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Pigment of the Imagination: How Color Accessibility Affects Contemporary Art Practice

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Abstract

The commodification of art over the past three centuries has resulted in an increase of colors available to artists while at the same time leading to artists' alienation from color as they no longer control the raw materials or the making of their colors. Going back to the beginning of art production, *The Red Bears* from the Chauvet Cave were made with red pigments found in the surrounding area and created by the artist's hands. When artists attempted to access colors beyond their local environment, it invariably meant relying on other sources, which might cause them to abandon their work in progress as they waited for pigments that were never going to arrive, as was the case with *The Entombment* (1500) by Michelangelo. In the 19th century, Western colonial powers took control over sources of color and instituted legal protections for pigments—setting a precedent for color copyrighting and the rise of color corporations. Facing this color capitalism, which exploited both the raw material and the artist, some artists began to copyright their works. *Vanta Black* (2014) by Anish Kapoor is one of the most prominent examples of trademarking and copyrighting a color. Other artists moved away from the commodification of color, with works like *Listen*, (2019), by Amanda Brazier, who returned to local earth pigments in an attempt to explore color sovereignty. This paper argues that as artists lost control over their materials, they also lost their control over their art process by being removed from these materials. Within contemporary art practice, artists are now seeking a resolution in two vastly different ways of reconnecting with their resources.

1. Introduction

Almost everything that is colored uses pigments—from clothing to industrial products & ceramics, and printers: they all require pigments. These kinds of colored dust and rocks have played an important role in creating most of the major masterpieces in art around the world, although some of these materials remain shrouded in mystery, being almost too ancient to comprehend. Early works, prehistoric works specifically, tended to work directly with the source material, artists using pigments found in their local environments. *The Red Bears* (Figure.1) from the Chauvet Cave from the Aurignacian period (roughly 43,000 to 26,000 years ago) were created with a red pigment painted across the cave walls, most likely applied with the artist's own hands or a piece of hide as a brush.[1] The bears show the artist depicting life-like forms from their surrounding environment and also are placed in a way that suggests that the light source the artist was working by would have affected their work. The red pigment that was used was red ochre, and deposits of it can still be found in the surrounding area.[2]

Figure. 1, Red Bears, Chauvet Cave, France
http://www.bradshawfoundation.com/chauvet/red_bears.php

Pigments in the contemporary art world are mainly synthetic due to safety concerns and pricing issues – especially in those instances where the former, ancient pigments, have proven to be either too toxic to humans or to have issues with lightfastness.[3] Contrary to earlier artistic practices involving natural pigments, nowadays the artist's hand (i.e. the practice of collecting the material for paint or creating it themselves) is not usually found in the materials involved in contemporary art.

Scholarship on color has historically focused solely on the scientific basis and psychological understanding of color. Ludwig Wittgenstein's *Remarks on Colour* (1978),[4] Barry Maund's *Colours: Their Nature and Representation* (1995),[5] and Hazel Rossotti's *Colour* (1984) studies of color exemplify this school of thought,[6] looking at color through the lens of the viewer. Contemporary color scholarship chooses instead to examine color through cultural context, being supported with scientific evidence instead of relying exclusively on it. Victoria Finlay's *Color: A Natural History of the Palette* (2002),[7] Kassia St Clair's *The Secret Lives of Color* (2017),[8] and Michel Pastoureau's color monographs lay out histories and studies of color through storytelling and cross cultural references,[9] allowing oral histories to be involved in the studies. Batchelors work looks deeper into the psychological studies of color but examines it through a cultural lens, critically looking at Western ideas of thought around color and the aversion to it. John Gage's *Color and Meaning: Art, Science, and Symbolism* (1999) takes a similar path but instead looks deeper into how one's cultural understanding of color affects their perception of it.[10] This scholarship of color overlooks the importance of the pigment trade and artist control over their own medium. This paper examines color through pigments and thus explores color through the lens of cultural economics.

While it is true that the creation of new colors (and the corequisite pigments) allows for growth in art, it is also true that whoever makes and controls the pigments is then also able to decide what kind of art is made. Access to these materials matters because accessibility is crucial in allowing every community to make art and allowing the art to evolve in new directions. Due to their connection with color, pigments are essential to art: without them our entire world view and experience with art would be different. These ideas of pigment are however not viewed equally. Hundreds and thousands of artists work with what they have, not just limited to painters. Within the scope of this paper, three groups of artists are identified. One group who actively works to reclaim their materials, a second that buys into color capitalism and the third group which works with materials given. The first two groups of artists are the focus of this paper as they have identified access as an issue. This paper argues that these two separate groups of artists lost control over their material, they also lost control of art itself and are now seeking a resolution in two vastly different ways of reconnecting with their resources.

2. Pigment Background

Before continuing, it is important to understand the basics of pigments, and to distinguish between the different means of adding color to a surface—such as using a pigment vs. using a dye. A pigment is a nonorganic dried material, usually mixed with a binder or gum to create a paint.[11] Traditionally, pigment has been suspended in linseed oil for many oil paintings, egg yolk in the case of tempera, applied onto dry or wet plaster for fresco, as well as mixed with various other oils and gums.[12] The technique of the art determines what the binder depends on. An important distinction to make is that a pigment is not water soluble, whereas a dye is an organic material that requires a dye bath

to transfer the color. Dye baths act as a binder in this case and while they require a base, such as ammonia or soda ash, to adhere the color to the fabric, they do use water soluble colorants. Ammonia was traditionally gathered from urine and dyers would leave pots outside of their workshops in order to collect it from passersby.[13] Dyers workshops and living spaces were located frequently away from town or at least downwind due to the overpowering smell of the dye baths . What occurs with a dye is a chemical reaction, yet with a pigment, an artist is simply suspending the particles but they remain the same. For example, Indigo is a dye not a pigment. In order to adhere it to fabric, a dye bath is required, but it is packaged traditionally in dry cakes which gives it the appearance of a pigment.

There are of course exceptions to the rules: some pigments were created out of organic material—mummy brown, used the dried remains of Ancient Egyptians to make a deep brown; cochineal red was produced by crushing cochineal beetles; as well as Tyrian purple, which is created from a drop of a chemical found in a sea snail—but in the contemporary world there are almost none created out of organic materials. Another crucial difference between the two is that pigments are more stable when exposed to UV light while dyes usually require an under dye in order to not fade completely. For example, many tapestries that originated in the Renaissance era have experienced the so-called "bluing disease" where the yellow dye fades under the UV light leaving behind the indigo under dye. Paintings from that same era tend to have issues with resin rotting or binders crumbling rather than the pigment in the paint fading, although there are a few instances where that is still an issue.

A further distinction has to be made at this point: The pigments which will be discussed throughout this paper are not just lake pigments, but raw pigment that must be mixed with a medium (typically oil) or a binder to be painted.[14] Lake pigments are traditionally used in watercolor pieces and plein-air paintings. As previously mentioned, many contemporary pigments are synthetically created, ridding them of the pitfalls of their traditional counterparts. Pitfalls could include but are certainly not limited to the pigment being too expensive to acquire or create, it took too much time to create or there simply was not enough of it. Also, unlike the pigments of the past, it is fairly uncommon today for these pigments to not come already pre-mixed into paint.

3. Historical Inaccessibility

Though most of academic color history is Western and the research done on it is fairly recent, to exist in color throughout our daily lives is not a Western idea.[15] Looking at anything about American or other Western societies would beg to differ on this idea, the almost overabundance of colors clear, but in order to examine it closer consider what trends inspire professionalism within corporate workplaces, how are our government buildings adorned, what is considered modern? Typically these are monochromatic, trends that lean towards neutrals, black or white. Throughout most of history, color has been widely restricted to the elite and the wealthy. Yellow was known as the imperial color in China and purple was the same in Rome, and no one was allowed to wear it besides the ruling class. Though, as Finlay illustrates, the rules fluctuated: "The various rules about this color over the centuries was bizarre and fairly confusing. In some reigns (Nero's was one of them, but the fifth-century Christian emperors Valentian, Theodosius and Arcadius were even more vehement) almost nobody could wear the mollusk-dyed purple, on pain of execution. Sometimes (as in the time of Septimus Severus and Aurelian in the third century) women could wear it, but only very special men like generals could join them."[16] Though the official rules changed, this restriction venerated Tyrinian purple even more noble. Han purple and Egyptian blue, both ancient synthetic pigments, are found in the tombs of officials or others of a similarly elite class. The restrictions marked upper class members or members of specific organizations, such as Tibetan monks and nuns being the only people allowed to wear red or orange.[17] It exemplified their wealth due to the high price of the pigment dyed fabric. Similar to a songbird, the brighter someone dressed the more likely they were to be looked at.

Lapis Lazuli, a mineral found in only four locations around the world but most prominently in Afghanistan, has been mined for over 600 years. When ground down, it creates ultramarine pigment. This pigment was very prestigious as it was not only inaccessible for most artists financially, but it also took an incredibly long time to transport the mineral back to Europe to be processed. For instance, Michelangelo left several paintings unfinished due to the mineral not getting to the artist fast enough.[18]

Mummy brown is another well-known and originally organic pigment, which can now be manufactured synthetically. This pigment gained notoriety in the 20th century due to the fact Egyptian mummies were ground up in order to create this specific shade of brown. Human and feline remains were both used in the making.[19] The pigment produced a translucent brown, and was popular throughout the 16th century.[20] It fell out of use as artists found out where the material used for it was being sourced. The trade of this pigment lasted for almost 300 years before a synthetic version of it was created, usually from hematite or goethite. Trade dried up as mummies became very costly to transport and grind up.

As mentioned previously, Tyrian Purple pigment historically had many accessibility issues. Though this purple is attributed typically to the Romans and their obsession with creating imperial robes from purple, the Phonecians however, are the original "creators" of the pigment. The purple is created from the murex, a sea snail that has a pituitary gland that when exposed to oxygen turns purple. Once the gland is exposed to oxygen, the purple is a pigment, not a dye, so it is no longer water soluble.[21]As previously mentioned, a dye bath would have been used to adhere the pigment to fabric. The final color would have been similar to the color of clotted blood. The Romans were well known for restricting access to this color legally, but it also posed problems with the sheer amount of snails required to dye fabric. This caused issues with accessibility due to expense.

While the downfalls of many pigments were well known and documented, the move towards pre-mixed paints and synthetic pigments continued to move artists further away from their material. The loss of knowledge on how to make and use their paints became a disappearing part of the artist's repertoire. The technical knowledge, the physical chemistry, was not being handed down to apprentices from masters and as such, many paintings suffered the consequences. Some pigments and paints simply could not be mixed with each other, the results would often discolor the painting, cause spontaneous combustion, or the paint to eat through the canvas. This continued into the Industrial Revolution, as paint and the knowledge of its making was taken further from the artists hands.

Even before the advent of the Industrial Revolution, artists who had traditionally used their apprentices to mix their paints instead now began turning toward colormen. *Vendecolori*, color men in English, were Venetian merchants around the end of the 15th century who would sell art supplies and premixed pigments.[22] The close commercial ties with Constantinople helped to push Venetian art practice further in terms of color, as more colors were available to them.[23]Readily available colors meant that more artists had access to colors than they could create by hand. Pre-mixed pigments and advances in paint storing techniques allowed artists more time to create art and even allowed them to begin leaving the studios for the plein air work of the Impressionists. Colormen became common practice in art further afield as well, workshops in Antwerp and London setting up shop closer to the turn of the 17th century.[24] Having the creation of their art medium being taken away from the artists worked well as long as the colors worked. An immense amount of trust had to be put in the colormen to deliver the correct paint and not swindle the artist. However, a maybe unintended consequence of this arrangement was that it also led to a large loss of technical knowledge on the artists' part. The final disconnect came with the complete turn over to synthetic pigments in the 19th century and Industrial Revolution. Industrialized pigment production allowed pigments to be created in a lab, making them cheap to create and to access.[25] Chemists in Germany and London created cheap alternatives to otherwise wildly expensive colors such as purple and indigo. William Holman Hunt's speech before the Royal Society of Arts in London in 1880, lamented about the loss of technical knowledge, claiming artists had fallen from grace.[26]

Another great technological advance in the world of painting and working with pigment was the introduction of paint tubes in 1841 by John Goffe Rand.[27] The traditional way of carrying paint into the field or storing paint colors was to take a square of pig bladder and tie it into a small balloon or molded into cakes which was applicable for water colors. The artist would poke a hole in the side of the bladder to squeeze the paint out for their palette. William Reeves discovered that mixing honey in with the traditional gum arabic meant the paint would not dry out as quickly.[28] Disposable paint tubes and fairly malleable paint allowed for a wider range than just the studio for artists to explore, pushing art movements such as the Impressionists further afield. This also meant that paint was easier and cheaper to access, with less work being done for the production of it. Suddenly anyone could be an artist, if they were able to afford these new tubes. The marketability of this began to push paint and pigments further across Europe and across the class divide of the elite.

The first synthetically produced pigment in Europe was Prussian blue in Germany in 1740.[29] As was the case with many of the first chemically synthesised pigments, its creation was an accident, the original experiment was intended to create a red. The creation of new blues allowed many artists access that they would not have had due to scarcity and expense. Much of the chemical advances of this time period were done under pressure of the textile dyeing industry and resulted in pigments that benefited artists as well.[30] This benefit however did push artists further away from the source of their material.

The creation of cadmium yellows allowed for cheap access to the color yellow, though it later was replaced by more lightfast pigments. Many original synthetics were found to be not useful or not lightfast enough for artists to use and were abandoned for newer material. Some pigments however, were so cheap to produce that they led to the destruction of pigment and dye trades, such as the creation of synthetic indigo. The British Indigo industry had already been fragile and collapsed after the introduction of the new pigment.

Many artists ,while enjoying the new access to pigments, did not seem to understand or care about the potential issues with longevity many of these pigments presented. Joseph Mallord William Turner had long standing issues with his works cracking or the paint simply peeling off the canvas.[31] His piece, *Waves breaking against the wind*,

1840[32] (Figure 2) was painted with a red that has long since faded off, even though he was warned about its issues by other critics and artists of his time.

Figure 2, Waves Breaking Against the Wind, Joseph Mallord William Turner, 1840, oil on canvas
https://www.tate.org.uk/art/artworks/turner-waves-breaking-against-the-wind-n02881

Other artists, like Vincent Van Gogh, used paints that had unintended consequences that only were seen much later on. His work, *Still Life: Vase with Pink Roses*, 1890 (Figure 3), is one of the most obvious examples.

Figure 3, Still Life: Vase with Pink Roses, Vincent Van Gogh,1890, oil
https://www.vincentvangogh.org/vase-with-pink-roses.jsp

If viewed today, the roses appear to be white rather than the aforementioned pink of the title. This is due in part to the red paint he used containing lead and the natural oxidation of the lead leaves behind a white film. Lack of chemical knowledge of pigment making may have led to more of these issues due to the artist being removed from the material making process. The pigment used in the paint can be viewed in the Harvard Pigment Library, where pigments and other materials are stored in glass vials. If the lid is removed and the viewer where to look inside, it is a very deep pink.

In the period during and after World War II, natural raw materials were harder to come by and more expensive, so many paint sellers began to use plastics as fillers in commercial paints as well as synthetic pigments.[33] The plastic fillers allowed paint to dry faster than the traditional oil paints, yet still flow smoothly, and acrylic paints warped surfaces such as paper and textiles less, allowing artists to expand the range of their canvases with more ease.[34] Early examples of heavily plastic paints can be seen in the Abstract Expressionist's work.[35] The easy flow of the paint on the canvas in some of the action paintings as seen in Jackson Pollock's *Number 1A*, 1948 (Figure 4), comes from the heavy use of plastic fillers in the house paint. The house paint being used was a cheap alternative to "high art" materials such as oil paints that used natural raw materials to produce.

Figure 4, Number 1A, 1948, Jackson Pollock, 1948 https://www.moma.org/collection/works/78699

Acrylic paints were also paints which used plastic fillers as binders. This allowed them to dry quickly and allowed for artists to work over previous layers of paint without disturbing them. The use of plastic fillers cut down on the overall cost of the paint and allowed more people to access them. The fillers however did dilute the amount of pigments used, causing the overall quality of some acrylics to drop. This transition of the commercial art market to plastics and synthetics negatively impacted artist's practice as they created a disconnect between the physical material and the intention of their art. This transition of colors into a synthetic market also saw the increase of patenting and copyrighting of materials produced by certain corporations and the "hoarding" of natural materials.

4. Modern Color

Crayons are some of the first experiences people have with pigments. Crayola is one of the largest providers of these goods in the US, with a box of eight crayons being only .99 cents.[36] In that box, there is red, orange, yellow, green, blue, purple, brown, and black. The original intent behind the creation of Crayola as a company was to offer a cheaper alternative to the imported crayons of the early 20th century.[37]

Crayola is also one of the largest backers behind modern pigment creation. They fund and purchase new pigments and colors from various creators and make sure that they are available widely to the public. One of their newest colors is based on the newly discovered YInMn Blue, a synthetic blue accidentally created at the University of Oregon, out of yttrium, indium and manganese. The Crayola color is based upon this blue but does not contain any YInMn pigment yet, as they are currently waiting for EPA testing results.[38] The company did crowdsource the name for their newest color which resulted in the name Bluetiful. Examples of both blues can be found in the Forbes Pigment Library.

Due in part to trade secrecy, no information is given on the sources of their pigments. A consequence of this is that artists are unaware of where and how the pigments they use are created. The domination of Crayola as a color corporation and the ease of accessibility to art supplies they produce essentially prices out artists out of that knowledge. This is of course not limited to only Crayola, but is an intrinsic part of color capitalism and color corporations.

In an almost opposition to color corporations, the Forbes Pigment Library explains exactly where pigments are from. The library, located at the Harvard Fogg Museum, is one of the largest modern archives of pigments. They operate as a conservation lab as well, using the archive in order to help the restoration and conservation process of paintings worldwide. There is a similar pigment archive contained at New York University. The beginning of the collection was started by Edward Forbes in order to conserve the modern pigments of the time.[39] Several other catalogues of known pigments were started, but the Forbes collection is the most comprehensive and up to date version. Forbes traveled to Europe, in order to collect the pigments straight from the manufacturers. In order to create this collection, he needed to understand the base materials first, as many pigments were being synthetically manufactured — French Ultramarine and synthetic indigo for example. Many of the pigments found in the collection are no longer manufactured. Some of these such as, Indian yellow watercolor, Mummy brown, Asbestine and Sheele's green, allow conservators and art historians to further their research safely. The collection was kept unchanged until 2005 when the decision was made to update the library with modern pigments from artists such as Rothko and Pollock. The collection is now kept up to date as new colors are created and marketed. The Pigment Library itself does not produce research but it is maintained

within the Straus Center of Conservation which does produce its own research. While not generally open to the public, they are very welcoming to researchers and people interested in their works coming into the labs. The full list of institutions is available on the Boston Fine Arts Museum website.[40]

5. Artists as the Pigment Creators

Pigment is well known for its traditional use, in the creation of paint. As stated earlier, when pigment is mixed with a binder or medium it becomes paint that can then be applied on a variety of surfaces. However, it is not absolutely necessary to mix pigment into a medium to use it in art – in fact, in contemporary usage, pigment has been used by several artists in its raw state as the art form and medium. One well-known artist who pioneered pure pigment is Yves Klein, an artist who was a part of the Nouveau Réalisme movement in France in the 1960s. Part of his work was creating International Klein Blue or I.K.B for short. Another pure pigment artist who is well known across social media is Anish Kapoor and his Vante black pigment which he famously trademarked. In direct opposition to him, Stuart Semple created the Blackest Black and made it available to everyone except Kapoor. These artists address their alienation from their material by working to create synthetic pigments that they "own" and can reclaim.

Most contemporary pigment creations were created to explore ideas of color and light. French artist Yves Klein,[41] combined his mysticism with his art to push ideas of infinity with color. A piece that can be seen by him in the Metropolitan Museum of Art in New York is *Monochrome Blue*,1961 (Figure 5).

Figure 5, Blue Monochrome, Yves Klein, 1961, https://www.moma.org/collection/works/80103

Monochrome Blue's visual analysis can be done quite succinctly. It is flat, it is on a canvas and it is blue. There are however, many different Monochrome Blue pieces and not all are created equally. Some are not as evenly painted or covered as fully with paint. The Monochrome series are large paintings done on cotton stretched over plywood. The paint is applied with a roller, leaving an incredibly textured surface that the viewer's eye does not catch from a distance. The paint is also applied very thickly, dripping off the edges of the pieces, suggesting that the paint was applied while the canvas was horizontal. The paint itself also is textured outside of just leaving a visual texture. It will leave marks if touched with a hand and has a powdery texture to it. They are all made with International Klein Blue, more commonly referred to as I.K.B, a pigment created by the artist with the help of a French chemist. It is a mixture of ultramarine pigment and polyacetate resin and was patented by Yves Klein. It was never copyrighted, only trademarked, however Klein was known to be even encouraging of other artists to use his paint. This was Klein's way of overcoming the alienation of his art.

International Klein Blue explored a mysticism held by the artist. It created infinity, undivided and unconquerable, creating unity out of its vastness.[42] Klein had painted over globes and maps, intending to transcend the need for human imposed borders, similar to his rejection of representation in his paintings. Another artist who shared his ideas was Derek Jarman and it is represented in his work *Blue*, (1993), a film that contains a single shot of I.K.B. Jarman was dying of AIDS related complications and Blue was his final film. He uses this film to narrate his life, which pairs well with Klein's ideas of his blue and his own obsession with death and infinity.[43]

Anish Kapoor is a sculptor who deals with much more physical ideas than that of Klein, with well known works that include *Cloud Gate*, 2006 (Figure 6) (colloquially known as the Chicago Bean) and the acquisition of VantaBlack, as well as hundreds of other installations and sculptures.[44] His ideas of the sublime are meant to challenge the viewer with what they see as physical space.[45]Kapoor is known to use raw pigments in many of his works, some critics saying as a call back to his Indian heritage. Some of his pieces have direct ties to the Festival of Color, Holi, where raw pigments are thrown on participants.

Figure 6, Cloud Gate, Anish Kapoor, 2006
https://www.choosechicago.com/articles/tours-and-attractions/the-bean-chicago/

One large example of his work is his piece *Svayambh* (2007) (Figure 7) which is a site-specific piece created for the Haus der Kunst in Munich.

Figure 7, Svayambh, Anish Kapoor, 2007
https://www.x-traonline.org/article/anish-kapoors-svayambh

It is an installation piece, actualized as multiple tons of wax forming an enormous and oblong cubic shape, which is pushed along a track through several doorways and hallways in the particular exhibition space. Due to the nature of the performance, the dimensions of the piece vary depending on the available space. The name of the piece Svayambh,

is an adaptation of svayambhuva, the Sanskrit word for self-generated or auto generated. Its texture is meant to look sheared off as it is shoved through the openings of entryways and the spatial constriction of hallways. At the beginning of the installation, the texture of the wax object is most likely smooth, to show the contrast more distinctly. The large "middle" piece is made out of raw red pigment, wax, and vaseline. It is pushed on a metal railway around the gallery. There have been many call backs to this piece in particular in many popular media pieces. One example is in BTS's music video, *Interlude: Shadow* 2020.[46] A shot down a hallway ending at a door where the singer is standing shows the red wax streaked down the walls and around the door behind the singer.

The colors that Kapoor uses in his works are bold primaries, a visceral red pigment being used in the wax of Svayambh. Red in Indian and Hindu tradition is a powerful and sacred color. It is used to symbolize a variety of things based on the occasion, ranging from strength and protection to happiness.[47] Almost at odds with the Western ideas of the color red and its symbol of sexuality as something negative. Black is also typically associated with negative connotations, the dark being a frightening place. One of Kapoor's most famous colors is VantaBlack, a material that he acquired in 2017.

VantaBlack (Figure 8) is unlike most synthetic pigments. In the first iterations of it, it had to be "grown" on to whatever surface that it is being applied to.[48]

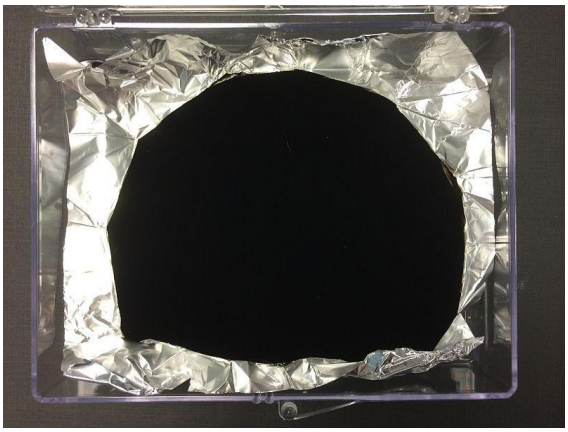

Figure 8, VantaBlack, Surrey Nano System, 2016
https://en.wikipedia.org/wiki/Vantablack#/media/File:Vantablack_01.JPG

As of 2016, there is now a sprayable version that is much easier to work with.[49] Rather than a ground up mineral or other organic structure, it is quite unique in that it is actually made up of nanotubes arranged vertically, VANTA literally stands for vertically aligned nanotubes. They absorb about 99.96 percent of all visible light. If someone were allowed to touch it, it would feel almost like velvet, but the unfortunate consequence is that when the tubes are bent they no longer absorb as much light.

The sprayable version of Vantablack is what Kapoor has access to. Vantablack is not a pigment, it is a material, and has to be applied to objects as such. The sprayable version is not like a spraypaint can, but the object must fit inside of a box where it will be coated in the material. The company responsible for the creation of it is Surrey Nanosystems, and they also are the ones who usually apply the pigment. Kapoor bought exclusive access to the material, which meant that no other artist was allowed to use it. Since it's acquisition, Kapoor has made only two works with the substance, a circular form displayed on the floor and a collaboration watch piece with a swiss watchmaker. The largest scale project was created by British Architect, Asif Khan who created a large scale sculpture in the Hyundai Pavilion for the 2018 Winter Olympics (Figure 9).[50]

Figure 9, Hyundai Pavilion, Asif Khan, 2018
http://www.asif-khan.com/project/hyundai-pavilion/

The outside of the pavilion is covered in lights that protrude from the side but due to the nature of VantaBlack, they appear as stars on a flat expanse.

One of Kapoor's most vocal "adversaries" is Stuart Semple, a British contemporary artist, specifically a painter.[51] He is known for his paintings such as *MESSAGE IN THE WIRE* from 2015 (Figure 10), and his installation pieces, such as the *Pot Shop* from 2019 (Figure 11). Many of his paintings are a mixture of collage and painting, drawing from popular culture throughout their composition. His more widely known work is his creation of new pigments as a direct opposition to Kapoor's acquisition of VantaBlack.

Figure 10, Message in the Wire, Stuart Semple, 2015
http://stuartsemple.com/project/message-wire/

Figure 11, PotShop, Stuart Semple, 2019
http://stuartsemple.com/stuart-opens-permanent-concept-store-pot-shop/

The original pigment creation was a pink pigment that went viral on social media. Pinkest Pink (Figure 12) was developed in direct response and opposition to the copyrighting of VantaBlack. A disclaimer on the website selling this pigment says, "we're not actually sure if this is the world's pinkest pink ever, it could well be! It's the pinkest we could come up with, and we've not seen anything pinker."[52] What does happen with this pigment is that visible light is heavily reflected off of it creating a fluorescent effect.

Figure 12, Pinkest Pink, Stuart Semple
https://www.culturehustleusa.com/products/pink-50g-powdered-paint-by-stuart-semple

Blackest Black (Figure 13) is another pigment created by Semple. While it does not absorb as much light as Kapoor's VantaBlack, "only" 99.94 percent (to VantaBlacks 99.96), it is one of the darkest blacks that is available for public consumption. It is nontoxic and smells similar to black cherries. Due in part to such heavy pigmentation, the texture of its surface is chalky or almost gritty. Since the original creation, Semple has released two other variations of the Blackest Black, now Blackest Black 3.0 is available on his website. Semple's work allows for more accessibility to the materials and his own way of reclaiming them for himself as well.

Figure 13, Blackest Black, Stuart Semple
https://www.culturehustleusa.com/products/black-1-0-pigment-50g-legacy-version

6. Artists using limited Pigments

In response to the alienation from their materials and the abundance of synthetic materials commercially available, some artists chose to return to local earth pigments found in their local environments. This reconnection with their materials lent itself to their practices, many artists choosing to use these pigments to explore their relationship with the land and their environments. These practices have been long established and implemented by indigenious peoples, and have found their way into contemporary art practices as well.

Listen, 2019 (Figure 14), by Amanda Brazier is a piece done in earth pigments. Her works are typically geometric compositions, invoking an almost meditative quality to the process of creating them. Brazier forages for her pigments, working with pigments found in her surrounding environment, similar to prehistoric artists. Pigments are mixed with linseed oil for her oil paintings and mulled into what we would recognize as oil paint. *Listen* is done on panel and is two feet by two feet. There are about five different recognizable colors and various shades of white. Many of her colors come from iron oxides found in Chattanooga where the artist resides. Her work aims to reconnect the artist not just with their material but also examine the relationship that exists between the artist and the land.

Figure 14, Listen, Amanda Brazier, 2019
http://amandabrazier.com/index.php/paintings/oil/

One steward of this idea of reclamation of natural pigments is the Wild Pigment Project. The project is an organization that attempts to help artists reconnect with their local earth pigments, and creates an archival space for pigment scientists and researchers as well.[53] Similar to Stuart Semple, they use social media as a way to share ideas

of natural earth pigment and the works created with them. Their exploration of pigments looks more closely at the questions of what art are people making and what is the artist's attachment to their materials.

In Brazier's work, she forages the pigments in her local environment. The Wild Pigment Project helps educate people on reciprocal foraging and how to care for and work with the local environment within their art practices.[54] This work actively reduces the alienation of artists by synthetic materials, physically reconnecting them with their pigments, similar to prehistoric artists. It also offers a validity to the ancestral work of indigenous artists that is often overlooked in contemporary practice.

7. Conclusion

The commodification of art over the centuries led to an increase in colors available to artists and an increase in the alienation of artists from their materials. The creation of new colors allowed for growth in art, but it also raised the question of control over those colors—and control over color determined what art is made and who makes that art. Many artists benefit from color capitalism with an increase in supplies but the two groups of artists, ones who actively seek to reclaim their materials and ones who buy into color capitalism, explore how access to their materials affects their practices. This paper was written in order to explore what the lack of control over colors and the alienation from materials has done to artists, and how specifically these two groups of artists have sought a resolution to those issues.

Pigments are important but not equally so to everyone. Color capitalism has created a huge variety in what is available to artists to use for their art. Many artists simply work with what they have and do not think about their supplies beyond that. Some artists create their own material but do not look beyond that creation. Pigments however are an intrinsic part of art regardless of the artist's specific intention in their work. No one person or corporation should be allowed to decide who makes art or what art is made based upon material. This color capitalism only further harms art communities, pushing artists further away from their materials and pigments. As our world and society dives deeper into late stage capitalism, it is more important than ever to rediscover color sovereignty and how artists can reestablish their connection with their materials.

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31. Finlay, *Color: A Natural History of the Palette*, 134-147.

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