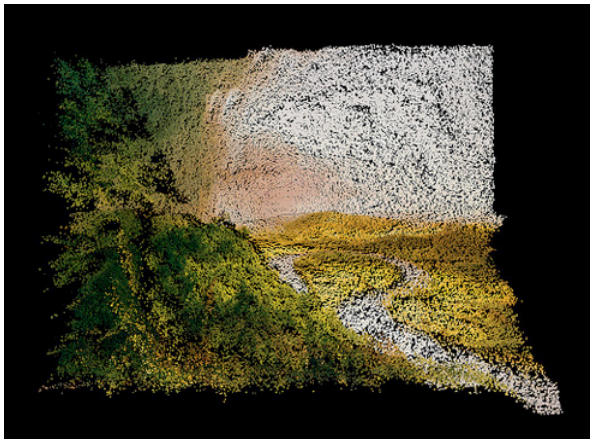
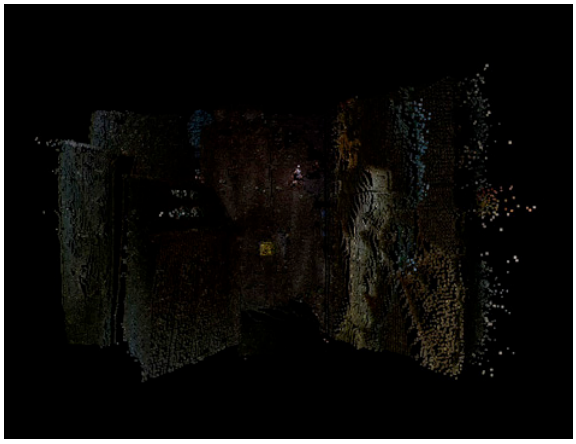



Americana and Technology

Interactive Telecommunications Program (ITP) Thesis Project, Spring 2008

Jeremy Rotsztain (jeremy@mantissa.ca)

Americana and Technology

Americana and Technology is a media installation that contrasts two popular depictions of the American landscape – in the 19th century Hudson River School painting movement and in contemporary science fiction cinema – to examine the stories that influence our beliefs about technology's effect on society.

The installation is composed of two large-scale prints (approximately 60" x 40") and two small computer displays. The prints are computational paintings - computer-generated compositions - that show the American landscape before and after technology. On the displays, a customized software program demonstrates the composition process - sampling textures from digital reproductions of Hudson River School paintings and still frames from science fiction films - slowly constructing the two printed landscapes and creating a cultural gestalt of technology using the visual language and symbolism of these forms.

Two American Landscapes

The Story of the Landscape

"All landscapes are symbolic." - J.B. Jackson[1]

"Landscape is a complex bearer of the possibilities of a plastic interpretation of emotions." - Sergei Eisenstein[2]

"Film landscapes are never purely narrative backgrounds nor simply distracting spectacular settings. They bear the traces of political projects and ideological messages. They press onto viewers' senses, memories, and fears and become part of their memory, carrying the subliminal strength of a past, even archaic, world view ready to come back as future progress." - Marizia Natali[3]

In cinema, landscape imagery is used to describe the setting in which the story unfolds. These cinematic landscapes, however, describe a bigger picture than the setting alone – they play a symbolic role that forms our understanding of environments, societies, and civilizations. They describe the world in which people live their lives - the social and political constructions under which they operate. In some cases, landscapes can also reveal a society's attitudes towards technology. These landscapes are the focal point of "Americana and Technology".

The Hudson River School: The Image of American Beauty

The Hudson River School was a movement in American landscape painting that began in the 1830s and lasted throughout the remainder of the century. Its founder, Thomas Cole, immigrated to America with his family after his father lost his job during the onset of the Industrial Revolution, which was transforming Britain both economically and physically. At a young age, Cole began traveling upstate from his New York City home to paint scenic images of the Hudson River Valley.

Cole's early work depicted a beautiful, pastoral American landscape untouched by technology, showing the power of nature with modest religious connotations. This was a time when America was largely untouched, when explorers were making their way across the country by horse, before train tracks had been laid from east to west.

Thomas Cole's "View on the Catskill, Early Autumn"

Cole was considered to be the first generation of Hudson River School artists. The second included artists such as Albert Bierstadt, Jasper Cropsey and Frederick Edwin Church. Together, using the visual language of European romanticism and the sublime movement (John Constable and J.M.W. Turner), this school of artists documented and idealized the American landscape before its transformation and development. Their works not only popularized landscape painting in the United States and but were also used to promote tourism in upstate New York and the development of the region.

Science Fiction Cinema: Conservatism and Social Criticism

A destroyed Manhattan in Artificial Intelligence

"For the past 60 years, cinema has been widely assumed to have had a powerful impact on popular attitudes towards many things." - Donald W. Meining[4]

"Science, as depicted in the movies, threatens not only to destroy the physical world ... but more to the point, science and technology are slowly invading our minds and bodies, making us more mechanical, more like machines. Science is robbing us of our humanity, metaphorically expressed as our soul: it threatens to replace the individual, God-given soul with a mechanical, machine-made one." - Per Schelde[5]

Science Fiction (SF) is a cinematic genre that depicts humanity in the future: life in off-world colonies, post-modern cities, protected domes, etc. It portrays civilizations and their dominant social structures in order to examine human nature and how it is affected by technology. In Blade Runner, the rich and wealthy leave the city for colonies on other planets, leaving the poor behind. The few who remain live in lavish residences that resemble Mayan temples. In Artificial Intelligence, Manhattan is a completely abandoned city, flooded by water, where only the tops of the skyscrapers are visible. Science fiction cinema frequently depicts an awful world transformed by technology, where humans are less emotional than the robots constructed to help them. Very few portray America with a functioning democracy.

In his book "Androids, Humanoids, and Other Science Fiction Monsters," film theorist Per Schelde presents the idea that SF films function as a modern-day folklore. Long before science and technology, folklore was used by those who had little power and control to explain the things that they did not understand in the world. They invented narratives with monsters and ghosts, which allowed them to make sense of their situations and regain a sense of power in their lives. Schelde writes that SF cinema gives people the opportunity to express their fears about technology and what it may do to humanity and society.

Film theorist Vivien Sobchack outlines seven extremely common landscapes of the city in SF cinema: modernist utopias, destroyed metropolises, overcrowding, post apocalyptic states, cities over the edge, post-modern spaces, and corporate/military controlled zones. These recurring stories - rather conservative in nature - paint a disturbing picture of our technological future that discourages technological progress.

Marizia Natali, writing on images of destruction in disaster films and science fiction cinema, argues that movies which feature aliens attacking our precious planet give incentive for military development programs like Regan's Star Wars: "Science Fiction films have translated the territorial instinct of American culture into landscape special effects, which often reveal Hollywood's basic alliance with the technology of weapons, surveillance and propaganda."[6]

Sublime Landscapes, Spectacular Entertainment

"These spectacular fields - The Stargate, The Mothership, Los Angeles 2019 - testify to the sublimity of technology, an experience of its beauty infused with the anxiety that acknowledges its power." - Scott Bukatman[7]

"Cole's landscapes of power and decadence appear as a series of drams and nightmares about things to come." - Marizia Natali[8]

The 19th century movement in landscape painting commonly referred to as the sublime is typically associated with artists like J.M.W. Turner and the Hudson River School painters. The movement arose from Edmund Burke's discussions on aesthetics in his treatise “Philosophical Inquiry into the Origin of Our Ideas of the Sublime and the Beautiful.” Burke set out to define the idea of sublime - that aesthetic emotion effect created when we encounter something vast, immense, powerful, ugly and awe-inspiring. According to art theorist Gerald Finley, “Burke associated pleasurable sensations with beauty while he linked pain with the sublime.”[9]

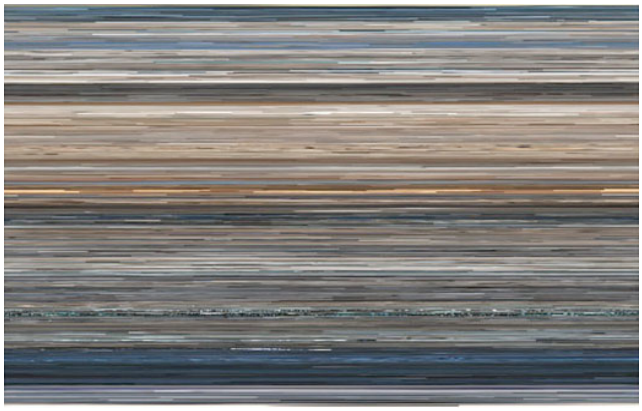
Finley wrote that scale played an important role in the synthesis of the sublime: “greatness of size or vastness was likewise a quality of the sublime according to Burke. He believed that in objects of great size, some 'quality of extension' is able to produce a greater impact on others. Infinity, which Burke believed might be related to vastness, was a further ingredient of the sublime. Infinity, he declared, 'has a tendency to fill the mind with that sort of delightful horror, which is the most genuine effect, and the truest test of the sublime.'”[10]

Film theorists such as Scott Bukatman have been making connections between the aesthetic affects of sublime paintings and special effects sequences on audiences. In fact, a series of paintings called "The Course of Empire" by Thomas Cole uses the same imagery found in SF cinema to depict the birth, growth, success and death of a civilization. Particularly in SF cinema, special effects use a contemporary form of paint, pixels and vectors, to generate spectacular images that take viewers into a place beyond comprehension. Like Burke’s sublime, these sequences are not particularly beautiful in nature (often depicting destruction) and are also displayed at an enormous scale on movie theatre screens.

Computational Painting

Computational painting is a term used to describe the use of computers for making images with a painterly composition approach or visual quality. Of course, in this day and age, nearly all images are created digitally, using ubiquitous computer applications like Photoshop and Illustrator. This term specifically refers to the *synthesized* image - those that are created instead of taken (ie. photographs). Computational paintings may be generated using logical processes (i.e. the work of Casey Reas, co-developer of the Processing program language), or visualizations of mathematical or geometrical patterns (VJ artist Sanch), or the output of computer vision algorithms such as motion detection, object recognition, or color tracking (Golan Levin and Zach Lieberman).

Painting with the Medium



Jason Salavon's "Top Grossing Film of All Time"

Digital media, in their true nature, are composed of bits and bytes, ones and zeros, that describe their appearance or content. These objects can be completely synthesized or digital recordings of an analog source. One unique quality of digital media is that their data can be transformed into almost anything else - a digital representation of a color, for example, can be inverted, scaled, or simply replaced by another using a computer algorithm – or turned into a sound.[11]

What I refer to as "media painting" is a form of digital appropriation (or "sampling") that works with color information to generate new imagery. Data becomes the *material* used to generate new images and computer algorithms are the *composition methods* for applying the color information onto a computer screen.

The color data comes from digital sources - images 'scraped' from websites, online photography archives and search engines (flickr.com or Google image search), DVDs of Hollywood movies, online video distribution sites like YouTube, or photographs taken with a digital camera. In this day and age, there is no shortage of accessible digital information.

French curator and theorist Nicholas Bourriaud criticizes digital image making for being purely synthesized and therefore devoid of content. On the contrary, this is not simply a technological process, a simple transformation of data, but rather a form of appropriation that creates the opportunity to explore and manipulate the conventions and themes of the original material. For example, when Jason Salavon goes frame by frame though the film Titanic, taking the average color of each image and recomposing the colors into a single digital image (in his work "The Top Grossing Film of All Time"), he makes us consider how color can be used dramatically in cinema to tell a story.

While media painting does provide an opportunity to explore purely aesthetic interests, it also creates a space for exploring the themes and narratives of the original material. Works in the first category may explore traditional aspects of visual arts - such as color, form, and movement. Daniel Shiffman's painterly software mirrors created are a good example of this approach. Works that explore narrative directions can either maintain or contrast the stories or themes from the selected material. Salavon's "100 Special Moments" uses image averaging (of wedding photos, graduation photos, etc.) to highlight the similarity of cultural experiences in America. Cinema, with all its narratives, character portraits and landscape compositions, offers a tremendous amount of aesthetic and conceptual material to work with.

Appropriation and Language

Richard Prince's "Untitled (Cowboy)"

Douglas Gordon's "24-Hour Psycho"

This practice of media painting follows the path of 80s and 90s appropriation artists such as Richard Prince and Douglas Gordon, but with a more computer-centric approach. What connects these forms is their mutual interest in the language of media.

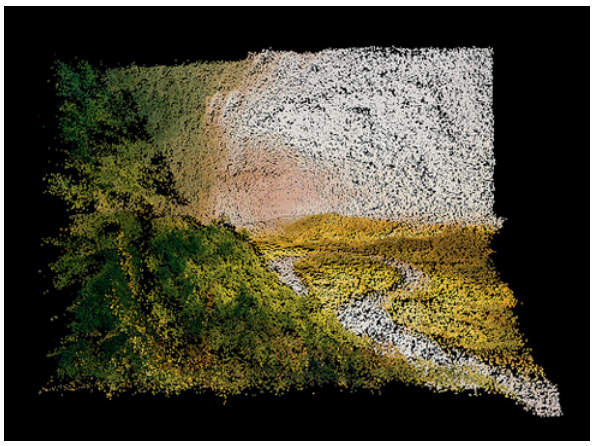
One of the considerable intentions of the 80s appropriation movement was to examine the language of mainstream media. Richard Prince deconstructed print advertising. His most famous work "Untitled (Cowboy)" (1980) is a re-photographed cigarette advertisement featuring the American cowboy icon - the Marlboro Man. His treatment of the original material was minimal, cropping the image (to remove advertising copy), scaling it slightly, and blurring the background areas to shift the view towards the cowboy. His photographs give viewers the opportunity to contemplate the imagery that they encounter on a daily basis in a whole new light.

Another technique of Prince's is repetition - he reveals the techniques and language of advertising by highlighting commonly used imagery. For "Untitled (Four Women With Hats)" (1980), he selects four different advertisements promoting white hats, each of which feature a French-looking woman standing on a bridge, gazing leftward. This simple work, presented as four neighboring photographs, clearly shows how advertising, which markets products to instill a sense of originality, uses unoriginal imagery to convey its messages.

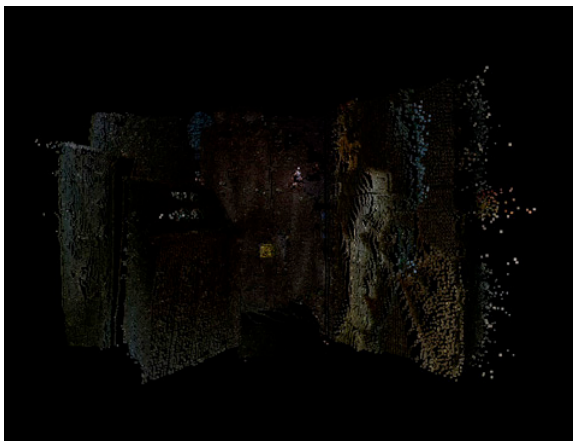
A decade later, for "24-Hour Psycho" (1993), Douglas Gordon took Hitchcock's classic film and slowed it down to the duration of a day. This minimal treatment is Gordon's own technique for reframing the cinematic event. It breaks down the cinematic continuity that allows viewers to believe that the activities are real, shifting their focus away from the original narrative, towards the raw movement and emotions of the actors.

These re-framing practices are akin to Luke DuBois' work for "Academy", for which he programmed a computer to compress each of the 77 Academy Award winning films temporally into a single minute, thereby enabling us to see how the language of American cinema has progressed since 1920s.

The Installation: Two Prints & Two Screens



"The Oxbow"



"Los Angeles, 2019"

Comparative Landscapes

The installation is composed of two large-format "computational paintings" - digital prints - approximately 60" by 40". The image that hangs on the left, "The Oxbow" is a transformation of Thomas Cole's masterpiece of a romanticized New England landscape. The image on the right, "Los Angeles, 2019," based on a landscape shot of Los Angeles in the future taken from the film Blade Runner, shows a highly technological post-modern city. Two small computer displays sit on the floor below each of the prints. On screen, an animation demonstrates the computational process used to generate the prints.

Hanging beside each other, the two images contrast how the cherished American landscape is portrayed before and after technology. The installation shows the narratives through which America was developed in the 19th century and how, presently, conservative attitudes towards technology are manifest and communicated through science-fiction cinema.

The Oxbow

Thomas Cole's "The Oxbow"

"The Oxbow" is based on the Thomas Cole painting "The View from Hollyoake in Northampton Massachusetts, after a Thunderstorm." Painted in the 1830s, this famous work commonly referred to as "The Oxbow" shows an almost pristine, untouched area with a small farming settlement speckled across the landscape.

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The violent thunderstorm on the left-hand side of the painting has just passed over the small settlement and the rain is still visible in some areas. The clouds are dark and vicious - showing the wrath and power of nature. In the middle ground stands a lush forest, but in the foreground the trees have been destroyed (possibly by the same storm) - one tree sill stands, though missing branches, and a few stumps sit nearby.

"The Oxbow" is a truly pastoral depiction of the American landscape. It is the idealized image of a little town surrounded by the beauty of nature - of a snaking river and rolling hills in the background. It romanticizes the life of settlers in America, for the development of the region and the promotion of tourism. In "The Oxbow," technology has touched the face of the earth (through farming and the development of a small settlement), but still nature is more powerful.

Los Angeles, 2019

Technological landscape from Blade Runner

This postmodern landscape of Los Angeles is a still frame from Ridley Scott's 1981 science-fiction classic Blade Runner. It is the construction of Syd Mead, a set designer who made hundreds of matte paintings that were used in the film to create a futuristic yet gothic image of Los Angeles forty years into the future, and Douglas Trumbull, the special effects artist who brought Mead's vision to life.

In this shocking and awe-inspiring landscape, technology is completely overpowering. It has created enormous skyscrapers that tower in the background - entire cities within a single building. The skyline is dominated by pervasive architectural screens and floating blimps promoting Coca Cola and off-world colonies. Cars fly through the abysmally colored sky, slowly hovering down to their destinations.

According to Bukatman, "the monumental headquarters of the Tyrell Corporation ... is vast beyond normal human experience, and in fact the human form is almost always missing from these intricate visions."[11] This is a landscape without nature - there is absolutely no natural sunlight or greenery to speak of.

The Computational Painting Process

The two large-format images in Americana and Technology ("The Oxbow" and "Los Angeles, 2019") were generated using a process akin to mosaic imaging. But whereas in mosaic imaging a collection of entire images is used to reform a brand new image (an approach already exhausted by the advertising world to communicate collective emotion and show human connections), this approach uses smaller textures sampled from images. It's akin to taking tiny images of brush strokes from thousands of paintings to compose a new "painting". This process gives the final product a texture that emulates the densely layered brush strokes of a physical painting and offers another layer of experience to viewing the work.

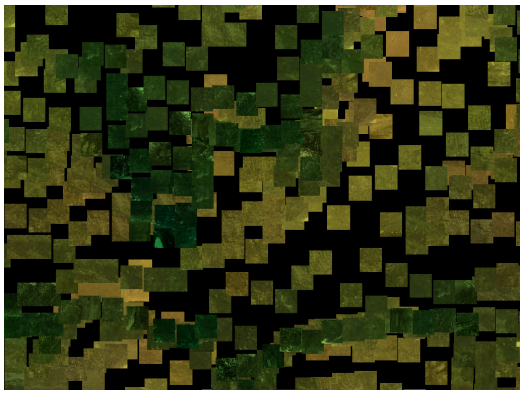
Samples extracted from a painting

Transforming samples

"The Oxbow" was composed of samples from other Hudson River School paintings. These images, now part of the public domain, were either found online or scanned from art history books. "Los Angeles, 2019" was composed of samples from city landscapes taken from approximately 40 science fiction films. These images, it turns out, are commonly used to introduce the setting where the narrative takes place.

The two compositions were generated using software programmed in C++ (using the open-source openFrameworks library[12]). The software searches through the collection of images, looking for colored textures (images that have a variation in texture, but not completely homogenous or pure in color). This gives the final images their own painterly texture, as each unique brush stroke does in a painting. Once a texture has been found, the software extracts its luminosity[13] (brightness) and stores it in its memory.

The software searches through the source image (either the painting or film still, which is used as a color map to form the composition) to find a pixel with the same luminosity as the one stored in its memory. When it finds that pixel, it takes its hue and saturation and adds it to the stored luminosity to form a new colored texture – a digital equivalent of mixing paint. This synthesized texture becomes a stroke in the final composition. Like a piece of a puzzle, this new texture is placed in the appropriate position on screen. If the software fails to find a match, it moves on to the next image in the collection.



Close-up of The Oxbow

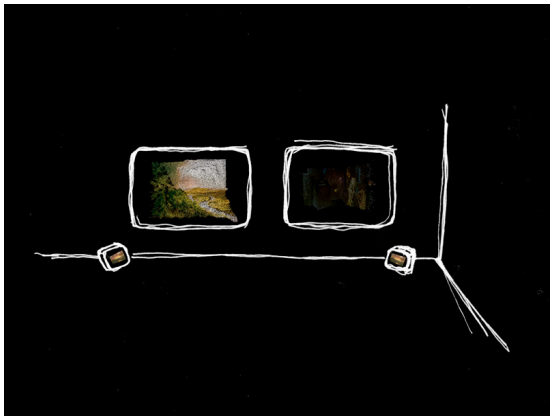
When the texture is animated into place, its depth (or distance from the screen) is determined by the brightness of the texture (commonly referred to in computer graphics as "bump-mapping") and a map that describes the features of the Cole painting or scene from Blade Runner (i.e. the sky, mountains, or buildings). This treatment gives the computer-generated image an unusual and dynamic three-dimensionality - hinting at what might be the technological sublime.

The software repeats this process, looking through all the pixels from the collection of images, to recompose large-scale representations of the original painting and film still. The completed "computational paintings" were printed on the wide-format printers at New York University's Advanced Media Studio.

Imaging a Cultural Gestalt

The term “cultural gestalt” arises from Gestalt psychology, which developed theories regarding how we make sense of visual information. Gestalt’s famed idea is “the whole is greater than the sum of its parts.” Cultural gestalt therefore refers to a larger cultural understanding – or “meta-narrative.” This process of constructing an image using samples from science fiction cinema and the Hudson River School of painting creates a cultural gestalt of technology - it provides viewers with a digitally mediated perspective that is greater than they can experience on their own.

Two Displays: Construction and Storytelling



Arrangement of prints and screens

Still from simulation software

On each of the computer displays, a software-based demonstration of the composition process (described above) slowly constructs the respective images. In the process, the software displays all the images in the two collections - all of the pristine landscapes of the Hudson River School and the anti-technological sentiment of science fiction cinema - giving viewers an opportunity to see the visual language used in popular culture that informs our own attitudes towards technology.

The software will take approximately 20 days to create each image. So while viewers will not be able to watch the entire process, they will be given a chance to make sense of the image-making process - unlike in other digital compositions where the images are constructed in advance and the algorithms hidden from the viewer.

Conclusion

The installation itself was designed to provide a rich experience - where viewers can find a lot to consider and explore. Looking at the two prints, they can play with the images' resolution - moving back to view the entire image and closer forward to examine their unique textures. They can also watch the construction unfold on the two computer displays, which illustrate the computational painting process and display all of the images used.

In response to the criticism by Bourriaud and considering the problem of communicating a story or meaning in algorithmic art, a considerable challenge for this project create a narrative that illustrates the anti-technological sentiment in the painting movement and cinematic genre. Incorporating the software proved to be very helpful in accomplishing this task - and in informing what could possibly be a confusing interpretation of how the work was made. I definitely plan to further develop this technique in other projects that explore the language of media.

Notes

1. Lefebvre, Martin. *Landscape and Film* (p. 53).

2. Lefebvre, Martin. *Landscape and Film* (p. xii).

3. Natali, Maurizia. “The Course of Empire: Sublime Landscapes in the American Cinema” (p. 100).

4. Lefebvre, Martin. *Landscape and Film* (p. xvi).

5. Schelde, Per. *Androids Humanoids and Other Monsters* (p. 9).

6. Natali, Maurizia. “The Course of Empire: Sublime Landscapes in the American Cinema” (p. 103).

7. Bukatman, *Blade Runner* (p. 25).

8. Natali, Maurizia. “The Course of Empire: Sublime Landscapes in the American Cinema” (p. 97).

9. Finley, Gerald. “The Genesis of Turner’s ‘Landscape Sublime’” (p. 142).

10. Finley, Gerald. “The Genesis of Turner’s ‘Landscape Sublime’” (p. 143).

11. These ideas were first discussed by William J. Mitchell in “The Reconfigured Eye”, Lev Manovich in “The Language of New Media” and Nicholas Negroponte in “Being Digital.”

12. openFrameworks (http://www.openframeworks.cc) is a library for working with images, movies and 3D graphics for C++. It is designed for people who are looking for something more powerful and faster than Processing (http://www.processing.org).

13. Typically, digital images are described as pixels using RGB components, each of which stores the amount of red, green and blue that form their color. Pixels can also be described as a function of their HSL values (hue, saturation, and luminosity). The hue describes the pure tone from the color spectrum (red, orange, yellow, green, blue, indigo, violet). The saturation describes the amount of color - from zero (a grey image) to fully saturated (a color image) - and luminosity describes its brightness.

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Appendix 1: Paintings Used

A Country Home (Frederic Edwin Church, 1854)
The Garden of Eden (Thomas Cole, 1828)
Kindred Spirits (Asher Brown Durand, 1849)
Days of Elizabeth (Jasper Francis Cropsey, 1853)
The Spirit of Peace (Jasper Francis Cropsey, 1851)
The Tempel of Neptune (Jasper Francis Cropsey, 1859)
The Course of Empire: The Savage State (Thomas Cole, 1836)
The Course of Empire: The Arcadian or Pastoral State (Thomas Cole, 1836)
The Course of Empire: The Consummation of Empire (Thomas Cole, 1836)
The Course of Empire: Destruction (Thomas Cole, 1836)
The Departure (Thomas Cole, 1837)
The Spirit of War (Jasper Francis Cropsey, 1851)
New England Scenery (Frederic Edwin Church, 1851)
Early Morning at Cold Spring (Asher Brown Durand, 1850)
The Evening of Life (Asher Brown Durand, 1840)
The View from Hollyoake in Northampton Massachusetts, After a Thunderstorm (Thomas Cole, 1836)
Twilight in the Wilderness (Frederic Edwin Church, 1860)
View on the Catskill, Early Autumn (Thomas Cole, 1837)
The Voyage of Life: Childhood (Thomas Cole, 1839-40)
The Voyage of Life: Youth (Thomas Cole, 1840)
Autumn - On the Hudson River (Jasper Francis Cropsey, 1860)
A Pastoral Scene (Asher Brown Durand, 1858)
Forest in the Early Morning (Asher Brown Durand, 1855)
Niagra (Frederic Edwin Church, 1857)
Summer, Lake Ontario (Jasper Francis Cropsey, 1859)
Kauterskill Clove (Sandford Robinson Gifford, 1862)
The Trout Pool (Worthington Whitteredge, 1870)
Lake George (John Frederick Kensett, 1869)
Thanatopsis (Asher Brown Durand, 1850)
The Millennial Age (Jasper Francis Cropsey, 1854)
Above the Clouds of Sunrise (Frederic Edwin Church, 1849)
Twilight, "Short Arbiter 'twixt Day and Night" (Frederic Edwin Church, 1850)
Expulsion from the Garden of Eden (Thomas Cole, 1827-28)
Yosemite Valley (Albert Bierstadt, 1868)

Appendix 2: Films Sampled

12 Monkeys
1984
2001
Aeon Flux
Artificial Intelligence (AI)
Armageddon
Batman
Blade Runner
Brazil
Dune
Escape From LA
Event Horizon
Fifth Element
Independence Day
I, Robot
Johnny Mnemonic
Logan's Run
Metropolis
Return of the Jedi
Robocop
Running Man
Silent Running
Sky Captain and the World of Tomorrow
Starship Troopers
Star Trek
Terminator 2
Terminator 3
The Time Macine
Things To Come
THX 1138
Total Recall