistemologies...and the possibility of a radical postmodernism..., a new socio-spatial movement or "community of resistance" is beginning to develop around what I am describing as a thirdspace consciousness and a progressive cultural politics that seeks to break down and erase the specifically spatial power differentials arising from class, race, gender, and many other forms of marginalizing...Rather than operating in separate and exclusive channels, this new movement/community is insistently inclusive..., searching for new ways of building bridges and effective political coalitions across all modes of radical subjectivity and collective resistance. In this coalition-building, it is a shared spatial consciousness, and a collective determination to take greater control over the production of our lived spaces, that provides the primary foundation- the long missing "glue"- for solidarity and political praxis. (Soja, 2000, p. 29)

This shared spatial consciousness brings to light mechanisms of domination that would otherwise go unnoticed. At the core of this argument is a problem of value. By value, this thesis means the regard that something is held in reserve; the usefulness or worth of something; and a person's principles or standards of

168

behaviour and judgment of what is important in life (Milton, 1973). It is important to narrate the contemporary situation of the control of colours through the kinds of organizational infrastructures that capitalism produces to understand how it affects the whole question of value. The three case studies are used to capture some of the dynamics and issues that need narration. The pervasiveness of the colour elite nexus has contributed to the erosion of the boundaries between culture, colour, and capital resulting in new kinds of cultural colour production infested with contradictions of value. Resistances, such as those by Eliasson, challenge traditional assumptions of colour in public space. Value is increasingly tied to these dynamics.

Social values form an important part of the culture of society and account for the stability of social order (i.e., work by Celia Lury, Beverly Skeggs, Arjun Appadurai, Michaela Wolf, and Jens Beckert). They are the criteria individuals use to assess daily activities, choices, priorities, and actions. Values bring legitimacy to the rules that govern specific activities. The rules, created by power networks, are accepted as rules and followed mainly because they embody the values that the majority of individuals accept. The French sociologist Pierre Bourdieu approaches power as being culturally and symbolically created and re-legitimized through interplay between agency and structure (Bourdieu, 1980; 1984; 1986, pp. 241-58).

This happens through a process Bourdieu refers to as 'habitus' or socialized tendencies that guide behavior and thinking. He has written a field theory to describe human practices and within this field theory he uses the notions of field; economic, symbolic, social, and cultural capital; and habitus. In brief, as part of human capital (accumulated labor), Bourdieu breaks capital down into four areas of understanding: economic (funds, property rights), symbolic (resources, connections, memberships, prestige), social (networking, community relationships), and cultural (assets to promote social mobility- affiliations, academia, presentation, taste; major source of social inequality).Cultural capital exists in three forms: embodied state (mind & body), objectified state (cultural goods), and institutionalized state (academic qualifications) (Bourdieu, 1986, pp. 241-258). Habitus is "the way society becomes deposited in persons in the form of lasting dispositions, or trained capacities and structured propensities to think, feel and act in determinant ways, which then guide them" (Wacquant, 2005, p. 316; Navarro,

2006, pp. 11-22). Habitus is created and produced unconsciously, "without any deliberate pursuit of coherence...without any conscious concentration" (Bourdieu, 1984, p. 170). As a system of dispositions surrounding perceptions and assessment, Bourdieu's habitus relates to what Lefebvre referred to as perception and conception as the organizing principles of action within lived space or what Soja termed the thirdspace.

The concern is that habitus conditions our perceptions over time and assists with the construction of spatiality through experience. Context and environment are important to habitus through what Bourdieu called fields. Within fields, the habitus influences individuals and their doxa. Doxa refers to the unstated, deep-founded, learned, unconscious beliefs, and taken-for-granted assumptions behind the distinctions individuals form that foster actions and thoughts within a given field. Doxa tends to privilege the dominant by accepting their position of dominance as self-evident and universally favorable. Bourdieu states that doxa, "happens when an individual forgets the limits that have given rise to unequal divisions in society: it is an adherence to relations of order which, because they structure inseparably both the real world and the thought world, are accepted as self-evident" (Bourdieu, 1984, p. 471). In this idea the thirdspace and an individual's actions and thoughts are linked in the social reproduction of values.

The concern is that individuals learn to desire the conditions made possible for them by the dominating agencies, such as the colour elite nexus, and not to aspire to what is not available to them. This type of submission conditions individuals to generate habitus pre-adapted by the dominant elite and thus create a form of inertia (Bourdieu and Wacquant, 1992, p. 133). Careful analysis of colour in public space can help to reveal the power relations that have been rendered invisible by habitus. By re-examining colour in public space and the various forms of authorities using colour, it becomes clear that David Batchelor's "fear of colour" is actually a form of biopolitical social control brought on by capitalistic regimes of power (Batchelor, 2000). It is not a fear, but rather a habitus of colour acceptance under the conditions of scarcity and economic capital set forth by dominate elite (VeneKlasen and Miller, 2002). The inability (i.e., complicity) to change the situation or the inertia towards questioning the use of colours is all the more problematic when considering the prevalence of blurred boundaries between

colours' power, the ownership, trademarking, and copyrighting of colours, and the implications colours have upon human perceptions. For Bourdieu, the holders of cultural capital, the intellectuals and academics in particular, play a crucial role in the struggles opposing forms of subordination that rest on symbolic power. In Bourdieu's *Acts of Resistance: Against the Tyranny of the Market*, he argues that there is an urgent need to create a resistance to neoliberalism, or what he termed, "the new conservative revolution" (Bourdieu, 1999). Resistance is located in "the social movement" where increasingly disempowered groups join forces with intellectuals to create change. It is time for resistance to the biopolitical manipulations of colour by the colour elite nexus and authorities. It is time for change.

CONCLUSION

"To be an artist means never to avert one's eyes."

~ Akira Kurosawa (Richie, 1999)

The Pink Elephant

There is a fable by Ivan Andreyevich Krylov, a Russian writer, which brings to mind the predicament that colour constitutes in public space. In 1814, Krylov wrote a short fable titled *The Inquisitive Man*. In the narrative he describes a gentleman who travels into a museum and notices all sorts of minute details about the space, yet fails to notice the large elephant in the room (please refer to the appendices for a complete version of the fable). This fable over time leads to the English metaphorical idiom of 'an elephant in the room', which has changed slightly to 'the pink elephant in the room' or 'the elephant in the living room' (Ralston, 1883, p. 43). It addresses the concept that an obvious truth can be ignored or unaddressed even when it is directly in front of an individual based on the concept taken from a law term used to describe a situation by which a person seeks to avoid criminal liability by being unaware of the facts (Palta, 2007; Heffernan, 2012). This is based on the premise that an elephant in a room would be impossible to overlook.

It is easier to ignore the evidence that colour (the pink elephant) is a mechanism for control inside a biopolitical formation of power than it is to acknowledge, rethink, and potentially alter our own epistemologies of colour. Perhaps it is easier because colour is considered trivial, insignificant, or secondary to other seemingly larger factors. Indeed, to recall Briony Fer's statement, "Irrelevance is colours' enemy" (Temkin et al, 2008). Yet it is colours' secondary status that makes it dangerously complex in neoliberal society. Colour becomes the foreign threat to be contained and controlled. Colour is also one of the mechanisms utilized by corporations, the colour elite nexus, and other dominant authorities to keep the market economy functioning and to keep society under control. As Batchelor

posits, "Colour is dangerous because it is secondary...the minor is always the undoing of the major" (Batchelor, 2000, p. 31).

It is through this thesis that the intertwining forms of domination over colours throughout history and into contemporary society have become crucial, essential, and primary in regards to understanding the powerful dynamics colour constitutes in public space. Informed by critical social theory as a framework of analysis, this thesis investigated the nature of neoliberal hegemonies of colour and its implications to the public. To recap, this thesis utilized, as a methodology, critical social theory. The theory involves a form of reflective knowledge encompassing theoretical explanations and increased awareness of issues to reduce entrapment in systems of domination. What began as an investigation of 'what colour is the everyday', turned into a much more complex and intricate network of concepts and ideas.

Section I focused on colour and capitalization. Specifically examining the hegemonies of capital and the formation of societies values towards colour through the historiography of colours. Chapters I and II emphasized the investigation of conditions which might affect the nature of colours and the potential new regimes of accumulation and hegemonic order. What is traditionally lacking from the history of colours, apart from ethical considerations, is theorization of interconnected changes in social forces within and across networks. This involves not only the issues of which colours were controlled and by whom, but also how various manifestations of capitalism have come to bear influence over the use and production of colours in society. The claim being that colour has always been historically shaped by efforts of control and motivations of capital. These in turn shape the legality surrounding colours, environmental utilizations of colour and understandings of culture and the consumption of colours.

A practical question that arises from these considerations is which social forces promote or inhibit a synchronization of the outlooks and policy preferences amoung ruling classes, elites, and authorities in the apparatuses of colour of the dominant nations in coming decades. This issue is central for ascertaining not only trends in superpower relations but also degrees to which the consumption of colour will be accompanied by a hegemonic international order. Section II begins to

address some of the key elements and players in the consumption of colours. First, the review of the legal battles over owning colours is brought into light. These court cases helped to indicate the levels to which corporations strive towards in terms of being able to be the only company allowed to use a specific colour as it relates to their brand. By adjusting the limits of regulations to include colours, copyright and trademark laws create a distinctive inaccessibility to others searching to avail oneself of particular hues for equivalent purposes.

As colour becomes more sequestered through branding, trademarking, and copyrights, etc., there is a failure to recognize the impacts those in control of colours have over societies. Chapter IV introduces the colour elite nexus as a form of dominance over colour regulations, forecasting, management, and marketing. The colour elite nexus is wrapped up in biopolitics, as a production of biopolitics and that which produces biopolitics as discussed in Chapter V. They continue to maintain the biopolitical situation that we are currently involved inside within neoliberalism. This relates back to the historiography of Section I in terms of how these groups rose to power and established themselves as the omniscient colour authorities.

Chapter V demonstrates the increasing complexity of colour relationships that in turn reflect a further problem of the relationship between the colour elite nexus and biopolitical predicated levels of knowledge. It argued that both the deepening and enlargement of the colour elite nexus are promoted by a historic bloc that seeks to establish the hegemony of transnational capital by controlling colour. Using Foucault's concept of biopolitics as a guide to help break down the control and mindsets produced in a neoliberal society towards colour, a paradigm emerges from the research- perceptual humanism.

It is from the idea that colour has a complex, interwoven consciousness and unconsciousness, affecting all other colours and undergoing constant modification and transformation, where the hidden biopolitics is discovered- the area of resistance located in perceptual humanism. As humans cling to what they have already come to know and resist giving up one more area of perceived unrestricted thought, that is to choose without consequence, the fallacy is revealed. What was thought of as their control is actually control that resides in the hands of a select

174

few, the dominant powers. The misconception is uncovered as the working class belief of consuming colour is in reality orchestrated by the capitalistic upper classes. Consuming colour in this sense is the secret of the dominant groups in power, a secret that reveals itself not by being visually present per se, but by being part of a reticent cultural capital commodity.

Perceptual humanism, as described in Chapter VI, is an evolutionary cultivated tendency or habitus with the capacity to change or at the very least alter given situations. It illustrates that daily decisions regarding colour embed humans more completely inside their affirming thoughts and values. It is a frightening process because over time, an individual sees less and less around them as their comfort levels increase and a greater certainty for the world grows. Instead of seeing more into the skyline, the landscape shrinks drastically. In order to open it back up to see the horizon in a new perspective, issues of dominance and control of colour need to be considered and not taken-for-granted. To take back the idea of consuming colour as a global cultural situation, with increased awareness and mindfulness for all aspects of colour is what is ultimately at stake.

Furthering this idea into a broader realm, quite literally into public space, Section III, Chapter VII, explores how colour and its capitalization produce our environment and public spaces. This is something artists have attempted with greater or lesser effectiveness to intervene into or to show us, such as Olafur Eliasson's *Green River* series in Chapter VIII. The struggle for a new approach to understanding colour in public space is required to repeatedly reveal its value through its accrual and potential investment opportunities in economic, symbolic, social, and cultural capital. Drawing on three case studies, this section details how colour is positioned to the dominant authorities and presented as a change agent rather than a mechanism for control in hopes of generating alternative ways for understanding what constitutes value in society. Yet even an agent of change can have both positive and negative effects upon communities as articulated in the case studies.

The Bourdieusian perspective allows for a critical approach to understanding colour not as a neutral formation, but rather how it functions as a central feature of the power struggle to occupy constitutive positions within a capitalistic field.

Showing how colour is used by various forms of authority demonstrates how the experience of colour is a complex process, not only addressing economic capital, but also confronting perceptual humanism within a neoliberal mindset. This thesis reveals a struggle at the very core of colour; demonstrating how dominant powers can create, manipulate, and control individuals.

Colour has the potential to alter an entire environment. It can open up, undo, and transform the thirdspace within public space. Massive colour bursts out onto a scene, alters it, and through this process creates awareness and change that potentially reshapes societal values. In public space, colour can bond individuals together as spectators or protectors of a given cause, as well as create tensions and conflicts that unfasten the perceived reality. The thirdspace unlocks the public dialogue around colour and offers a freedom from all the grey in the case of Edi Rama's *Clean and Green* project described in Chapter IX. Ultimately, the illusion of arriving at a definite consensus depoliticizes public space. Mouffe articulated this as a lack of "agnostic debate" that under neoliberalism is weakening the public space and affirms her importance to counter-hegemonic processes that could make life 'robust' again. As the colours bring in increased tourism, a growing concern for the preservation of the nation's identity along with gentrification issues rise with the advent of capitalism in the society. These types of situations illustrate the multitudinal and complex processes colour occupies in public space.

Any radical change from within government and society requires a "long march through the institutions of power". As noted by Alfred Willi Rudi Dutschke, the most prominent spokesperson of the German student movement of the 1960s. Although the quote is often attributed to Antonio Gramsci, Dutschke advocated a "long march through the institutions of power" to create radical change from within government and society by becoming an integral part of the machinery (Huffmann, 2004). Grounded theoretical understandings of colour are crucial if there is hope to intervene effectively in the resolution of capital regimes of power. The task is certainly daunting, given such a vast and complex theoretical situation in a global society. The potential to ground the understanding of colour in biopolitics and capitalism is not something to pass over since ignoring the politics of colour is like pretending to not see the pink elephant in the room. The present thesis contributes to this endeavor by gaining a more nuanced theoretical

understanding of colour in public space and with it, a more aware and mindful future.

APPENDICES

Figure A1.1 – Intervention: London, England, 2015

Figure A1.2 – Detail of Intervention, Acrylic on pavement

Figure A1.3 – Intervention: Atlanta, Georgia, 2015

Figure A1.4 – Detail of Intervention, spray paint on pavement
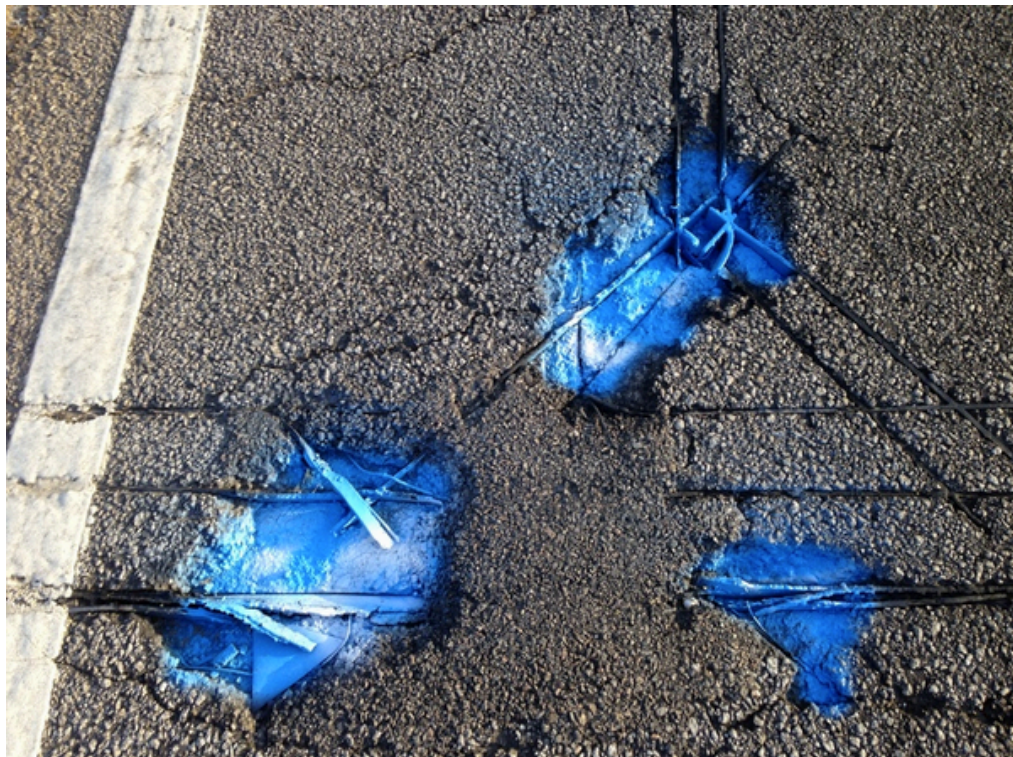
Figure A1.5 – Intervention: Atlanta, Georgia, 2015

Figure A1.6 – Intervention: Atlanta, Georgia, 2015

Figure A1.7 – Painting: *For Keeps (we are one),* 2014
Medium: Oil, Acrylic, and Ink on canvas. Dimensions: 16" x 17"

Figure A1.8 – Painting: *User Assumes All Risk*, 2015
Medium: Oil, Acrylic, and Ink on paper. Dimensions: 72" x 60"

Figure A1.9 – Painting: *I'm Not Young Enough Yet to Know Everything*, 2014
Medium: Acrylic and Ink on canvas. Dimensions: 36" x 24"

Figure A1.10 – Painting: *There Are Beggars And Buskers Operating On This Train, Please Do Not Encourage Their Presence By Supporting Them,* 2015
Medium: Oil, Acrylic, and Ink on paper. Dimensions: 72" x 60"

Figure A1.11 – About Page From Website, 2015

www.michellecorvette.com

Michelle Corvette

Originally from New York, Michelle Corvette is a prolific artist dividing her time between Paris, London, and Atlanta, GA. She creates experiences that engage with social and political issues through painting, interventions, installations, and performances. Her artwork has been exhibited both nationally and internationally in group and solo shows including the Frist Center for the Arts, Swan Coach House Gallery, Zeitgeist Gallery, Kibbee Gallery, and Vanderbilt University Club Gallery. She has won numerous awards including an Individual Artists Fellowship Grant from the Tennessee Arts Commission and the Outstanding Professional Promise Award from the University of Tennessee, as well as being selected for the Hambidge Center Creative Residency Program.

Her MFA degree from New York University (NYU) was an Interdisciplinary Studio Art major and an Art Theory and Criticism minor. She received her BFA, Summa Cum Laude, with double majors in Painting and Drawing and double minors in Art History and Cinematography from the University of Tennessee, Knoxville. In addition, her first empirical-based Ph.D. was in Education, Department of Educational Psychology, from the University of Tennessee, Knoxville with a focus on student experiences of hindered creativity in academia. She currently is completing a second theoretical-based Ph.D. in Art Research in Interdisciplinary Studio Art at Goldsmiths College, University of London, with a focus on the legality and biopolitics of colour in public spaces.

Figure A1.12 – Artist Statement, 2015

Corvette Artist Statement

I am interested in the intersection between capitalism and daily activities. Specifically how consumer culture is intertwined with crowd sourcing, mapping, and transportation. Extracting from my own experiences of psychological space as I interact with architecture and social situations, my work focuses on shifts of perceptions in relation to constructed realities. By reflecting on my recovered way of being after a brain aneurysm, I paint the interconnectedness of existence from an aerial perspective that relates a narrative about human connectiveness and the desires to consume. I am occupied with the consciousness of being emotionally connected to the space that is around me both visually and intuitively. By utilizing the theories of Lefebvre's production of space, Foucault's biopolitics, Soja's thirdspace, Mouffe's agonistic pluralism and Deutsch's art in public space, I view my artwork as constructing realities that reflect the study of consciousness and ways of being with public space, colour, social situations, and architecture.

My practice involves utilizing the methodology of ethnographic research with direct observation of cityscapes and crowd movements from the tops of buildings and establishing documentation of such views through videos and photography, as well as field sketches. Having completed this stage, I return to my studio to locate patterns within street landscapes and to reinterpret them in multilayered forms. The abstraction focuses on the applied use of local colour often intersected with stochastic colours to create a commentary upon city existence. Therefore, the paintings themselves are often flat, bright, and abstract, yet derived from the ethnographic research of the city patterns relating back to human connectivity and critical social theory.

Finally, by bringing my art practice into public space for my series of interventions, I focus on articulating the loopholes found in current structures of societal laws. I am interested in places of neglect that reflect society's discarded, abandoned, and deconstructed areas. It is here where I am able to directly connect with public spaces, colours, and growing population concerns such as gentrification and biopolitical manipulations. My interventions raise awareness of biopolitical issues within the current neoliberal situation.

Appendix B: Colour Ontology

There are a number of philosophical reasons to be interested in the research of colour. One of the significant reasons concerns the nature of both physical reality and the reality of the mind in regards to understanding them as linked together and yet independently providing experiences of colour. This metaphysical issue begins the dialogue between epistemological and semantic concerns with colour. Contemporary visual science, psychophysics, and colour in art have historically been on separate paths in spite of strong reasons for collaboration and unity. A disorientated misunderstanding of colour is perhaps more accountable than any intrinsic incompatibility. Especially since colour and science were once collaborators in research when considering the work of Sir Isaac Newton or Johann Wolfgang von Goethe. The sensation and perception of colour is tangled in paradox. Consider that everything living is able to see colour quite differently from each other. Due to biological differences in eye structure, no one living creature sees colour the same as another creature (Gage, 1999).

Colour may be a property of light, a wavelength of light and energy, but it is perceived within our brain, which leads to the question- is colour a thing or is it perhaps a notion of colour? (Dowling, 2001). This notion of colour is reinforced in John H. Krantz's scientific work where he argues that colour is both a visual perception and an innate form of colour constancy (Krantz, 2009). As scientific research and the conditions of colour ontology change, to what extent are human beings changed in tandem? Is the psychological colour research from the late 1880s still a valid assessment of articulating a populations' experience of colour?

A brief ontology of the current ontological reasoning of colour is important to understand for the direction of claims within this thesis. Colours are intensely visceral and emotional, as well as highly personal. They encompass deep meanings and connections to the past and future. Colour has been cited in research as influencing personal identity, social status, group affiliation, and the symbolization of movements. Yet colour does not exist independently, at least not in the way majorities of humans think of colour as being part of something outside of their own way of being.

There is a tendency to regard colours as purely separate from the human being, as something 'out there'. However, no act of colour perception is a pure or unmediated event. David Hume stated, "Sounds, colors, heat and cold, according to modern philosophy are not qualities in objects, but perceptions in the mind" (Hume, 1738/1911, p.177; Hume, Bk I, IV, IV, p. 216). By examining a disparate array of Western and non-Western cultural colour histories, neuroscience research, and psychoanalytical research, it is clear that colour is a multilayered and complex construct to define. Due to the various approaches to defining colour, it is relevant therefore to offer a clear concise definition of colour. According to the Merriam-Webster Dictionary colour is: "*a* : a phenomenon of light visual perception that enables one to differentiate otherwise identical objects. *b (1)* : the aspect of the appearance of objects and light sources that may be described in terms of hue, lightness, and saturation for objects and hue, brightness, and saturation for light sources *also* : a specific combination of hue, saturation, and lightness or brightness *(2)* : a color other than and as contrasted with black, white, or gray". This definition is closely related to the Oxford English Dictionary definition of color that states: "The property possessed by an object of producing different sensations on the eye as a result of the way it reflects or emits light".

However, the key difference lies in the notion of where colour is present- in the world 'out there' or 'in here', meaning in the brain or the mind. The reason this is a key point to stress is because recent scientific discoveries have revealed that colour is a perception of our brain and it is not something inherent within an object or thing. This is not to indicate that objects and things do not possess 'colour', but rather that they possess specific wavelengths, luminance, and saturations which our eyes then perceive and reinterpret through our neurological networking to indicate a 'hue'. Such a simple change in definition actually causes significant alterations in the research of colour.

The fundamental mistake in understanding colour is one that humans have been ingrained to believe; the sky looks blue because it is blue, the clouds look white because they are white, and the grass looks green because it is green. However, this universal belief system is flawed since objects, lights, or anything physical is actually not coloured, at least not in the way humans think they possess colours. Colours are based on the properties of light and vibrations of hues, which are then

psychologically interpreted through the visual perception and the brain (Palmer, 1999, p.95). By visual perception, I mean the process of acquiring knowledge about environmental objects and events by extracting information from the light they emit or reflect (Palmer, ibid., p.5). Colour becomes an active experience for the viewer.

Subjectivism (the view that colour is a subjective quality) and eliminativism (the view that objects do not have colours) is based upon research of scientists and contemporary experts (authorities on colour). Within the subjectivism realm there are multiple ways of viewing the colours in regards to sensations, psychological properties, visual experiences, memories, dreams, constructions of the brain, and even properties of the brain that lead to further complications in understanding colour ontology. Colour Irrealism, Colour Eliminativism, Colour Fictionalism all share the view that, there are no colours in the external world, or more precisely, that physical bodies do not have the colours that we ordinarily and unreflectingly assume the bodies to have. These views are usually committed to an 'Error theory' of visual colour experience according to researchers such as Hardin, Boghossian and Velleman, Averill, and Maund. As Descartes and Locke posited that there are no colours in the physical world. They also held the view that colours are powers or dispositions that can cause experiences of certain forms. This dual position was illustrated by Descartes when he stated, "It is clear then that when we say we perceive colors in objects, it is really just the same as saying that we perceived in objects something as to whose nature we are ignorant but which produces in us a very clear and vivid sensation, what we call the sensation of color" (Descartes, 1644/1988, pp. 68–70).

In recent times, however, there have emerged five positions that challenge this view, each encompassed by there own series of internal and external debates. They are summarized below:

Primitivism - Colours are 'primitive' properties—simple, *sui generis*, qualitative properties that physical objects possess or appear to possess.

Reductive Physicalism - Colours are 'hidden' properties of objects—complex, physical properties that dispose objects to look blue, red, purple, etc.

Dispositionalism - Colours are perceiver-dependent, dispositional properties—powers to look in distinctive ways to appropriate perceivers, in appropriate circumstances.

Projectivism - Colours are subjective qualities 'projected' onto physical objects and light-sources—qualities which visual experiences represent objects as having.

Subjectivism - Colours are subjective qualities—either qualities presented in experience or qualities of experiences.

Given any ontological understanding, there are concerns that have risen depending upon the approach, including the ones suggested above. In traditional colour research there is a range of light sources, illuminants, surfaces, volumes, films, luminescent objects, and various objects which scatter light, as well as objects which diffract light (the causes of which are varied and numerous). For most theorists the plausible physical elements for colours are light-related surfaces with the capacity to emit, reflect, absorb, transmit, scatter, or vibrate varying degrees of hues. Therefore, the colour is related to the object's reflectance profile or the capacity to differentially reflect wavelengths from different regions of the illumination or light source. Yet, for each surface 'colour' there is not a single reflectance angle or curve associate with a particular colour. Rather, there seem to be multiple curves or sets of metamers (Averill, 1992, pp. 551–88; Averill, 2005, pp. 217–234). For example, to communicate verbally that something is purple is not a specific colour reflectance, but a type of reflectance that is a member of a certain group.

However, the problems established become increasingly challenging to comprehend because as Hardin and Cohen have contested in their research, there is a major problem of identifying in a non-arbitrary way, normal conditions and standard observers when the reflectance profile is contingent upon numerous factors (Hardin and Maffi, 1997; Cohen, 2009). Not only is there a minority of colour perceivers who are anomalous with respect to normal observers, but also the statistical spread from within this group is considerable. From a metaphysical standpoint to decide on a random fixed colour is arbitrary and could potentially skew data. One possible recent argument that could aid in the understanding of this situation is presented by Matthen who proposes a theory of colour sense-

perception in which encompasses studies of different species. The main idea expressed is that the visual sensory system is able to categorize objects as 'purple' or 'red', etc., but these qualities are related to actions that perceivers can perform, and in particular, to 'epistemic affordances' (Matthen, 1988, pp. 5–27; 2000, pp. 47–84; 2005). Epistemic in the idea that colour classification is generated from the processing by normal colour perceivers to the different wavelengths reaching the eye. Therefore, there would be no established set of properties that colour vision had to characterize as colour and likewise there would be no types of experiences that the colour perceiver must possess.

Scientific research in summary, posits that colour is a limited perception of our mind and perhaps has no consistent reception. Therefore, this suggests that objects do not have colour, at least not in the traditional sense, but perhaps in the more contemporary understandings of colour ontology, but rather the human eye and brain work in combination to interpret colour upon the object based on the reflectance profile at any given context. This type of inference serves to complicate the history of colours within societies because colours referred to directly in literature, may or may not be the colours assumed in present day. This thesis is not providing an extensive review of the ontology of colour, as there are numerous books and articles already addressing many of the controversial issues about the topic including works by Galileo, Boyle, Descartes, Newton, Young, Maxwell and Helmholtz (Maxwell, 1890/1970). Nor shall it focus in depth on the variances of how different cultures view colours as other books have already established this research (Davidoff, 1991; Gage, 2009).

Appendix C: LED Lights Extended

Glasgow and LEDs

Glasgow is the largest city in Scotland and one of the largest in the United Kingdom. In order to understand what has occurred within the city regarding colour over the last fifteen years, a brief review of how the council created, decided and implemented their future city plans, the government agencies involved, the funding and research behind issues surrounding blue LED lights are examined in depth. If the future of "smart cities" has arrived and new types of technology are being implanted into the public realm, aside from the proposed benefits that the grants articulate, what are the some of the major consequences of such actions, specifically in regards to how the government is utilizing colour in these situations? Focusing on the research of how colour and psychology interact, how will implementations such as the 'white street lighting' (blue LED lights) have on public spaces?

During the daylight, the sun provides most of the natural lighting needed for vision, however in the night hours, the use of artificial lighting has been employed since early man discovered fire. Humans see colour in light through the colour footprint called a gamut that defines a colour space pigmentation. Each colour on the spectral electromagnetic wavelength has a gamut that eyes are able to interpret and read as being connected to a hue. Some humans are able to see specific nuances in the slightest shift of a gamut, whilst others are unable to see even drastic differences in hues (Davidoff, 2014). With the advent of new technology, blue LED lights are being used more and more during the daylight hours. This is seen in the use of laptop computers, iphones/cell phones, ipad screens, projectors, digital billboards, roadway signs, light bulbs, streetlights, automobile headlights, architectural lighting, parking garages, aviation lighting, stage lighting, flashlights, and security infrared lighting. Human eyes are staring into blue LED lights now more than ever before.

The use of artificial lighting is a relatively new invention occurring within the last 120 years of human history. The use of traditional sulfur lights was established in

1835 when the first constant electric light was demonstrated. William Sawyer and Albon Man, who received a U.S. patent for the incandescent lamp, and Joseph Swan, who patented his light bulb in England. The technology for Light Emitting Diodes (LED) was discovered in 1907 by a Russian scientist named Oleg Vladimirovich Losev and independently at the same time by another scientist named H. J. Round in London. Both individuals were working with early LED technology involving electroluminescence when using silicon carbide and a cat's whisker. Further developments involving LEDs would happen in the 1960s to the 1980s. Some researchers, such as M. George Craford, who discovered the yellow LED lights, would be created under research funding from Monsanto. The current blue LED lights were developed in 1979 by Shuji Nakamura whose research would continue to improve on the technology until 1994 when the first commercial blue LED light was released to the public. As of early 2015, the blue light revolution is currently in full maturation with multiple cities replacing numerous streetlights, traffic signals, road signs, and pedestrian signals with blue LED technology. With the technology being so new for the blue LED lights it is questionable as to what the impacts over time will prove to be upon the human, environmental, and ecological systems.

In April of 2001, the Enhanced Capital Allowance (ECA) was established in the U.K., which enables large businesses and government agencies to claim 100% first year capital allowance on investments in certain energy saving equipment (HMRC website, 2014). The Department of Energy and Climate Change established the ECA along with a number of other capital allowance investment schemes starting in 1997. Along with updating and improvements to business and residential properties, city concerns such as pavements, streets, and lighting were included on the list of approved claims. The "White Light Emitting Diode Lighting Units" for "improving street lighting conditions to save energy" where implemented by the Glasgow City Council in their original five year Action Plan of the late 1990s (Glasgow City Council Five Year Plan, 2014).

By 1998 the city of Glasgow was falling into disrepair due to neglect, poor governmental decisions, and crime. The Glasgow City Council proposed the first steps of a major revitalization process that would encompass the next twenty years.

The Merchant City Townscape Heritage Initiative Project, Phase I, Five Year Action Plan was developed and implemented from 2000 to 2006. It was funded through numerous programme grants by the Heritage Lottery Fund, the Glasgow City Council, and the Scottish Enterprise Glasgow. The main initiative was to tackle the problems of the run down historic buildings and streetscape in the Merchant City area where economic and structural decline had undermined the character of an architecturally significant neighborhood. Based on the idea of 'conservation deficit' (Glasgow City Council Five Year Plan, ibid), £30 million of works and renovations were carried out that focused on Trongate and the surrounding areas to allow for a kick-start of regeneration in the sector. The original Five Year Action Plan for the Merchant City had as its aim:

> To create an area of design and inspirational excellence,
> individuality and style – a unique urban quarter where the cultural
> and the artistic can mix with retail and residential to generate
> energy, where quality architecture re-enforces the sense of place
> and creates activity and where boldness and innovation is
> positively encouraged at the expense of blandness and mediocrity.
> (Glasgow City Council Fiver Year Plan, ibid)

This statement was quite bold for a city government to produce, but also telling of the economic downturn that had plagued the city since the late 1960s. Despite small efforts to keep the city energized with commerce, large-scale relocations of residents to new towns and peripheral suburbs occurred as part of a comprehensive urban renewal project in the 70s. This was part of what the Five Year Action Plan was attempting to undo, by drawing back residents who had once left the inner city area. To determine what would be considered bland and mediocre, the main partners of the Glasgow City Council, Scottish Enterprise Glasgow, and the Merchant City Initiative worked closely in alliance with the Business Gateway, local traders associations, Strathclyde European Partnership, Historic Scotland, Visit Scotland, Scottish Arts Council, University of Strathclyde, and two resident community councils that serve the area. One of the projects included in the renovations was an "upgrade of lighting to white light" and an "increase to the CCTV cameras" as part of the Action Plan, specifically focusing on Buchanan Street, a major shopping area. Phase 2 of the Merchant City Townscape Heritage Initiative Project, Five Year Action Plan was conducted from 2006-2011 with £3.2 million funding from the same three government bodies. After reviewing the

overall Action Plan, an additional follow-up phase was deemed necessary and is in process, but recently Glasgow received a new grant that will help them in the undertaking.

In early 2013, Glasgow was awarded the "smart city" grant worth £24 million by the Technology Strategy Board (TSB). The TSB was established by the U.K. government in 2007 as a public body operating at arm's length from the government reporting to the Department for Business, Innovation, and Skills (BIS). The grant, "Future Cities Demonstrator", is intended to help create one of the first smart cities in the United Kingdom. Glaswegians will have access to real-time information for traffic, apps to check buses and trains, and apps for reporting potholes and missing bins. There will also be an increase of CCTV cameras installed throughout the city, including CCTV installed inside taxi services. Analytical software and security cameras will be used to help identify and prevent crime. Sensors will be installed around the city to monitor energy levels to find new ways of providing gas and electricity to all areas, as well as track patterns of pedestrian traffic. Glasgow won the award with smaller grants of £50,000 being distributed to London, Peterborough, and Bristol for future research into how they can best implement smart city design (Glasgow city website, 2014).

This section claims that the government is subjecting the public to the exposure of blue LED lights without enough research as to how long term use of blue light will affect human beings. Colour psychology as a field is only now opening up to significant scientific breakthroughs and that the information, which came before, is predominately questionable. Colour psychology is the study of colour as a determinant of human behaviour. The interface between colour and environmental stimuli is a highly complex interface. This thesis is particularly critical of colour psychology literature from the late 1880s until 1980s. The main reason being that research was unmonitored, predominately conducted with white males subjects, and biases were left unchecked and unaccounted. Too many elements were left to chance. Take for example, the colour research by Berlin and Kay where they attempted to establish that all cultures around the globe had indications of colour hierarchy. The data generated is now understood to be constructed and improvable (Bornstein, 2007, pp.3-27). It is not to dismiss all colour theory before the last ten

years, but it is to indicate a critical stance towards what has become known as colour biases in the world. Colours have no meaning except that which human beings attribute to them. Yet colours are able to have a psychological impact upon the brain that manifests itself through indications of human actions, emotions, and responses to colours.

Prolonged exposure to blue LED lights has not been adequately researched because this is a relatively new invention. However, the light emitted by older sources, such as incandescent bulbs contain increased levels of red wavelengths. The problem now is that the world is increasingly illuminated in blue and the damage that was once thought to be confined to nighttime is occurring during daylight hours as well. By one estimate, 1.6 billion new computer laptops, flat screen televisions, and cellphones were sold in 2013 alone and inside each of these devices contain blue LED lights. Dr. Celia Sanchez-Ramos of Complutense University in Madrid points out that humans spend roughly 6,000 hours a year exposed to artificial lights and damage to the retina is increasing as humans live longer and children are exposed to blue lights from an earlier age (Allan, 2014). "Some people consider progress in the field of light and health over the last couple of years as the most important light induced innovation since the invention of the light bulb" states Dr. Dieter Kunz, head of the Sleep Research and Clinical Chronobiology group at the Institute for Physiology, Charité, Berlin (Holzman, 2010, pp. A22-A27).

There is debate over whether brighter outdoor white lighting actually improves security. In a 1996 report, "Preventing Crime: What Works, What Doesn't and What's Promising", submitted to the United States Congress by the National Institute of Justice and the Department of Criminology and Criminal Justice at the University of Maryland, concluded that, "lighting is effective in some places, ineffective in others, and counter productive in still other circumstances" in deterring crime (Sherman et al, 1998). An example of how lighting could be counter productive is found in the Colchester Gazette, U.K., where in 2008 a report about the towns in Essex County, U.K. witnessed a reduction in crime during an 18 month pilot project in which residential streetlights were turned off between midnight and 5am. In the city of Maldon, the murder offenses fell by 14% during

the hours the street lights were off and other criminal offenses fell by 12.6%. Although the original intent of the Essex Council was to measure and reduce energy-related Co2 emissions, the project produced unexpected benefits with the reduction of streetlights.

The use of blue LED lights is a growing concern as more and more cities begin to implement them into their 'future cities' directives. Likewise, more than half the world's population now lives in cities according to the World Health Organization. It is stated on the World Health Organization's website, "As of 2010 more than ½ of all people live in an urban area. By 2030, 6 out of 10 people will live in a city and by 2050, this population will increase to 7 out of 10 people" (World Health Organization website, 2014). With over seven billion people on the planet as of 2011, Thoraya Ahmed Obaid, Executive Director of UN Population Fund said, "We must abandon a mindset that resists urbanization and act now to begin a concerted global effort to help cities unleash their potential to spruce economic growth and solve problems" (United Nations website, 2014).

What can be done? On a small scale, dimming computer screens and iphone/cellphone screens could help the individual public, but more information needs to be generated to communicate the blue light hazard to the world. Some possible solutions for short-term research include focuses on sustainable planning, minimizing the "ecological footprint" by exploring different areas of resources, and accounting for change blindness by creating an archive. By change blindness, this thesis is referring to the changes that happen slowly over a human lifetime that do not startle. Dr. Daniel Pauly, a professor at the University of British Columbia, describes these acts as the condition "shifting baseline syndrome". His idea is postulated as:

> When you're young, you look at the world and think what you see
> has been that way for a long time. When you're 5, everything feels
> "normal". When things change in your lifetime, you may regret
> what has changed, but for your children, born 30 years later into a
> more diminished world, what they see at 5 becomes their new
> "normal", and so, over time, "normal" is constantly being redefined
> to mean "less." And people who don't believe that the past was so
> different from the present might have what could be called "change
> blindness." (Krulwick, 2014)

Change blindness is a concern that needs to be addressed more in literature as the world continues to evolve with new technologies that are permanently rendering previous advances obsolete. An archive of how the world once looked before blue LED lights were implemented will be necessary for future researchers. In the long term, research into world energy consumption needs to be examined closely in relation to lighting. World energy consumption is the total energy used by all human civilizations. Every country has an Energy Policy (US, China, India, European Union, U.K, Russia, Brazil, Canada, etc.) Providing research projects, funding, and implementation into sustainability through wind power, solar power, hydro power, geothermal, and biofuels as sources of renewable energy that are more energy efficient and perhaps safer. Including the International Organization for Standardization which is part of the United Nations Economic and Social Council headquartered in Geneva, Switzerland, in research in order to seek guidance and understandings of the use of blue LED lights over time.

The Inquisitive Man

An Inquisitive Man was one day met by a friend who cordially hailed him:

"Good day, my dear fellow! Where do you come from?"

"From the Museum of Natural History, where I have just spent three hours. I saw everything there was to see and examined it carefully. So much have I seen to astonish me, that, if you will believe me, I am neither strong enough nor clever enough to give you a full description of it. Upon my word it is a place of wonders. How rich Nature is in invention! There are more birds and beasts than I ever dreamed of- not to mention the butterflies, dragonflies, and beetles- some green as emeralds and others as red as coral! And what tiny cochineal insects! Why, really, some of them are smaller than the head of a pin."

"But did you see the elephant? What did you think it looked like? I'll be bound you felt as if you were looking at a mountain."

"Elephant? Are you quite sure it's there?"

"Quite sure."

"Well, brother, you mustn't be too hard upon me; but to tell the truth, I didn't remark the elephant."

Ivan Andreevich Krylov (1814) "The Inquisitive Man". In John Francis Campbell of Islay (ed.) *Krilof and His Fables*. Translation by Campbell and W. R. S. Ralston. The physical item used to create this version is out of copyright. Early Gaelic Book Collection: National Library of Scotland.

REFERENCES

Abramov, I. (1997) "Physiological Mechanism of Color Vision". In C. L. Hardin & L. Maffi (eds.), *Color Categories in Thought and Language*. Cambridge: Cambridge University Press, pp. 89–117.

Adorno, T. W. (2002) *Dialectic of Enlightenment*. Translation by Edmund Jephcott. Stanford: Stanford UP, p. 95.

Agamben, G. (1993) *The Coming Community (Theory Out of Bounds, Vol.1)*. Translation by M. Hardt. Minnesota: University of Minnesota Press.

Akins, K. & Hahn, M. (2000) "The Peculiarity of Color". In S. Davis (ed.), *Color Perception: Philosophical, Psychological, Artistic and Computational Perspectives*. Oxford: Oxford University Press, pp. 215–257.

Albers, J. (1963/2006) *Interaction of Color*. New Haven: Yale University Press.

Andrew, J. A. (1998) *Lyndon Johnson and the Great Society*. Chicago: Ivan R. Dee Publishing.

Appadurai, A. (1996) *Modernity At Large: Cultural Dimensions of Globalization*. Minnesota: University of Minnesota Press.

Archibugi, D. & Filippetti, A. (2010) 'The globalization of intellectual property rights: Four learned lessons and four thesis'. *Journal of Global Policy*. New York: Springer, 1, pp. 137-49.

Arendt, H. (1958/1998) *The Human Condition*. 2nd ed. Chicago: University of Chicago Press.

Armstrong, D. (1961) *Perception and the Physical World*. London: Routledge.

—— (1968) *A Materialist Theory of the Mind*. London: Routledge.

Armstrong, D. M. (1969) "Color-Realism and the Argument from Microscopes". In R. Brown & C. D. Rollins (eds.) *Contemporary Philosophy in Australia*. London: Allen & Unwin, pp. 119–31.

Ambrose, G. & Harris, P. (2005) *Colour*. Switzerland: AVA Publishers.

Atkinson, J. (2000) *The Developing Visual Brain*. Oxford: Oxford University Press.

Averill, E. W. (1992) "The Relational Nature of Colour". *The Philosophical Review*. Durham, NC: Duke University Press, 101, pp. 551–588.

—— (2005) "Toward a Projectivist Account of Color". *The Journal of Philosophy*. New York: Columbia University, 102, pp. 217–234.

Backhaus, W. G. K., Gliegl, R., & Werner, J. S. (eds.) (1998) *Color Vision: Perspectives from Different Disciplines*. Berlin: Walter de Gruyter.

Balfour-Paul, J. (1998) *Indigo: Egyptian Mummies to Blue Jeans*. London: British Museum Press.

Ball, P. (2001) *Bright Earth: Art and the Invention of Color*. Chicago: University of Chicago Press.

Bannatyne, L. (1998) *Halloween: An American Holiday, an American History*. Gretna, LA: Pelican Publishing.

Barber, E. J. (1991) *Prehistoric Textiles*. Princeton, NJ: Princeton University Press.

Barton, R. A. & Hill, R. A. (2005) "Sporting Contests: Seeing Red? Putting Sportswear in Context". *Nature*, 437: E10-E11, rsbl.royalsocietypublishing.org. (Accessed 29 November 2015).

Batchelor, D. (2000) *Chromophobia*. London: Reaktion Books LTD.

—— (ed.) (2008) *Colour*. London: Whitechapel Gallery/MIT Press.

—— (2014) *The Luminous and the Grey*. London: Reaktion Books.

Beaudot, W. H. A. & Mullen, K. T. (2005) "Orientation Selectivity in Luminance and Color Vision Assessed Using 2-D Band-pass Altered Spatial Noise". *Vision Research*, 45, pp. 687-696.

Beckert, J. (2002) *Beyond the Market: The Social Foundations of Economic Efficiency*. Translation by B. Harshav. Princeton: Princeton University Press.

—— (2011) *The Worth of Goods: Valuation and Pricing in the Economy*. Oxford: Oxford University Press.

—— (2016) *Imagined Futures: Fictional Expectations and Capitalist Dynamics*. Cambridge: Harvard University Press.

Beioley, K. (2014) "Supreme Court Refuses Cadbury's Permission to Appeal Colour Purple Trademark". *The Lawyer*. Website: http://www.thelawyer.com/news/practice-areas/intellectual-property-news/supreme-court-refuses-cadburys-permission-to-appeal-colour-purple-trademark/3018814.article. (Accessed 20 April 2014).

Bennett, J. (1971) *Locke, Berkeley, Hume: Central Themes*. Oxford: Clarendon Press.

Bennett, J. (2010) *Vibrant Matter: A Political Ecology of Things*. Durham, North Carolina: Duke University Press.

Bergson, H. (1913/2005) *Time and Free Will*. London: Elibron Classics.

—— (1988) *Matter and Memory*. Translation by N. M. Paul & W. S. Palmer. New York: Zone Books.

—— (2002) "The Perception of Change". Translation by M.L. Andison, in Keith Ansell Pearson & John Mullarkey (eds.) *Henri Bergson: Key Writings*. New York & London: Continuum.

Berke, H. (2002) "Chemistry in Ancient Times: The Development of Blue and Purple Pigments". *Angewandte Chemie International Edition*. New York: John Wiley & Sons, 41, p. 14.

Berlin, B. & Kay, P. (1969) *Basic Color Terms*. Berkeley & Los Angeles: University of California Press.

Bernstein, D. A. (2010) *Essentials of Psychology*. Boston, MA: Cengage Learning, pp. 123–4.

Berrie, B. H. (1997) "Prussian Blue". In E. W. FitzHugh (ed.) *Artists' Pigments: A Handbook of their History and Characteristics*. Washington, DC: National Gallery of Art.

Bertrams, A., Baumeister, R F., Englert, C., & Furley, P. (2014) "Ego Depletion in Color Priming Research: Self-Control Strength Moderates the Detrimental Effect of Red on Cognitive Test Performance". *Personality and Social Psychology Bulletin.* Thousand Oaks, CA: Sage.

Billock, V. A., Gleason, G. A., & Tsou, B. H. (2001) "Perception of Forbidden Colours in Retinally Stabilized Equiluminant Images: An Indication of Softwired Cortical Colour Opponency?" *Journal of the Optical Society of America*, 18, pp. 2398-2403.

Birren, F. (1961) *Color, From, and Space*. New York: Reinhold Publishing Corporation.

Blair, E. (2016) *Some Artists Are Seeing Red Over a New 'Black'*. National Pubic Radio, http://www.npr.org/sections/thetwo-way/2016/03/03/469082803/some-artists-are-seeing-red-over-a-new-blac. (Accessed 5 May 2016).

Blaszczyk, R. L. (2012) *The Color Revolution*. Cambridge, MA: MIT Press.

Bleicher, S. (2005) *Contemporary Colour: Theory & Use*. New York: Delmar. pp. iv, 23, 24.

Bloch, M. (1989) *Feudal Society: Vol 1: The Growth of Ties of Dependence*. Chicago: University of Chicago Press

——— (1989) *Feudal Society: Vol 2: Social Classes and Political Organisation.* Chicago: University of Chicago Press.

Block, N. (1998) "On a Confusion About a Function of Consciousness". In N. Block, O. Flanagan & G. Guzeldere (eds.) *The Nature of Consciousness: Philosophical Debates*. MIT Press, pp. 375–415.

——— (2000) *Psychologism and Behaviorism*. Website: http://www.nyu.edu/gsas/dept/philo/faculty/block/papers/Psychologism.htm. (Accessed 5 September 2015).

Boas, T. C. & Gans-Morse, J. (2009) "Neoliberalism: From New Liberal Philosophy to Anti-Liberal Slogan". *Studies in Comparative International Development*, 44(2), pp. 137–161.

Boghossian, P. & Velleman, J. D. (1989/1997) "Color as a Secondary Quality". In A. Byrne & D. Hilbert (eds.) *Readings on Color, vol.1: The Philosophy of Color*, Cambridge, MA: MIT Press, pp. 81–104.

––– (1991/1997) "Physicalist Theories of Colour", In A. Byrne & D. Hilbert (eds.) *Readings on Color, vol.1: The Philosophy of Color*, Cambridge, MA: MIT Press, pp. 105–136.

BonJour, L. (2007) "Epistemological Problems of Perception". Stanford Encyclopedia of Philosophy. Website: http://plato.stanford.edu/entries/perception-episprob/. *Stanford Encyclopedia of Philosophy*. (Accessed 02 February 2011).

Bornstein, M. H. (2007) Hue Categorization and Color Naming: Cognition to Language to Culture. In MacLaury, Robert E., Paramei, Galina V. & Dedrick, Don (eds.) *Anthropology of Color*. Philadelphia: John Benjamin's Publishing Company, pp. 3–27.

Boroditsky, L. (2010) *How Language Shapes Thought*. (video online) Website: http://fora.tv/2010/10/26/Lera_Boroditsky_How_Language_Shapes_Thought. (Accessed 10 October 2012).

Bostock, J. & Riley, H. T. (eds.) (1855) "Pliny the Elder". *Natural History*. London: Taylor & Francis, pp. 35-42.

Bouilloc, C. et.al. (2000) *Afrique Bleue: Les Routes de L'indigo, Exhibition Catalogue*. http://www.adireafricantextiles.com/indigointroduction.htm. (Accessed 4 September 2013).

Bourdieu, P. (1980) *The Logic of Practice*. Stanford: Stanford University Press.

––– (1984) *Distinction: A Social Critique of the Judgment of Taste*. London: Routledge.

––– (1986) "The Forms of Capital". In J. Richardson (ed.) *Handbook of Theory and Research for the Sociology of Education*. New York: Greenwood, pp. 241-258.

––– (1999) *Acts of Resistance: Against the Tyranny of the Market*. New York: New Press.

Bourdieu, P. & Wacquant, L. J. D. (1992) *An Invitation to Reflexive Sociology*. Chicago: University of Chicago Press.

Bourne, E. J. (2011) *The Anxiety & Phobia Workbook*. 5th ed. Oakland, CA: New Harbinger Pub. pp. 50–51.

Boym, S. (2005) "Modernities Out of Sync: The Tactful Art of Anri Sala". *ARTMargins Online*. Website: http://www.artmargins.com/index.php/2-articles/177-modernities-out-of-sync-the-tactful-art-of-anri-sala#ftnlink_artnotes1_10. (Accessed 20 March 2014).

Braedley, S. & Luxton, M. (eds.) (2010) *Neoliberalism and Everyday Life*. McGill-Queen's University Press.

Braithwaite, J. & Drahos, P. (2000) *Global Business Regulation*. Cambridge: Cambridge University Press.

Bryant, R. (2001) "Political Ecology: A Critical Agenda for Change?" In Castree, N. & Brawn, B. (eds.) *Social Nature: Theory Practice and Politics*. Malden, MA: Blackwell Publishers, pp. 151-169.

Britt, S. H., Adams, S. C., & Miller, A. S. (1972) "How Many Advertising Exposures per Day?" *Journal of Advertising Research*. Cambridge: Cambridge University Press, pp. 3-9.

Broackes, J. (1992) "The Autonomy of Color". In D. Charles & K. Lennon (eds.) *Reduction, Explanation, and Realism*. Oxford: Clarendon Press, pp. 421–66.

––––– (2010) "What Do the Color-Blind See?" In J. Cohen and M. Matthen (eds.) *Color Ontology and Color Science.* Cambridge, MA: MIT Press, pp. 291–405.

Brockman, H. (1965) *The Theory of Fashion Design*. Hoboken, NJ: John Wiley & Sons.

Brogaard, B. (2010) "Perspectival Truth and Colour Primitivism". In C. Wright & N. Pedersen (eds.) *New Waves in Truth*. New York: Palgrave Macmillan, pp. 249-266.

Brown, D. H. (2006) "On the Dual Referent Approach to Colour Theory". *The Philosophical Quarterly*. Oxford: Oxford University Press, 56, pp. 96–105.

Brown, R. & Rollins, C. D. (eds.) (1969) *Contemporary Philosophy in Australia*. London: Allen and Unwin.

Brown, S. (1992) *Stained Glass: An Illustrated History*. London: Bracken Books.

Brown, W. (2003) "Neo-liberalism and the End of Liberal Democracy". *Theory and Event*. Baltimore, MD: John Hopkins University Press, 7(1).

Bruce, L., Gaskins, M. D., & Mahnke, F. H. (2007) *Color: Communication in Architectural Space*. New York: Springer.

Budini, B. (2009) *Edi Rama, Politikani Pop(ulist)-Star*. Tirana: UET Press.

Bullock, A. & Trombley, S. (eds.) (2000) *The New Fontana Dictionary of Modern Thought*. 3rd edition. New York: HarperCollins, pp. 387-88; and Germino, D. L. (1990) *Antonio Gramsci: Architect of a New Politics*. Louisiana: Louisiana Press University.

Burchett, K. E. (2002) "Color Harmony". *Color Research and Application*, 27(1), pp. 28-31.

Burrows, C. (2013) *Cochineal Extract Update*. Website: http://blogs.starbucks.com/blogs/customer/archive/2012/04/18/cochineal-extract-update.aspx. (Accessed 1 February 2013).

Byrne, A. (2006) "Comments on Cohen, Mizrahi, Maund, and Levine". *Dialectica*. Hoboken, NJ: Blackwell-Wiley Publishing, 60, pp. 337-40.

Byrne, A. & D. R. Hilbert (1997a) *Readings on Color, Vol. 1: The Philosophy of Color*. Cambridge, MA: MIT Press.

––– (1997b) *Readings on Color, Vol. 2: The Science of Color*. Cambridge, MA: MIT Press.

––– (2003) "Color Realism and Color Science". *Behavioral and Brain Sciences*. Cambridge: Cambridge University Press, 26, pp. 1–44.

––– (2007a) "Color Primitivism". *Erkenntnis*. New York: Springer, 26, pp. 3–21.

––– (2007b) "Truest Blue". *Analysis*. Oxford: Oxford University Press, 67, pp. 87–92.

––– (2011) "Are Colors Secondary Qualities?" In L. Nolan (ed.) *Primary and Secondary Qualities*. Oxford: Oxford University Press, pp. 339–361.

Calvert, M. (2010) *Navigating Smell and Taste Disorders*. New York: Demos Medical Publishing, pp. 33–37.

Campbell, J. (1994) "A Simple View of Color". In J. Haldane & C. Wright (eds.) *Reality, Representation, and Projection*. Oxford: Clarendon Press, pp. 257–269.

––– (2005) "Transparency vs. Revelation in Color Perception", *Philosophical Topics*. Arkansas: University of Arkansas, 33, pp. 105–115.

Campbell, K. (1969) "Colors". In R. Brown & C. D. Rollins (eds.) *Contemporary Philosophy in Australia*. London: Allen & Unwin, pp. 132–57.

Campbell, T. & Sitze, A. (2013) *Biopolitics: A Reader*. Durham & London: Duke University Press.

Carlucci, A. & Barber, P. (2001) *Lie of the Land: The Secret Life of Maps*. London: The British Library.

Carr, S., Francis, M., Rivlin, L. G., & Stone, A. M. (1993) *Public Space*. Cambridge: Cambridge University Press.

Carraway, J. C. (1995) *Color as a Trademark Under the Lanham Act: Confusion in the Circuits and the Need for Uniformity, Further Developments on Previous Symposia*, Durham, NC: Duke University School of Law.

Caygill, H. (1998) *Walter Benjamin: The Colour of Experience*. London: Routledge.

de Certeau, M. (1984) *The Practice of Everyday Life*. Translation by S. Rendall. Berkeley: University of California Press.

Chase, W. T. (1971) "Egyptian Blue as a Pigment and Ceramic Material". In R. H. Brill (ed.) *Science and Archaeology*. Cambridge: MIT Press, pp. 80-90.

Chatterjee, A. & Southwood, M. H. (1995) "Cortical Blindness and Visual Imagery. *Neurology*. New York: Springer, 45, pp. 2189-2195.

Chevreul, M. E. & Birren, F. (1987) *The Principles of Harmony and Contrast of Colors and Their Applications to the Arts*. Atglen, PA: Schiffer Publishing.

Chomsky, N. (2013) *A People Centered Society*. Lecture in Chicago viewed on youtube: https://www.youtube.com/watch?v=v-rrXjYi-Uw. (Accessed 9 August 2014).

⸺ (2015) *Because We Say So*. San Francisco, CA: City Lights Publishers.

Chrisment, A. (1998) *Color and Colorimetry*. Editions 3C, Paris: Conseil.

Clark, A. (1993) *Sensory Qualities*. Oxford: Clarendon Press.

⸺ (2010) "Color, Qualia, and Attention: A Nonstandard Interpretation". In J. Cohen & M. Matthen (eds.) *Color Ontology and Color Science*. Cambridge, MA: MIT Press, pp. 203–228.

Cline, E. L. (2012) *Overdressed: The Shockingly High Cost of Cheap Fashion*. New York: Penguin Group.

Color Association of the United States (2014) CAUS Website: http://www.colorassociation.com/. (Accessed 4 August 2014).

Color Marketing Group (2014) CMG Website: http://www.colormarketing.org/. (Accessed 3 August 2014).

Cohen, J. (2001) "Subjectivism, Physicalism, or None of the Above …" *Consciousness and Cognition*. Amsterdam: Elsevier, 10, pp. 94–104.

⸺ (2004) "Color Properties and Color Ascription: A Rationalist Manifesto". *The Philosophical Review*. Durham, NC: Duke University Press, 101, pp. 451–488.

⸺ (2009) *The Red and the Real: An Essay on Color Ontology*. Oxford: Oxford University Press.

Cohen, J., Hardin, C. L., & McLaughlin, B. (2006a) "True Colors". *Analysis*. Oxford: Oxford University Press, 66, pp. 335–339.

⸺ (2006b) "The Truth About "The Truth About True Blue"". *Analysis*. Oxford: Oxford University Press, 67, pp. 162–166.

Cohen, J. & Matthen, M. (eds.) (2010) *Color Ontology and Color Science*. Cambridge: MIT Press.

Combs, A. W., Richards, A. C., & Richards, F. L. (1976) *Perceptual Psychology: A Humanistic Approach to the Study of Persons*. England: University Press of America.

Connolly, W. E. (2002) *Neuropolitics: Thinking, Culture, Speed*. Minnesota: University of Minnesota Press.

Conway, B. R., Hubel, D. H., & Livingstone, M.S. (2002) "Color Contrast in Macaque" vol.1. *Cerebral Cortex*. Oxford: Oxford University Press, 12, pp. 915-925.

Crane, T. (2003) *The Mechanical Mind*. 2nd ed. London: Routledge.

Creswell, J. (2007) *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. Thousand Oaks, CA: Sage.

Cronin, T. W. (2008) "Visual Ecology". *The Senses: A Comprehensive Reference*. In R. Masland & T.D. Albright (eds.) *Vision I*. San Diego: Academic Press, pp. 211-246.

Cullen, G. (1961) *Townscape*. Oxford: Architectural Press.

Darier, E. (1999) "Foucault and the Environment: An Introduction" in Darier, E. (ed.) *Discourses of the Environment*. Malden, Mass: Blackwell Publishers, pp. 1-34.

Davidoff, J. (1991) *Cognition of Color*. Cambridge, MA: MIT Press.

—— (2005) *Colour Categories as Cultural Constructs*, artbrain.org. (Accessed 8 February 2014).

Davies, N. (2000) "Facsimile of tomb painting of Ramesses III [Egyptian] (33.8.7)". In *Heilbrunn Timeline of Art History*. New York: The Metropolitan Museum of Art. Website: http://www.metmuseum.org/toah/works-of-art/33.8.7. (Accessed 22 September 2013).

Davis, M. (1992) *The City of Quartz: Excavating the Future of Los Angeles*. London: Verso.

Davis, S. (ed.) (2000) *Color Perception*. Oxford: Oxford University Press.

Debord, G. (1984) *Society of the Spectacle*. Translated by K. Knobb. London: Rebel Press/Aldgate Press.

Delamare, F. & Guineau, B. (2000) *Colors: The Story of Dyes and Pigments*. New York: Abrams Inc.

Descartes, R. (1644/1988) "Principles of Philosophy". In J. Cottingham, R. Stoothoff, & D. Murdoch (eds.) *Descartes: Selected Writings*. Cambridge: Cambridge University Press.

—— (1988) *The Philosophical Writings of Descartes* in 3 vols. Translation by J. Cottingham, R. Stoothoff, A. Kenny, and D. Murdoch. Cambridge: Cambridge University Press.

Deutsche, R. (1996) *Evictions: Art and Spatial Politics*. Cambridge MA: MIT Press.

Dickson, M., Cataldi, C., & Grover, C. (2010) *Fashion: Tailoring a Strategic Approach Towards Sustainability*. Master's Thesis, School of Engineering: Blekinge Institute of Technology.

Dusenbury, M. M. (2015) *Color in Ancient and Medieval East Asia*. Lawrence, Kansas: Spencer Museum of Art.

Douma, M. (2008) *Pigments through the Ages*. Institute for Dynamic Educational Advancement. Website: http://www.webexhibits.org/pigments/intro/blues2.html. (Accessed 19 March 2013).

Dowling, J. E. (2001) *Neurons and Networks: An Introduction to Behavioral Neuroscience*. Cambridge: Harvard University Press.

Drahos, P. & Braithwaite, J. (2007) *Information Feudalism: Who Owns the Knowledge Economy?*, New York: New Press.

Drescher, T. D. (1992) "The Transformation and Evolution of Trademarks – From Signals to Symbols to Myth". *The Trademark Reporter*. New York: United States Trademark Association, 82, pp. 301-330.

Drobnick, J. (ed.) (2006) *The Smell Cultural Reader*. Oxford & New York: BERG.

Duncan, J. (1978) "Men Without Property: The Tramp's Classification and Use of Urban Space". *Antipode*. Hoboken, NJ: John Wiley & Sons, 10(1), pp. 24–34.

Duménil, G. & Lévy, D. (2013) *The Crisis of Neoliberalism*. Boston: Harvard University Press.

Dummett, M. (1979) "Common Sense and Philosophy". In G. Macdonald (ed.) *Perception and Identity*. London: Macmillan, pp. 1–40.

Dutton, D. (2003) "Aesthetics and Evolutionary Psychology". In J. Levinson (ed.) *The Oxford Handbook for Aesthetics*. Oxford: Oxford University Press.

Eckstut, J. & Eckstut, A. (2013) *Secret Language of Color: Science, Nature, History, Culture, Beauty of Red, Orange, Yellow, Green, Blue, & Violet*. New York: Black Dog & Leventhal.

Eliasson, O. (2012) *Studio Olafur Eliasson*. Cologne: Taschen.

––– (2015) *Olafur Eliasson: Werke/Works 1994-2015*. Berlin: Distanz.

––– (2015) *Olafur Eliasson: Contact*. Paris: Flammarion.

Eliasson, O. & Obrist, H. U. (2008) *Hans Ulrich Obrist & Olafur Eliasson: The Conversation Series, Vol. 13*. Köln: Walther König Pub.

Eliasson, O. & Ursprung, P. (2012) *Studio Olafur Eliasson*. Berlin: Taschen.

Eliasson, O. & Arnault, B. (2015) *Olafur Eliasson: Contact*. Paris: Flammarion.

Elkins, J. (1996) *The Object Stares Back: On The Nature of Seeing*. London: Harvest Inc.

Elliott, C. (2003) *Colour Codification: Law, Culture, and the Hue of Communication*. Unpublished Doctoral Thesis, School of Journalism & Mass Communication. Ottawa, Ontario: Carleton University.

Ensminger, A. H., Ensminger, M. E., Konlande, J. E., & Robson, J. R. K. (eds.) (1994) "Coloring of Food". *Foods and Nutrition Encyclopedia*. Hoboken, NJ: John Wiley & Sons, 1, pp. 458-461.

Erdemci, F. (2011) "Compromise is Grey". In Andrea Phillips & Markus Miessen (eds.) *Actors, Agents, and Attendants Caring Culture: Art, Architecture and the Politics of Health*. Berlin: Sternberg Press, pp. 179-190.

Esposito, R. (2008) *Bios: Biopolitics and Philosophy*. Minnesota: University of Minnesota Press.

Evans, G. (1980) "Things Without the Mind". In Z. v Straaten (ed.) *Philosophical Subjects*. Oxford: Clarendon Press, 10, pp. 76–116.

Farrer, K. T. H. (2000) "Food Additives." In Kenneth F. Kiple & Kriemhild Coneè Ornelas (eds.) *The Cambridge World History of Food*, v.2. Cambridge: Cambridge University Press.

Fechner, G. T. (1860) *Elemente der Psychophysik*, Leipzig: Leipzig Publishing.

Federation of German Landscape Architects (2013) *Periods- Timescales: Contemporary German Landscape Architecture*. Berlin: Walter de Gruyter Publishing.

Feisner, E. A. (2000) *Colour: How to Use Colour in Art and Design*. London: Laurence King.

Feisner, E. A. & Reed, R. (2013) *Color Studies*. 3rd ed. London: Fairchild Books.

Fichte, J. G. (1994) *Introductions to the Wissenschaftslehre and Other Writings (1797-1800)*. Translation by D. Breazeale. Cambridge: Hackett Publishing Company.

Finlay, V. (2014) *The Brilliant History of Color in Art*. Los Angeles, CA: J. Paul Getty Museum.

Food & Water Watch (2008) "Masking the Truth About Meat?". *Carbon Monoxide*. Website: http://www.foodandwaterwatch.org/reports/carbon-monoxide/. (Accessed 5 September 2015).

Forman, D. (2015) *Color Lab for Mixed-Media Artists*. Beverly, MA: Quarry Books.

Foucault, M. (1975/1995) *Discipline and Punish: The Birth of the Prison*. New York: Vintage Books.

––– (1982) "The Subject and Power". In *Critical Inquiry*. Chicago: University of Chicago Press, 8(4), pp. 777-795.

––– (1984) "What is Enlightenment?" In P. Rabinow (ed.) *The Foucault Reader*. New York: Pantheon Books, pp. 32-50.

––– (1990) *The History of Sexuality, vol.1: An Introduction*. Translation by Robert Hurley. New York: Vintage Random House.

––– (1998) *The History of Sexuality: The Will to Knowledge*. London: Penguin.

––– (2003) *Lectures at the Collège de France, 1975-76: Society Must Be Defended*. London: Picador.

––– (2008) *The Birth of Biopolitics: Lectures at the Collège de France, 1978-1979*. New York & London: Palgrave Macmillan.

––– (1981/2011) "Omnes et Singulatim: Towards a Criticism of Political Reason". In S. M. McMurrin (ed.) *The Tanner Lectures on Human Values*. Cambridge: Cambridge University Press.

––– (2013) "Right of Death and Power Over Life, in Timothy Campbell & Adam Sitze, (eds.) *Biopolitics: A Reader*. Durham, NC: Duke University Press, 2013, p. 42.

Franco, I. (1999) *Nouveau Dictionnaire de Mythologie Egyptienne*. Paris: Pygmalion, pp. 60-61.

Fraser, N. (1991) 'Rethinking the Public Sphere: A Contribution to the Critique of Actually Existing Democracy'. In Craig Calhoun (ed.) *Habermas and the Public Sphere*. Cambridge, MA: MIT Press, pp. 109–42.

––– (1995) "Politics, Culture, and the Public Sphere: Toward a Postmodern Conception", *Social Postmodernism: Beyond Identity Politics*. Cambridge: Cambridge University Press, pp. 287-312.

––– (2007) *Transnationalizing the Public Sphere On the Legitimacy and Efficacy of Public Opinion in a Post-Westphalian World*. Website: http://eipcp.net/transversal/0605/fraser/en. (Accessed 3 June 2015).

Fried, M., Obrist, H. O. (2013) *Edi Rama*. Art Basel: JRP|Ringier; Bilingual edition.

Fuchs, C. (2008) *Internet and Society: Social Theory in the Information Age*. New York: Routledge.

Gage, J. (1995/2009) *Colour and Culture: Practice and Meaning from Antiquity to Abstraction*. London: Thames & Hudson.

––– (1999/2011) *Colour and Meaning: Art, Science, and Symbolism*. London: Thames & Hudson.

Garfield, S. (2000) *Mauve: How One Man Invented a Color that Changed the World*. London: Farber & Farber Limited.

Garrison, D. R. (2000) "Theoretical Challenges for Distance Education in the 21st Century: A shift from structural to transactional issues", in *The International Review of Research in Open and Distance Learning*, vol. 1(1).

Gegenfurtner, K. R. & Sharpe, L. T. (eds.) (1999) *Color Vision: From genes to Perception*. Cambridge: Cambridge University Press.

Gehl, J. (2011) *Life Between Buildings: Using Public Space*. 6th edition. Washington, DC: Island Press.

Geller, M. (2007) *Albania Revels in Freedom of Colour Chaos.* Website of the Albania government archives: http://www.tirana.gov.al/?cid=2,58,1502, October 6 2007. (Accessed 12 April 2015).

Gerber, D. (1994) "Constitutionalizing the Economy: German Neo-liberalism, Competition Law, and the 'New' Europe". *American Journal of Comparative Law*. Michigan: University of Michigan Law School, 42(1), pp. 25-84.

Gert, J. (2006) "A Realistic Color Realism". *Australasian Journal of Philosophy*. New York: Routledge, 84, pp. 565–589.

Gillow, J. (2001) *Printed and Dyed Textiles from Africa*. London: British Museum Press.

Gladstone, W. E. (1858) *Studies on Homer and Homeric Age*. Oxford: Oxford University Press.

Godfrey, M., Obrist, H. U., & Gillick, L. (2006) *Anri Sala*, London: Phaidon Press Inc.

Goethe, J. W. (1895/1982) *The Theory of Colours*, Translation by Charles Lock Eastlake, Cambridge, MA: MIT Press.

Golan, T. (2004) *Laws of Men and Laws of Nature: The History of Scientific Expert Testimony in England and America*. Cambridge, MA: Harvard University Press.

Gonnella, R. & Friedman, M. (2014) *Design Fundamentals: Notes on Color Theory*. Berkeley, CA: Peachpit Press.

Gonzalez, J. L. (1970–1975) *A History of Christian Thought: Volume 2 (From Augustine to the eve of the Reformation)*. Nashville, TN: Abingdon Press.

Goonewarddena, K., Kipfer, S., Milgrom, R., & Schmid, C. (eds.) (2008) *Space, Difference, Everyday Life: Reading Henri Lefebvre*. London: Routledge.

Gottdeiner, M. (1985) *The Social Production of Space*. Texas: University of Texas Press.

Gravellini, A-C. & Ringuedé, A. (2005) *Bleus et Ocres de Guinée*. Saint-Maur-des-Fosses: Sepia Press.

Gregory, R. (1987) "Perception". In Gregory, Zangwill (ed.) *Knowledge in Perception and Illusion*. Department of psychology, Bristol: University of Bristol, pp. 598–601.

Gregory, R. L. & Colman, A. M. (eds.) (1994) *Sensation and Perception*. Essex: Longman Publishers.

Griggs, M. B. (2016) *Only One Artist Can Use the Blackest Material In the World*. Popular Science, http://www.popsci.com/only-one-artist-can-use-blackest-material-in-world. (Accessed 5 May 2016).

Grosz, E. (2001) *Architecture from the Outside*. Cambridge: MIT Press.

Grynsztejn, M., Birnbaum, D., Speaks, M., & Eliasson, O. (2002) *Olafur Eliasson*. London: Phaidon Press.

Gullett, E. (1992) "Color and Food". In Y. H. Hui (ed.) *Encyclopedia of Food Science and Technology, v.1*. New York: John Wiley & Sons.

Gurewitsch, M. (2008) *True Colors*. Website: http://www.smithsonianmag.com/arts-culture/true-colors.html?c=y&page=1. (Accessed 5 December 2012).

Habermas, J. (1971) *Knowledge and Human Interests*. Translation by J. Shapiro. Boston: Beacon.

—— (1973) *Theory and Practice*. Translation by T. McCarthy. Boston: Beacon.

—— (1991) *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society*. Translation by Thomas Burger. Cambridge, MA: MIT Press.

Hacker, P. M. S. (1987) *Appearance and Reality*. Oxford: Blackwell Publisher.

Hall, E. T. (1969/1990) *The Hidden Dimension*. New York: Anchor Books.

Hardin, C. L. (1988/1993) *Color for Philosophers: Unweaving the Rainbow*. Indianapolis: Hackett.

—— (2003) "A Reflectance Doth Not a Color Make". *The Journal of Philosophy*. Balitmore, MD: John Hopkins University Press, 100, pp. 191–202.

—— (2004) "A Green Thought in a Green Shade". *Harvard Review of Philosophy*. Cambridge: Harvard University Press, XII, pp. 29–39.

—— (2008) "Color Qualities and the Physical World". In E. Wright (ed.) *The Case for Qualia*. Cambridge, MA: MIT Press, pp. 143–154.

Hardin, C. L. & Maffi, L. (eds.) (1997) *Color Categories in Thought and Language*. Cambridge: Cambridge University Press.

Harman, G. (1996/1997) "Explaining Objective Color in Terms of Subjective Reactions". In A. Byrne & D. Hilbert (eds.) *Readings on Color, vol.1: The Philosophy of Color*, Cambridge, MA: MIT Press, pp. 247–262.

Harrison, B. (1973) *Form and Content*. Oxford: Blackwell.

Hartley, J. (1992) *The Politics of Pictures: The Creation of the Public in the Age of Popular Media*. New York: Routledge, Psychology Press.

Harvey, D. (2005) *The New Imperialism (Clarendon Lectures in Geography and Environmental Studies)*. Oxford: Oxford University Press.

—— (2007) *A Brief History of Neoliberalism*. Oxford: Oxford University Press.

—— (2010) *A Companion to Marx's Capital*. New York: NY, Verso Books.

Heffernan, M. (2012) *Willful Blindness: Why We Ignore the Obvious at Our Peril*. London: Walker Books.

Hegel, G. W. F. (1977) *Phenomenology of Spirit*. Translation by A. V. Miller. Oxford: Oxford University Press.

Henry, C. & Stiglitz, J. (2010) 'Intellectual Property, Dissemination of Innovation and Sustainable Development', *Journal of Global Policy*, 1: pp. 237-51.

Herault, J. (2010) *Vision: Images, Signals and Neural Networks: Modes of Neural Processing in Visual Perception*. Singapore: World Scientific Pub.

Hering, E. (1964) *Outlines of a Theory of the Light Sense*. Translation by L. Hurvich & D. Jameson. Cambridge, MA: Harvard University Press.

Herman, E. S. & Chomsky, N. (2002) *Manufacturing Consent: The Political Economy of the Mass Media*. New York: Pantheon Books.

High Court of Justice, Chancery Division, (Appeal from the United Kingdom Intellectual Property Office, Trade Marks Registry), Société Des Produits Nestlé S.A. v. Cadbury UK Ltd., 2012, EWHC 2637 (Ch) Website: http://curia.europa.eu/juris/document/document.jsf?docid=164950&doclang=EN. (Accessed 01 October 2012).

Highmore, B. (ed.) (2002) *The Everyday Reader*. London: Routledge.

—— (2011) *Ordinary Lives: Studies in the Everyday*. London: Routledge.

Hilbert, D. R. (1987) *Color and Color Perception*. Stanford, CA: CSLI Publications.

Hokusai (1898) "les albums traitant de la peinture et du dessin avec ses prefaces". In *Gazette des Beaux-Arts*, v.3, xiv, xxxvi, in *Japanese Art*. London: South Kensington Museum. Website: https://archive.org/stream/japaneseart00artgoog/ japaneseart00artgoog_djvu.txt. (Assecced 10 March 2012).

Holtzschue, L. (2012) *Understanding Color: An Introduction for Designers*. Hoboken, NJ: John Wiley & Sons.

Holzman, D. C. (2010) "What's in a Color? The Unique Human Health Effects of Blue Light". *Environmental Health Perspectives*. Durham, NC: National Institute of Environmental Health Sciences, 118(1), pp. A22-A27.

Horkheimer, M. (1937) "Traditional and Critical Theory". In M. O'Connell (ed.) *Critical Theory: Selected Essays*. New York: Continuum Press, 1999.

—— (2006) "Problematizing Global Knowledge" in *Theory, Culture, & Society*. Thousand Oaks, CA: Sage, 23, pp. 2-3.

Horton, A. A. (1989) "Designs, Shapes and Colours: A Comparison of Trademark Law in the United Kingdom and the United States". In *European Intellectual Property Review*. London: Sweet & Maxwell, 11(9).

Hovers, E., Ilani, S., Bar-Yosef, O., & Vandermeersch, B. (2003) "Case of Color Symbolism: Ochre Use by Modern Humans in Qafzeh Cave". *Current Anthropology*. Chicago: University of Chicago Press, 44(4).

Howard, J. A. (2000) "Social Psychology of Identities". *Annual Review of Sociology*. Palo Alto, CA: Annual Review, 26.

Huffmann, R. (2004) *The Limits of Violence*. Satya: Baader Meinhof.

Hullinger, J. (2016) *Six Facts About Vantablack, the Darkest Material Ever Made*. Mental Floss, http://mentalfloss.com/article/77190/6-facts-about-vantablack-darkest-material-ever-made. (Accessed 5 May 2016).

Hume, D. (1738/1911) "Treatise of Human Nature". In A. D. Lindsay (ed.) London: J. M. Dent & Sons Ltd.

Hunger, K. (ed.) (2003) *Industrial Dyes: Chemistry, Properties, Applications*. Weinheim: Wiley-VCH.

Hunt, R. W. G. & Pointer, M. R. (2011) *Measuring Colour*. 4th ed. Hoboken, NJ: John Wiley & Sons.

Hyman, J. (2006) *The Objective Eye: Color, Form, and Reality in the Theory of Art*. Chicago: University of Chicago.

Ikas, K. & Wagner, G. (eds.) (2009) *Communicating in the Third Space*. New York & London: Routledge.

International Colour Authority (2014) "Don't Be Off-colour". International Trade Forum, 1, 2001. Website: https://en.wikipedia.org/wiki/International_Colour_Authority. (Accessed10 April 2011).

Iserson, K. V. (1994) *Death to Dust: What Happens to Dead Bodies?* Tucson, AZ: Galen Press, Ltd.

Jackson, F. (1996) "The Primary Quality View of Color". *Philosophical Perspectives*. Hoboken, NJ: John Wiley & Sons, 10.

—— (1998) *From Metaphysics to Ethics*. Oxford: Clarendon.

—— (2000) "Philosophising about Color". In S. Davis (ed.) *Color Perception*. Oxford: Oxford University Press, pp. 152–162.

—— (2007) "Color For Representationalists". *Erkenntinis*. New York: Springer, 66, pp.169–185.

Jackson F. & Pargetter, R. (1987) "An Objectivist's Guide to Subjectivism About Color". *Revue Internationale de Philosophie*. France: Wetteren, etc., Universa, 160, pp. 129–41.

Jacobs, J. (1961) *The Death and Life of Great American Cities*. New York: Vintage Books.

James, W. (1892) "The Stream of Consciousness". *Psychology*, Chapter XI. Cleveland & New York: World Publishers.

Jameson, K. (2010) "Where in the World Color Survey is the Support for Color Categorization Based on the Hering Primaries?". In J. Cohen & M. Matthen (eds.) *Color Ontology and Color Science*. Cambridge: MIT Press, pp. 179–202.

Jenks, C. (1998) *Core Sociological Dichotomies*. London: Sage.

Johnson, E. N., Hawken, M. J., & Shapley, R. (2001) "The Spatial Transformation of Colors in the Primary Cortext of the Macaque Monkey". *Nature Neuroscience*. London: Nature Publishing Group, 4(4), pp. 409-416.

Johnston, M. (1992/1997) "How to Speak of the Colors". In A. Byrne & D. Hilbert (eds.) *Readings on Color, vol.1: The Philosophy of Color*. Cambridge, MA: MIT Press, pp. 137–176.

Johnstone, S. (ed.) (2008) *The Everyday*. London: Whitechapel Gallery/MIT Press.

Jordana, S. (2011) "In Progress: Superkilen / BIG and Topotek 1". *ArchDaily*. http://www.archdaily.com/161389/superkilen-big. (Accessed 29 November 2015).

––– (2013) "Superkilen / Topotek 1 + BIG Architects + Superflex". *ArchDaily*. Website: http://www.archdaily.com/286223/superkilen-topotek-1-big-architects-superflex/. (Accessed 03 November 2015).

Judgment of the Court (6 May 2003) *Trademarks* – Approximation of laws-Directive 89/104/EEC – Signs Capable of Constituting a Trade Mark – Distinctive Character – Colour per se – Orange; Website: http://www.copat.de/markenformen/c-104_01en.pdf. (Accessed 5 October 2014).

Kaiser, P. K. & Boynton, R. M. (1996) *Human Color Vision*. 2nd edition. Washington: Optical Society of America.

Kalderon, M. (2007) "Color Pluralism". *The Philosophical Review*. Durham, NC: Duke University Press, 116, pp. 563–601.

Kandinsky, W. (1912/1977) *Concerning the Spiritual in Art*. Translation by M. T. H. Sadler. New York: Dover.

Kant, I. (1790/2009) *Critique of Judgement*. Translation by J. C. Meredith. Oxford: Oxford University Press.

––– (1788/2011) *The Critique of Pure Reason*. Translation by J. M. D. Meiklejohn. New York: CreateSpace Independent Publishing Platform.

Kees, H. (1943) "Farbensymbolik". In *ägyptischen religiösen Texten*. Göttingen: Vandenhoeck & Ruprecht, pp. 413-479.

Kierkegaard, S. (2000) *The Essential Kierkegaard*. Howard V. Hong & E. H. Hong (eds.). Princeton: Princeton University Press.

Kjellén, R. (1920) *Outline for a Political System; Grundriss zu einem System der Politik*. Leipzig: Rudolf Leipzig Hirzel.

Klaniczay, G. (2002) *Holy Rulers and Blessed Princesses: Dynastic Cults in Medieval Central Europe*. Cambridge: Cambridge University Press.

Klein, N. (2007) *The Shock Doctrine: The Rise of Disaster Capitalism*. New York: Henry Holt & Company.

Klein, Y. (1955/1962) *Les Monochromes de l'Époque Bleue*. Website: http://radicalart.info/nothing/space/klein/blue.html. (Accessed 10 March 2011).

Khan, C. H. (2000) "Xenophanes". In S. Hornblower & T. Spawforth (eds.) *Who's Who in the Classical World*. Oxford: Oxford University Press.

Kincheloe, J. L. & McLaren, P. L. (1994) "Rethinking Critical Theory and Qualitative Research." In N. K. Denzin and Y. S. Lincoln (eds.) *Handbook of Qualitative Research*. Thousand Oaks, CA: Sage, pp. 138-157.

Kitchel, E. (2000) "The Effects of Blue Light on Ocular Health". *Journal of Visual Impairment and Blindness*. NY: AFB Press. American Printing House for the Blind, Website: http://www.tsbvi.edu/instructional-resources/62-family-engagement/3654-effects-of-blue-light. (Accessed 19 March 2014).

Kohn, M. (2004) *Brave New Neighborhoods: The Privatization of Public Space.* New York: Routledge.

Koopman, C. (2011) "Foucault Across the Disciplines: Introductory Notes on Contingency in Critical Inquiry". *History of the Human Sciences*, vol. 24, pp. 1-12.

Kooser, A. (2016) *Vantablack, The World's Blackest Material, Now Comes In A Spray.* CNet, http://www.cnet.com/news/worlds-blackest-material-now-comes-in-a-spray/. (Accessed 5 May 2016).

Korstanje, M (2015) "Review: Why Nations Fail. The Origins of Power, Prosperity and Poverty". *Journal of International and Global Studies*. St. Charles, MO: Center for International and Global Studies. 6(2).

Kotz, D. M. (2015) *The Rise and Fall of Neoliberal Capitalism*. Cambridge: Harvard University Press.

Kraft, A. (2008) "On the Discovery and History of Prussian Blue" *Bulletin for the History Chemistry*. Illinois: University of Illinois at Urbana-Champaign, 33(2), pp. 61-67.

Krantz, J. (2009) *Experiencing Sensation and Perception*. Hanover, ID: Pearson Education, Limited.

Krulwick, R. (2014) *Big Fish Storied Getting Smaller*, Radiolab, NPR News Story, www.radiolab.org, Feb. 5, 2014, (Accessed 11 February 2014).

Kuehni, R. G. (1997) *Color*. Hoboken, NJ: John Wiley & Sons.

―― (2001) "Determination of Unique Hues Using Munsell Color Chips". *Color Research and Application*. Hoboken, NJ: John Wiley & Sons, 26, pp. 61–66.

―― (2003) *Color Space and its Divisions*. Hoboken, NJ: John Wiley & Sons.

―― (2005) *Color: An Introduction to Practice and Principles*. 2nd edition. Hoboken, NJ: John Wiley & Sons.

⸺ (2010) "Color Spaces and Color Order Systems". In J. Cohen & M. Matthen (eds.) *Color Ontology and Color Science*. Cambridge: MIT Press, pp. 3–36.

Kuehni, R. G. & Hardin, C. L. (2010) "Churchland's Metamers". *British Journal for the Philosophy of Sci*ence. Oxford: Oxford University Press, 61, pp. 81–92.

Kvavadze, E., Bar-Yosef, O., Belfer-Cohen, A., Boaretto, E., Jakeli, N., Matskevich, Z., & Meshveliani, T. (2009) "30,000-Year-Old Wild Flax Fibers". *Science*. Philadelphia, PA: American Association for the Advancement of Science, 325(5946) p. 1359.

Laclau, E. & Mouffe, M. (1985) *Hegemony and Socialist Strategy: Towards a Radical Democratic Politics*. London: Verso.

Land, E. H. (1983) "Recent Advances in Retinex Theory". *Proceedings of the National Academy of Sciences*. Washington, DC: United States National Academy of Sciences, 80(16), pp. 5163–9.

Landesman, C. (1989) *Color and Consciousness*. Philadelphia, PA: Temple University Press.

Lassard, Y. & Koptev, A. (2008) *The Roman Law Library*, Website: http://webu2.upmf-grenoble.fr/DroitRomain/. (Accessed 1 February 2013).

Lavoie, M. (Winter 2012–2013) "Financialization, neo-liberalism, and securitization". *Journal of Post Keynesian Economics*. London: Taylor & Francis, 35(2), pp. 215–233.

Law, L. (2002) "Defying Disappearance: Cosmopolitan Public Spaces in Hong Kong", *Urban Studies*. Thousand Oaks, CA: Sage, 39(9), pp. 1625–1645.

Lebrow, V. (1944/1955) "The Nature of Postwar Retail Competition" in *Journal of Retailing*. 301(1), pp. 5-10. Website: http://whatdoino-steve.blogspot.fr/2007/12/victor-lebows-complete-original-1955.html. (Accessed 26 October 2014).

Lee, L. & Quirke, S. (2000) "Painting Materials". In P. Nicholson & I. Shaw (eds.) *Ancient Egyptian Materials and Technology*. Cambridge: Cambridge University Press, p. 30.

Lees, L., Slater, T., & Wyly, E. K. (2010) *The Gentrification Reader*. London: Routledge.

Lefebvre, H. (1961/2002) *Critique of Everyday Life Vol. 2: Foundations for a Sociology of the Everyday*. Translated by J. Moore. London: Verso.

⸺ (1971/2002) *Everyday Life in the Modern World*. Translated by S. Rabinovitch. London: Continuum.

⸺ (1981/2008) *Critique of Everyday Life Vol. 3: From Modernity to Modernism*. Translated by G. Elliott. London: Verso.

⸺ (1992) *The Production of Space*. Translation by Nicholson-Smith. Hoboken, NJ: Wiley-Blackwell.

––– (2009) *State, Space, World: Selected Essays*. Translation by Gerald Moore, Neil Brenner, & Stuart Elden. Minnesota: University of Minnesota Press.

Lefort, C. (1989) *Democracy and Political Theory*. Cambridge, MA: MIT Press.

Leibniz, G. (1989) *Leibniz: Philosophical Essays*. Translation by D. Garber. Cambridge: Hackett Publishing Company.

Lemke, T. (2011) *Biopolitics: An Advanced Introduction.* New York: New York University Press.

––– (2012) *Foucault, Governmentality, and Critique*. Boulder, CO: Paradigm Pub.

Levin, J. (2000) "Dispositional Theories of Color and The Claims of Common Sense". *Philosophical Studies*. New York: Springer, 100, pp. 151–174.

Lewis, D. (1997) "Naming the Colors". *Australasian Journal of Philosophy*. London: Taylor & Francis, 75, pp. 325–42.

Lewis, R. G. (2014) *Color Psychology: Profit From The Psychology of Color: Discover the Meaning and Effect of Colors*. Riana, Tasmania: Riana Publishing.

Liesen, L. T. & Walsh, M. B. (2011) *The Competing Meanings of 'Biopolitics' in Political Science: Biological and Post-Modern Approaches to Politics*. APSA: Annual Meeting Paper.

Little, A. C. & Hill, R. A. (2007) "Attribution to Red Suggests Special Role in Dominance Signaling". *Journal of Cultural and Evolutionary Psychology*, 5. rsbl.royalsocietypublishing.org. (Accessed 29 November 2015).

Livingstone, M. (2002) *Vision and Art*. New York: Harry N. Abrams.

Locke, J. (1706/1961) In J. Yolton (ed.) *An Essay Concerning Human Understanding*. London: Dent & Sons Ltd.

––– (1689/1996) *An Essay Concerning Human Understanding* in four books. Cambridge: Hackett Publishing Company.

Lofgren, O. & Wilk, R. (eds.) (2006) *Off the Edge: Experiments in Cultural Analysis.* Copenhagen: Museum Tusculanum Press.

Londesborough, S. (2008) *LW556 - Intellectual Property Law, Should Colours be Protected by Trademark Law?: What Problems May Arise in Protecting Them?* Unpublished Dissertation/Thesis: University of Kent.

Low, S. & Smith, N. (2006) *The Politics of Public Space*. London: Routledge.

Lowengard, S. (2008) *The Creation of Color in Eighteenth-Century Europe.* New York: Columbia University Press.

Luke, T. W. (1999) "Environmentality as Green Governmentality" In Darier, E. (ed.) *Discourses of the Environment*. Malden, MA: Blackwell Publishers, pp. 121-151.

Lury, C. (2011) *Consumer Culture: Consumer Culture*. 2nd edition. Rutgers: Rutgers University Press.

Lynch, K. (1960) *Image of the City*. Cambridge. MA: MIT Press.

Macey, D. (ed.) (2001) *The Penguin Dictionary of Critical Theory*. London: Penguin Books.

⸻ (1995) *The Lives of Michel Foucault*. New York: Vintage Books.

MacAdam, D. L. (1985) "The Physical Basis of Color Specification". In MacAdam (ed.) *Measurement: Themes and Variations*. Berlin: Springer-Verlag, pp. 1–25.

MacLeod, D. I. A. (2010) "Into the Neural Maze". In J. Cohen & M. Matthen (eds.) *Color Ontology and Color Science*. Cambridge: MIT Press, pp. 151–178.

Madanipour, A. (2004) "Marginal Public Spaces in European Cities", *Journal of Urban Design*. London: Taylor & Francis, 9(3), pp. 267–286.

Mahnke, F. (1996) *Color, Environment, and Human Response*. New York: John Wiley & Sons.

Malette, S. (2009) "Foucault for the Next Century: Eco−Governmentality". In S. Binkley, & J. Capetillo (eds.) *A Foucault for the 21st Century: Governmentality, Biopolitics and Discipline in the New Millennium*. Cambridge: Cambridge Scholars Publishing.

Marcuse, H. (1968) *Negations: Essays in Critical Theory*. London: Heinemann.

Martin, M. G. F. (2002) "The Transparency of Experience". *Mind and Language*. Hoboken, NJ: John Wiley & Sons, 17, pp. 376–425.

Marx, K. (1867) *Capital, Volume One (Das Kapital)*. Chapter Twenty-Five: "The General law of Capitalist Accumulation. www.marxists.org/archive/marx.htm. (Accessed 2 December 2015).

Marx, K., Engels, F., Moore, S., & McLellan, D. (1992) *The Communist Manifesto*. Oxford: Oxford University Press.

Massumi, B. (2002) *Parables for the Virtual: Movement, Affect, Sensation*, Durham, NC: Duke University Press.

Matthen, M. (1988) "Biological Function and Perceptual Content". *The Journal of Philosophy*. New York: Columbia University, 95, pp. 5–27.

⸻ (2000) "The Disunity of Color". *Philosophical Review*. Durham, NC: Duke University Press, 108(1), pp. 47–84.

⸻ (2005) *Seeing, Doing and Knowing: A Philosophical Theory of Sense Perception*. Oxford: Oxford University Press.

Maund, J. B. (1991) "The Nature of Color". *History of Philosophy Quarterly*. Illinois: University of Illinois Press, 8, pp. 253–63.

––– (1995) *Colors: Their Nature and Representation*. Cambridge: Cambridge University Press.

––– (2006) "The Illusion Theory of Colour: An Anti-Realist Theory". *Dialectica*. Hoboken, NJ: John Wiley & Sons, 60, pp. 245–68.

––– (2008) "A Defence of Qualia in the Strong Sense". In E. Wright (ed.) *The Case for Qualia*. Cambridge, MA: MIT Press, pp. 269–284.

––– (2011) "Color Eliminativism". In L. Nolan (ed.) *Primary and Secondary Qualities*. Oxford: Oxford University Press, pp. 362–385.

Maund, B. (1995) *Colours: Their Names and Representation*. New York: Cambridge university Press.

––– (2012) "Color". *The Stanford Encyclopedia of Philosophy*. Winter Edition. E. N. Zalta (ed.) Website: http://plato.stanford.edu/archives/win2012/entries/color/. (Accessed 5 September 2013).

Maxwell, J. C. (1890/1970) "On Colour Vision". In D. L. MacAdam (ed.) *Sources of Color Science*. Cambridge, MA: MIT Press.

McCann, D., Barrett, A., Cooper, A., Crumpler, D., Dalen, L., Grimshaw, K., Kitchin, E., & Lok, K. et.al. (2007) "Food Additives and Hyperactive Behaviour in 3-year-old and 8/9-year-old Children in the Community: A Randomised, Double-blinded, Placebo-controlled Trial." *Lancet.* London: Lancet, 370, pp. 1560–7.

McDowell, J. (1985) "Values and Secondary Qualities". In T. Honderich (ed.) *Morality and Objectivity: A Tribute to J. L. Mackie*. London: Routledge/Kegan Paul, pp. 110–129.

––– (1994) *Mind and World*. Cambridge, MA: Harvard University Press.

McGilvray, J. A. (1994) "Constant Colors in the Head". *Synthese*. New York: Springer, 100, pp. 197–239.

McGinn, C. (1983) *The Subjective View: Secondary Qualities and Indexical Thoughts*. Oxford: Clarendon Press.

––– (1996) "Another Look at Color". *The Journal of Philosophy*. New York: Columbia University, 93, pp. 537–555.

McKenzie, E. (1994) *Privatopia: Homeowner Associations and the Rise of Residential Private Government*. New Haven, CT: Yale University Press.

McKinley, C. (2011) *Indigo: In Search of the Color that Seduced the World*. New York: Bloomsbury.

McLaughlin, B. (2003) "The Place of Color in Nature". In R. Mausfield & D. Heyer, (eds.) *Color Perception: From Light to Object*. New York: Oxford University Press, pp. 475–502.

McLeod, K. (2001) *Owning Culture (Microform): Authorship, Ownership, and Intellectual Property Law*. New York: Peter Lang Publishers.

McQuail, D. (2005) *Mass Communication. 5th ed.*, London: Sage.

Melville, S. (1996) "Color has Not Yet Been Named: Objectivity in Deconstruction". In J. Gilbert-Rolfe (ed.) *Seams: Art as Philosophical Context*. Amsterdam: OPA/G&B Art International, pp. 129-146.

Merrifield, A. (2005) *Guy Debord*. London: Reaktion Books LTD.

Mills, C. W. (1956/2000) *The Power Elite*. Oxford: Oxford University Press.

Miller, E. G. & Kahn, B. E (2005) "Shades of Meaning: The Effect of Color and Flavor Names on Consumer Choice". *Journal of Consumer Research*. Chicago: University of Chicago Press, 32 (1), pp. 86–92.

Milton, R. (1973) *The Nature of Human Values*. New York: The Free Press.

Mirowski, P. & Plehwe, D. (eds.) (2009) *The Road From Mont Pelerin: The Making of the Neoliberal Thought Collective*. Cambridge: Harvard University Press.

Mitchell, D. (1995)*"There's No Such Thing as Culture: Towards a Reconceptualisation of the Idea of Culture in Geography".* Transactions of the Institute of British Geographers, 19, pp. 102-116.

—— (2003) *The Right to the City: Social Justice and the Fight for Public Space*. New York: Guilford Press.

Mizrahi, V. (2006) "Color Objectivism and Color Pluralism". *Dialectica*. Hoboken, NJ: John Wiley & Sons, 60, pp. 283–306.

Morton, J. (2010) "A Color that's Worth $80,000,000". From: http://www.colormatters.com/color-matters-blog/entry/blog-archive/a-color-thats-worth-80000000. (Accessed 20 April 2010).

Mouffe, C. (2000) *The Democratic Paradox*. New York: Verso.

—— (2005) "Some Reflections on an Agonistic Approach to the Public". In B. Latour & P. Weibel (eds.) *Making Things Public: Atmospheres of Democracy*. Cambridge: MIT Press.

—— (2007a) "Artistic Activism and Agonistic Spaces". *Art & Research*, 1(2). http://artandresearch.org.uk/v1n2/mouffe.html. (Assessed 25 November 2015).

—— (2007b)"Articulated Power Relations". In M. Miessen (ed.) *The Violence of Participation*. New York: Sternberg Press.

—— (2008) "Art and Democracy: Art as an Agonistic Intervention on the Public Space". In *Open: Art as a Public Issue*. Rotterdam: Nai Publishers.

Munsell, A. H. (1905/2015) *A Color Notation: A Measured Color System Based, on the Three Qualities of Hue, Value, and Chroma With Illustrative Models, Charts, and a Course of Study Arranged for Teachers*. London: Forgotten Books.

Nassau, K. (1983) *The Physics and Chemistry of Color*. New York: Wiley-Interscience.

Navarro, Z. (2006) "In Search of Cultural Interpretation of Power". *IDS Bulletin*. London: Wiley, 37(6), pp. 11-22.

Negri, A. & Hardt, M. (2000) *Empire*. Cambridge, MA & London: Harvard University Press.

Nida-Rumelin, M. (2006) "A Puzzle About Colors". *Dialectica*. Hoboken, NJ: John Wiley & Sons, 60, pp. 321–336.

Nietzsche, F. (1997) *Beyond Good and Evil: Prelude to a Philosophy of the Future*. 3rd edition. Translation by H. Zimmern. London: Dover Publications.

——— (1882/2013) *The Gay Science*. Translation by J. Nauckhoff. Cambridge: Cambridge University Press.

Noë, A. (2004) *Action in Perception*. Cambridge, MA: MIT Press.

Nolan, L. (ed.) (2011a) *Primary and Secondary Qualities*. Oxford: Oxford University Press.

——— (2011b) "Descartes on 'What We Call Color'". In L. Nolan (ed.) *Primary and Secondary Qualities*. Oxford: Oxford University Press, pp. 81–108.

O'Connor, Z. (2010) *Colour Psychology and Colour Therapy: Caveat Emptor*. Color Research and Application.

——— (2015) *Colour Psychology and Colour*. Australia: Design Research Associates.

Öhman, A. (2000) "Fear and Anxiety: Evolutionary, Cognitive, and Clinical Perspectives". In M. Lewis & J. M. Haviland-Jones (eds.) *Handbook of Emotions*. New York: The Guilford Press, pp. 573–593.

Orna, M. V. (2013) *The Chemical History of Color: Springer Briefs in Molecular Science, History of Chemistry*. New York: Springer.

Ou, L.-C., Luo, M. R., Woodcock, A., & Wright, A. (2004). "A study of colour emotion and colour preference. Part I: Colour emotions for single colours". *Color Research & Application*. Hoboken, NJ: Wiley, 29 (3), pp. 232–240.

Owen-Crocker, G. R. (2004) *Dress in Anglo Saxon England*. New York: Boydell & Brewer.

Oxford Journal (1976) "Smith, Kline and French Laboratories Ltd v Sterling-Winthrop Group Ltd". In *Reports of Patent, Design and Trade Mark Cases*. Oxford: Oxford University Press, 93(20), pp. 511-540.

Packard, V. (1970) *The Waster Makers*. Thousand Oaks, CA: Sage.

Palmer, S. E. (1999) *Vision Science: Photons to Phenomenology*. Cambridge: MIT Press.

Palta, N. (2007) *Spoken English: A Detailed and Simplified Course for Learning Spoken English.* New Delhi: Lotus Press.

Panagia, D. (2009) *The Political Life of Sensation*. Durham, NC: Duke University Press.

Pantone (2014) Pantone Website: http://www.pantone.com/pages/pantone/index.aspx. (Accessed 10 April 2012).

Paoletti, J. B. (2012) *Pink and Blue: Telling the Boys form the Girls in America*. Indiana: Indiana University Press.

Parry, J. D. (ed.) (2011) *Art and Phenomenology*. London: Routledge.

Pastoureau, M. (1991) *The Devil's Cloth: A History of Stripes*. New York: Washington Sq. Press.

––– (2001) *Blue: The History of a Color*. Princeton: Princeton University Press.

––– (2008) *Black: The History of a Color*. Princeton: Princeton University Press.

––– (2012) *The Colour of Our Memories*. Cambridge: Polity Press.

Pautz, A. (2006) "Can the Physicalist Explain Colour Structure in Terms of Colour Experience?". *Australasian Journal of Philosophy*. New York: Routledge, 84(4), pp. 535–564.

Peacocke, C. (1984/1997) "Colour Concepts and Colour Experience". In A. Byrne & D. Hilbert (eds.) *Readings on Color, vol.1: The Philosophy of Color*. Cambridge, MA: MIT Press, pp. 51–66.

Peck, J. (2008) "Remaking Laissez-faire". *Progress in Human Geography*. Sage Journals: University of Wisconsin.

––– (2010) *Constructions of Neoliberal Reason*. Oxford: Oxford University Press.

Petrini, C. (2003) *Slow Food: The Case for Taste*. Translation by William McCuaig. New York: Columbia University Press.

Petru, S. (2006) "Red, Black, or White? The Dawn of Colour Symbolism". *Documenta Praehistorica*, University of Ljubljana Press.

Pinault, M. (1987) "Savants at Teinturiers". In *Sublime Indigo*. Exhibition. Marseilles: Fribourg, pp. 135-41.

Piotrowski, C.; Armstrong, T. (2012). "Color Red: Implications for applied psychology and marketing research". *Psychology and Education: an Interdisciplinary Journal*. Orangeburg, SC: SC State University Press, 49 (1–2), pp. 55–57.

Pomerantz, J. R. (2003) "Perception: Overview". In Lynn Nadel (ed.) *Encyclopedia of Cognitive Science*, v.3, London: Nature Publishing Group, pp. 527–537.

Putnam, R. (2000) *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon and Schuster.

Price, T. R. (1883) "The Color System of Virgil". *American Journal of Philology*. v.4. Baltimore, MD: John Hopkins University Press, pp. 61-87.

Rabinow, P. (ed.) (1991) *The Foucault Reader: An Introduction to Foucault's Thought*. London: Penguin.

Ralston, W. R. S. (1883) *Krylov and his Fables*. British Museum. London: Cassell & Company Ltd., p. 43.

Rama, E. (2012) *Edi Rama: Take Back Your City with Paint. Video, TEDx:* TEDxThessaloniki. Website: https://www.ted.com/talks/edi_rama_take_back_your_city_with_paint?language=en. (accessed 5 March 2013).

⸺ (2005) "You've got to tear this old building down". *International Special Report Article*, European Stability Initiative. Website: http://www.esiweb.org/index.php?lang=en&id=311&film_ID=3&slide_ID=6. (Accessed 10 April 2015).

Ranciere, J. (2009/2007) *The Future of the Image*. Translated by G. Elliott. London: Verso.

⸺ (2009) *The Emancipated Spector*. London: Verso.

Reid, T. (1822/1970) *An Inquiry into the Human Mind*. Edited by T. Duggan. Chicago: Chicago University Press.

Reese, D. (1987) "Palalkastro Shells and Bronze Age Purple: Dye Production in the Mediterranean Basin". *Annual of the British School of Archaeology at Athens*. Cambridge: Cambridge University Press, 52, pp. 201-206.

Richie, D. (1999) *Films of Akira Kurosawa*. 3rd edition. Oakland, CA: University of California Press.

Riley II, C. A. (1995) *Color Codes: Modern Theories of Color in Philosophy, Painting and Architecture, Literature, Music, and Psychology*. Hanover: University Press of New England.

Roberts, J. M. (2008) "Public Spaces of Dissent". *Sociology Compass*. Hoboken, NJ: John Wiley & Sons, 2(2), pp. 654–674.

Rogers, N. (2002) "Coming Over: Halloween in North America". *Halloween: From Pagan Ritual to Party Night*, p.76. Oxford: Oxford University Press.

Roosevelt Institute (2014) "New Deal". Website: http://rooseveltinstitute.org/policy-and-ideasroosevelt-historyfdr/new-deal. (Accessed 10 March 2011).

Rose, N. (1996) *Inventing Our Selves*. Cambridge: Cambridge University Press.

—— (1999) *Powers of Freedom: Reframing Political Thought*. Cambridge: Cambridge University Press.

Ross, P. (2001) "The Location Problem for Color Subjectivism". *Consciousness and Cognition*. Amsterdam: Elsevier, 10, pp. 42–58.

Russell, B. (1912) *The Problems of Philosophy*. London: Oxford University Press.

Rutherford, P. (1999) "The Entry of Life Into History" in Darier, E. (ed.) *Discourses of the Environment*. Malden, MA: Blackwell Publishers, pp. 37-62.

Saunders, P. (1986) *Social Theory and the Urban Question*. New York: Routledge.

Schacter, D. L. (2011) *Psychology*. New York: Worth Publishers.

Schettler, T., Stein, J., Reich, F., & Valenti, M. (1998) *In Harm's Way: Toxic Threats to Child Development.* Website: www.igc.org/psr/. (Accessed 4 September 2015).

Schimkus, A. (2012) *Submissions to the 2012 Review of the National Industrial Chemicals Notification and Assessment Scheme - Council of Textile and Fashion Industries of Australia Limited*. Australian Government Department of Health. Website: http://www.health.gov.au/internet/main/publishing.nsf/content/ohp-nicnas-tfia-2012. (Accessed 8 September 2015).

Schmidt, R. E. (1918) "The Use of Color in Operating Rooms", *The American Architect*. Washington, DC: American Institute of Architects, 114(2), pp. 681-88.

Schmitt, C. (1927) *The Concept of the Political*. Translation by G. Schwab. Chicago: University of Chicago Press.

Schneider, S. & Velmans, M. (2008). "Introduction". In Max Velmans & Susan Schneider (eds.) *The Blackwell Companion to Consciousness*. Hoboken, NJ: Wiley Publication.

Scholte, J. A. (2005) *Globalization: A Critical Introduction*. New York: Palgrave Macmillian.

—— (2008) "Defining globalization". *World Economy*. Hoboken, NJ: Wiley Publications, 31(11), pp. 1471-1502.

Schopenhauer, A. (1966) *The World as Will and Representation, Vol.1*. Translation by E. F. J. Payne. London: Dover Publications.

Scully, K. & Cobb, D. J. (2012) *Colour Forecasting for Fashion*. Carlstadt, NJ: Pantone Publication.

Sennett, R. (1972) *The Fall of Public Man*. New York: Knopf.

Shields, R. (1991) *Places on the Margin*. New York: Routledge.

 —— (2003) *The Virtual*. New York: Routledge.

Sherman, L. W., Gottfredson, D. C., MacKenzie, D. L., Eck, J., Reuter, P., & Bushway, S. D. (1998) *Preventing Crimes: What Works, What Doesn't, What's*

Promising. National Institute of Justice, July 1998, Retrieved as a pdf. (Accessed 19 March 2014).

Shoemaker, S. (1994/1997) "Phenomenal Character". In A. Byrne & D. Hilbert (eds.) *Readings on Color, vol.1: The Philosophy of Color*. Cambridge, MA: MIT Press, pp. 227–246.

Shove, E. (2003) *Comfort, Cleanliness and Convenience: The Social Organization of Normality*. Oxford: Berg.

Simoncini, M. (2011) "Heinz Ketchup: A 135-Year History of Innovation". PDF. HeinzWebsite: http://www.heinz.com/data/pdf/ketchuptimeline.pdf. (Accessed 28 October 2014).

Skeggs, B. (1997) *Formations of Class & Gender: Becoming Respectable*. London: Sage.

Smithers, R. (2012) "Cadbury Hits a Purple Patch with Legal Victory to Secure Trademark", *The Guardian*, Website: http://www.theguardian.com/business/2012/oct/02/cadbury-purple-legal-victory-trademark. (Accessed 15 October 2012).

Snowdon, P. (1980) "Perception, Vision and Causation". *Proceedings of The Aristotelian Society*. Hoboken, NJ: John Wiley & Sons, 81, pp. 175–192.

Soja, E. W. (1980) "The Socio-Spatial Dialectic". *Annals of Association of American Geographers*. London: Taylor & Francis, 70, pp. 207-25.

—— (1996) *Thirdspace: Journeys to Los Angeles and Other Real-and-Imagined Places*. Oxford: Blackwell Publishing.

—— (2000) "Thirdspace: Expanding the Scope of the Geographical Imagination". In Alan Read (ed.) *Architectually Speaking: Practices of Art, Architecture and the Everyday*. New York: Routledge.

—— (2009) "Thirdspace: Toward a New Consciousness of Space and Spatiality". In K. Ikas & G. Wagner (eds.) *Communicating in the Third Space*. New York & London: Routledge, pp. 49-61.

Solnit, R. (2002) *Hollow City: The Siege of San Francisco and the Crisis of American Urbanism*. New York: Verso.

Sommer, D. (2014) *The Work of Art in the World: Civic Agency and Public Humanities*. Durham, NC: Duke University Press.

Sorlini, G. B. (1985) "The Megalithic Temples of Malta". In Por Anthony Bonanno, *Archaeology and fertility cult in the ancient Mediterranean: papers presented at the First International Conference on Archaeology of the Ancient Mediterranean*. University of Malta.

Soutworth, J. (1998) *Fools and Jesters at the English Court*. Stroud: Sutton Publishing.

Spinoza, B. (2002) *Spinoza: Complete Works.* Translation by S. Shirley. Cambridge: Hackett Publishing Company.

Staeheli, L. & Mitchell, D. (2008) *The People's Property? Power, Politics, and the Public*. New York: Routledge.

Steen, K. (1995) *Wartime Catalyst and Postwar Reaction: The Making of U.S. Synthetic Organic Chemical Industry, 1910-1930*. Ph.D. Dissertation/Thesis: University of Delaware, pp. 36-47.

Steger, M. B., & Roy, R. K. (2010) *Neoliberalism: A Very Short Introduction*. Oxford: Oxford University Press.

Steiner, B., BIG Architects, Topotek 1, & Superflex (2013) *Superkilen*. Stockholm: Arvinius + Orfeus Publishing.

Sterling, D. A. (2012) *LED Lights Ruin Retinas, Researchers Say*. Website: www.pureenergyblog.com. (Accessed 19 March 2104).

Sterman, B. (2012) *The Rarest Blue: The Remarkable Story of an Ancient Color Lost to History and Rediscovered*. Guilford, Conn.: Lyons Press.

Stewart, J. (2013) *ROY G. BIV: An Exceedingly Surprising Book About Color*. London: Bloomsbury.

Strawson, G. (1989) "Red and 'Red'". *Synthese*. New York: Springer, 78, pp. 193–232.

Stroud, B. (2000) *The Quest for Reality: Subjectivism and the Metaphysics of Color*. Oxford: Oxford University Press.

Surrey NanoSystems website, https://www.surreynanosystems.com/about. (Accessed 5 May 2016).

Swift, N. (2008) *Edi Rama: Artist, Reformer, and Former Mayor of Tirana*. Website: http: www.citymayors.com. (Accessed 10 April 2015).

Tarte, R. (2009) *Ingredients in Meat Products: Properties, Functionality and Applications*. New York: Springer Publishing.

Taussig, M. (2009) *What Colour is the Scared?*. Chicago: University of Chicago Press.

Temkin, A., Fer, B., Ho, M., & Lawrence, N. (2008) *Color Chart*. New York: The Museum of Modern Art.

Thompson, E. (1995) *Colour Vision: A Study in Cognitive Science and the Philosophy of Perception.* New York: Routledge.

—— (2000) "Comparative Color Vision: Quality Space and Visual Ecology". In S. Davis (ed.) *Color Perception*. Oxford: Oxford University Press, pp. 163–186.

Thompson, J. L. (1995) *An English-language finding guide to John Calvin Opera quae supersunt omnia,* Guilielmus Baum, Eduardus Cunitz, and Eduardus Reuss

(eds.) *Calvin Opera, Corpus Reformatorum, Brunswick and Berlin, 1863-1900,* Pasadena, Calif.

Thompson, K. & Bordwell, D. (2009) *Film History: An Introduction*. 3rd edition. Columbus, OH: McGraw-Hill Higher Education.

Tite, M. S., Bimson, M., & Cowell, M. R. (1984) "Technological Examination of Egyptian Blue". In J. B. Lambert (ed.) *Archaeological Chemistry III*. Washington, D.C.: American Chemical Society, pp. 215-42.

Travis, C. (2004) "Silence of the Senses". *Mind*. Oxford: oxford University Press, 113, pp. 57–94.

Travis, J. (2004) "Fear Not: Scientists are Learning How People Can Unlearn Fear". *Science News*. Science News: Elizabeth Marincola Publisher, 165(3), pp. 42–44.

Tuan, Y-F. (1977) *Space and Place: The Perspective of Experience*. Minneapolis: University of Minnesota Press.

Tye, M. (2000) *Consciousness, Color, and Content*. Cambridge, MA: MIT/Bradford.

—— (2006a) "The Puzzle of True Blue". *Analysis*. Oxford: Oxford University Press, 66, pp. 173–178.

—— (2006b) "The Truth About True Blue". *Analysis*. Oxford: Oxford University Press, 66, pp. 340–344.

—— (2007) "True Blue Redux". *Analysis*. Oxford: Oxford University Press, 67, pp. 92–93.

Van Brakel, J. (1993) "The Plasticity of Categories: The Case of Color". *British Journal for the Philosophy of Science*. Oxford: Oxford University Press, 44(1), pp. 103–35.

Veblen, T. (1899/1915) *Theory of the Leisure Class: An Economic Study of Institutions*. Internet Archive: https://archive.org/details/theoryofleisurec00vebliala. (Accessed 22 September 2013).

VeneKlasen, L. & Miller, V. (2002) *A New Weave of Power, People and Politics: The Action Guide for Advocacy and Citizen Participation*. Oklahoma City: World Neighbors.

Wacquant, L. (2005) "Habitus". In J. Becket and Z. Milan (eds.) *International Encyclopedia of Economic Sociology*. London: Routledge.

Waldman, G. (2002) *Introduction to Light: The Physics of Light, Vision, and Color*. Mineola: Dover Publications.

Ware, C. (2008) *Visual Thinking for Design*. Burlington, MA: Morgan Kaufmann Publishers.

Watkins, M. (2005) "Seeing Red: the Metaphysics of Colour Without the Physics". *Australasian Journal of Philosophy*. New York: Springer, 83(1), pp. 33–52.

Watson, J. (2013) "Eco-sensibilities: interview with Jane Bennett". *Minnesota Review*. Durham, NC: Duke University Press, 81(1), pp. 147–158.

Watts, M., & Peet, R. (eds.) (2004) *Liberation Ecologies: Environment, Development, and Social Movements*. London and New York: Routledge.

Westen, D. (1999) "The Scientific Status of Unconscious Processes: Is Freud Really Dead?". *Journal of the American Psychoanalytic Association*. Thousand Oaks, CA: Sage, 47(4), pp. 1061–1106.

Westkamp (2003) TRIPS Principles, Reciprocity and the Creation of Sui-Generis-Type Intellectual Property Rights for New Forms of Technology', *The Journal of World Intellectual Property*. Hoboken, NJ: Wiley Publications, 6(6), pp. 827-859.

Westphal, J. (1991) *Color: A Philosophical Introduction*. 2nd ed. Oxford: Blackwell Publisher.

Whitfield, T. W. A. & Wiltshire, T. J. (1990) "Color Psychology: A Critical Review". *Genetic, Social & General Psychology Monographs*. London: Taylor & Francis, 116(4), p. 387.

Whorton, J. C. (2011) *The Arsenic Century: How Victorian Britain was Poisoned at Home, Work, and Play*. Oxford: Oxford University Press.

Wiedemann, D., Burt, D. M. Hill, R. A. & Barton, R. A. (2015) "Red Clothing Increases Perceived Dominance, Aggression and Anger". *Biology Letters*. rsbl.royalsocietypublishing.org. (Accessed 29 November 2015).

Wildenstein, D. (2014) *Monet or The Triumph of Impressionism*. Berlin: Taschen.

Wittgenstein, L. (1977/1997) *Remarks on Colour*. G.E.M. Anscombe (ed). Translated by L. L. McAlister & M. Schattle. Oxford: Basil Blackwell.

⸺ (1977/1980) *Culture and Value*. Translation by P. Winch. Chicago: University of Chicago Press.

Wright, E. (ed.) (2008) *The Case for Qualia*. Cambridge, MA: MIT Press.

Yablo, S. (1995) "Singling Out Properties". In J. Tomberlin (ed.) *Philosophical Perspectives*. Atascadero, CA: Ridgeview.

Yu-lan, F. (1983) *A History of Chinese Philosophy*. Translation by Derk Bodde. Princeton: Princeton University Press, v.2, p. 13.

Zajonc, A. (1995) *Catching the Light: The Entwined History of Light and Mind*. Oxford: Oxford University Press.

Zeki, S. (1983) "Color Coding in the Cerebral Cortex". *Neuroscience*. Amsterdam: Elsevier, 9, pp. 741–81.

Zollinger, H. (2003) *Color Chemistry: Synthesis, Properties and Applications of Organic Dyes and Pigments*. 3rd edition. Weinheim: Wiley-VCH.

REFERENCES FOR FIGURES

Introduction

Fig. 01- Superkilen: Red Square from above. 2013. Public domain image; fair dealing for review. Website: http://www.publicspace.org. (Accessed 25 November 2015).

Fig 0.2- Superkilen: The Black Market from above. 2013. Public domain image; fair dealing for review. Website: http://www.archiscapes.wordpress.com. (Accessed 25 November 2015).

Fig. 0.3- Superkilen: the Red Square, the Black Market, and the Green Park. 2013. Public domain image; fair dealing for review. Website: http://www.denmark.dk. (Accessed 25 November 2015).

Section I

Fig. 1.1- Dry Pigments from Mysore, India. 2013. Photograph courtesy of Jor-El C. Zajatz. Public domain image; fair dealing for review . https://earthbycycle.wordpress.com/2013/02/09/incense-and-fame/. (Accessed 23 November 2015).

Fig. 1.2- Naturally Dyed Yarn. 2014. Public domain image; fair dealing for review. http://www.wildbynaturenewmillennium.wordpress.com. (Accessed 25 November 2015).

Fig. 1.3- Detail of dye baths from Fez, Morocco. 2012. Public domain image; fair dealing for review. Website: http: www.kaufmann-mercantile.com. (Accessed 25 November 2015).

Fig. 1.4- Overview of dye baths from Fez, Morocco. 2010. Photograph courtesy by Darby Sawchuk.Public domain image; fair dealing for review. Website: http://www.dsphotogaphic.com. (Accessed 25 November 2015).

Fig. 1.5- *Food Dyes: A Rainbow of Risks*. 2010. Center for Science in the Public Interest. Public domain image; fair dealing for review. http://www.cspinet.org. (Accessed 2 April 2015).

Fig. 1.6- *Psychology of Colour in Logo Design.* 2015. The Logo Company. Public domain image; fair dealing for review. https://thelogocompany.net/blog/infographics/psychology-color-logo-design/. (Accessed 25 November 2015).

Section II

Green gold press pads covers. 1995. Public domain image; fair dealing for review. Website: http://www.museumofintellectualproperty.org. (Accessed 25 November 2015).

The Chocolate War Rages On. 2015. Public domain image; fair dealing for review www.madan-law.com. (Accessed 2 April 2015).

The Chocolate War Rages On. 2015. Public domain image; fair dealing for review www.madan-law.com. (Accessed 2 April 2015).

Decayed meat. 2012. Public domain image; fair dealing for review. www.preventdisease.com. (Accessed 2 April 2015).

When Orange Isn't Orange. 2011. Photo courtesy of David Hammond. Public domain image; fair dealing for review. www.littlelocavores.blogspot.com. (Accessed 2 April 2015).

Section III

River Olafur, Berlin. 1998. Public domain image; fair dealing for review. www.germany.dailysecret.com/berlin/en. (Accessed 23 November 2015).

The River is Always Greener on the Other Side. *Genetology Research*. 2000. Public domain image; fair dealing for review. www.genetology.net. (Accessed 25 November 2015).

Dreaming with Colour. 2014. Public domain image; fair dealing for review. www.mynewcupofcoffee.com. (Accessed 25 November 2015).

Color is a Key to Transforming a City. 2011. Public domain image; fair dealing for review. www.sustainableideas.it/2011/11/color. (Accessed 25 November 2015).

Blue lights after and before. 2015. White Spaces. Public domain image; fair dealing for review. www.unclutteredwhitespaces.com/2015/04/blue-light/. (Accessed 25 November 2015).

Blue lights street scene. 2011. Public domain image; fair dealing for review. www.safe-growth.blogspot.com. (Accessed 25 November 2015).