

**Artistic Exploration in Scientific Research And Technology**  
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**Lecture – 18**  
**When Art Meets Science and Technology**

Hello friends, in the last class we discussed about interdisciplinary approach towards learning. We discussed that new and radical knowledge is produced in the frontiers of disciplinary knowledge. We saw that how a practitioners from science and technology have often talked about art and need to incorporate, art in their research and in their work. And also practitioners of art often talked about the need for rationality or the logic of science and technology and how it helps to thing their work better.

So, today in today's class, let us see some example how bringing together science and technology to along with art what responses they produce? What are the kind of things that are produced when science and technology is brought together with art. So, let us see how or what are the responses that are produced when art made science and technology? I have put together some examples around the world when artist or practitioners of science and technology has brought art along with the work or artist has brought science and technology with their work, and what are the results that are produced when this kind of interdisciplinary methods are used.

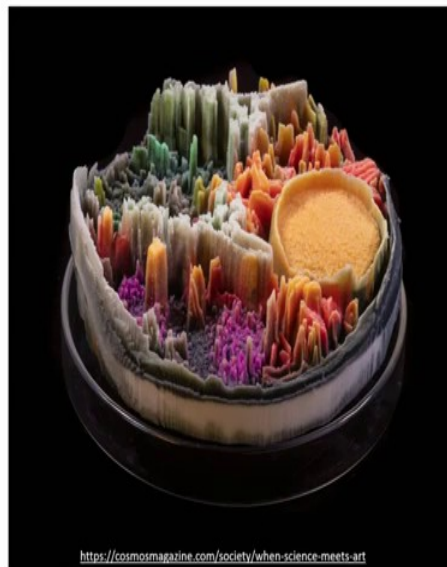
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**Remote Sensing by Suzanne Anker**

In her *Remote Sensing* series Suzanne Anker uses the Petri dish to juxtapose microscopic and macroscopic worlds. The title refers to new digital technologies that can picture places too toxic or inaccessible to visit.

The fabrication of this piece began with 2D digital photographs, which were then converted into 3D virtual models. This petri dish with its luxuriant growth emerged from the 3D printer.

These micro-landscapes offer the viewer a top-down topographic effect assembled by zeros and ones. Each configuration of these works takes the geometry of a circle, inspired by the Petri dish, and crosses the divide between the disciplines of art and science.



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This is remote sensing by Suzanne Anker, this is an art work done by Suzanne Anker in a remote sensing series Suzanne Anker uses the Petri dish to juxtapose microscopic and microscopic world. The title refers to new digital technologies that can picture places too toxic or inaccessible to visit.

The fabrication of this piece began in 2D two-dimensional digital photograph which were then converted to 3D virtual models. The petri dish with its luxuriant growth emerged from the 3D printer. So, here Suzanne Anker has experimented on a petri dish by, mean of bringing together macroscopic and microscopic worlds, and this is what the result is produced it is a beautiful art work which is produced on a petri dish.

This micro landscape offer the viewer a top down topographic effect assemble by zeros and ones. Each configuration of this works takes the geometry of a circle inspired by the petri dish and crosses to divide between disciplines of art and science. So, have a look at this, how beautiful the artwork looks when science and technology is brought together to give an artistic turn.

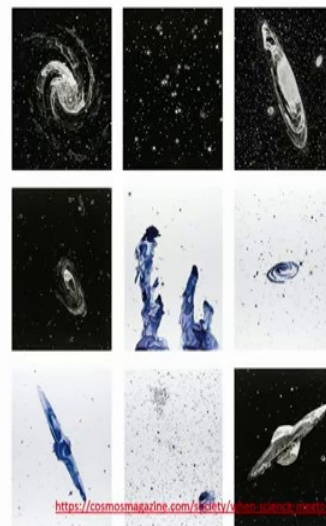
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#### Deep Sky Companion by Liam Halloran

The 18th-century French astronomer Charles Messier set his telescopic sights on the grand prize of finding a lonely, wandering comet. He ended up amassing an astronomical inventory filled with galaxies, clusters and nebulae. A catalogue of 110 objects is credited to his journals and drawings.

*Deep Sky Companion* is a series of 110 pairs of paintings and photographs of night sky objects drawn from the Messier catalogue by Lia Halloran.

Each painting in the *Deep Sky Companion* series was created in ink on semi-transparent paper, which was then used as a negative to create the positive photographic equivalent using standard black-and-white darkroom printing. This process connects to the historical drawings by Messier, here redrawn and then turned back into positives through a photographic process mimicking early glass-plate astrophotography.



Next is deep sky companion by Liam Halloran. The 18 century French astronomer Charles Messier set his telescope sights on the grand price of finding a lonely wondering comet. He ended up amassing and astronomical inventory filled with galaxies, clusters and nebulae. A catalogue of 110 objects is credited to his journal and drawings. Deep sky companion is a series of 110 pairs of painting and photographs of night sky, objects

drawn from Messier catalogue by Lia Halloran. Each painting in the deep sky companion series was created in ink on semi transparent paper.

So, this is a series of hundred and ten paintings and it was created by ink on semi transparent paper, which was then used as a negative to create the positive photograph equivalent using standard black and white darkroom printing. This process connects to the historical drawing by Messier, here redrawn and then turned black back into positive through a photographic process mimicking early glass plate astrophotography.

Now, have a look at this, this is a painting done by Liam Halloran and this mimics the astronomical Messier telescopic sites.

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#### Cassini Mission by Daniel Zeller

The Cassini mission as a launching point for this drawing. (Cassini's 20-year mission ended in September 2017 when it crashed into Saturn.) Saturn's largest moon has an atmosphere, deserts and seas – it is an alien world with some characteristics we can relate to. This was the theme of this art created by Daniel Zeller.

Zeller says, the probe generated so much fascinating source material that it was difficult to choose any single viewpoint, but there was something particularly intriguing about the image of Titan that Zeller finally settled on. Greyscale imagery naturally lends itself to broad interpretation, and the radar-mapping method suited his curiosity and his process; it seems to relay its subject as somehow simultaneously familiar and completely alien. Titan's surface became a scaffold on which he could build and explore. The relative ambiguity of the source image allowed him wide latitude to interpret the moon as a stand-in for any not-yet-discovered world or landscape, while still allowing it to be grounded in the recognisable projection of topography.



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So, the artist describes us how he has created this artwork and what are the inspiration he has drawn from. So, he has drawn his inspiration from the Cassinis mission, which ended in 2017 and it is actually is crashed in Saturn. So, these are the background of this earth that he took inspiration from. So, you can see how science and technology is depicted in this artwork, how art inspired by discoveries or inventions done in the field of science and technology.

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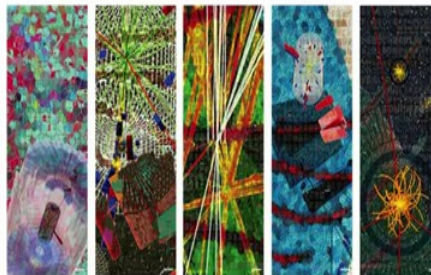
#### Higgs Boson by Xavier Cortada

This art by Xavier Cortada honours the Nobel Prize-winning discovery of the Higgs boson, the particle that imbues all the others with mass. Five banners depict the five experiments used to make the discovery.

Identifying the Higgs required the most complex machine humans have ever built, the Large Hadron Collider (LHC). The particle accelerator shoots protons at almost the speed of light along a 27 km tunnel. Every second 40 million protons collide with one another. These high-energy collisions make new particles and new mass.

The LHC's detectors did not directly measure the Higgs.

They measured the paths taken by the photons, quarks and electrons created in the collisions. The curvature of the paths revealed the charge and momentum of the particles, and the size of the signal their energy. The data told scientists there was another particle – the Higgs boson – produced in the collision



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There is a Higgs Boson by Xavier Cortada. This art by Xavier Cortada honours the Nobel Prize winning discovery of Higgs Boson. The particle that imbues all the others with mass, five banners depict the five depict experiment used to make the discovery. So, this is a combination of five panels of painting. Identifying the Higgs required the most complex machine human have ever built, the large hadron collider.

The particle accelerator shoots protons at almost speed of light along a 27 kilometer tunnel, every second 40 million protons collide with one another. This high energy collision make few particles and new mass. The LHCs detectors did not directly measure the Higgs, they measured path taken by proton, quarks and electron created in the

collision. The curvature of the path revealed the charge and momentum of the particles and the size of the signal their energy. The data told scientists there was another particle the Higgs boson produced in the collision.

So, you see how ; scientific research has inspired this kind of artwork and how artwork has art and artists have potential to depict very complex scientific research and how they can be depicted in artwork.

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#### Artistic Chemistry of Kim Keever

Kim Keever devised a method in which he drizzles paint into a 200-gallon fish tank, creating some magnificent effects before taking photos of the colorful chemical reactions. His work is so amazing that it fascinates you whilst also leaving you puzzled, questioning which medium you are actually observing.



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This is artistic chemistry of Kim Keever. Kim Keever devised a method in which he drizzles paint into a 200 gallon fish tank creating some magnificent effects before taking photos of the colorful chemical reaction. His work is so, amazing that it fascinates you whilst also leaving you puzzled questioning which medium you are actually observing.

So, here the artist has experimented with the medium and here what he has done he has drizzles paint into a 200 gallon fish tank creating some magnificent effect then he took photographs of this affect. So, it incorporate different kinds of medium and your left puzzled looking at the art work which medium you looking at, whether you are looking at colors of the paint; colors of the paint or you are looking at the photograph or the technique used. So, it incorporates very many different methods.



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#### **Eric Standley's Papers and Lasers**

Standley's paper-cut artworks expand the traditional use of the medium as he works with lasers, shredding with it upwards of 250 sheets of archival paper. The most impressive aspect of his production is the amount of details he is able to achieve as his pieces are incredibly detailed and miniature.



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Eric Standley's papers and lasers. Standley's paper cut artwork. This is a paper cut artwork expand the traditional use of the medium as he works with lasers shredded with its upwards of 250 sheets of archival paper. The most impressive aspect of this production is the amount of detail he is able to achieve in his pieces are incredibly detailed and miniature. So, he has; there are a paper cutting technique in traditional art also, but what he has done? He has used laser to make this artwork and it looks amazing the amount of detail he has you now brought about.

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#### **Robotics of Yuri Suzuki**

Another creative who relies heavily on science is a Japanese designer Yuri Suzuki. He is mostly famous for his work with will.i.am, namely Pyramidi, a piece made out of a trio of robotic instruments, deconstructed versions of a piano, a guitar and a drum. The fascinating skill of engineering a piece like Pyramidi would be impressive enough, but Suzuki takes it another step forward and grants it an artistic note.



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So, just observe how this art work has been done, he has combined a lot of things engineering and artistic perspective. And this artwork has been created with combination of engineering and artistic skills.

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#### Cai Guo-Qiang and His Explosions

Cai Guo-Qiang is a Chinese author who loves to experiment with the explosive nature of gunpowder and its modern variations, initiating what he loves to call ignition events – after the controlled explosion, we are left with traces of an image that are literally burned into the surface. Cai Guo-Qiang also works in installations and performances, often combining many elements of engineering and science in order to achieve the desired effects.



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So, this is another example where science and technology is used to create artwork and you are left baffled to as to what you are looking at are you looking at a engineering marvel or you are looking at a beautiful piece of art. So, this work is done with gunpowder, real gunpowder is used to create this artwork.

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#### The Fascination with Internet

Logically, much of modern production that is somehow tied to science is concentrated on the Internet and the online world that altered the art scene in so many ways – providing an opportunity for literally anyone to display his work and for the audience to seek out any piece that interests them, not to mention the way the Internet impacted the art market. Petra Cortright creates her paintings in order to explore issues of online consumption, rendering them in aluminum and making endless modifications to the computer file until she is satisfied with the result. Another internet-obsessed individual is Parker Ito, a man who relies on the reflective quality of 3M Scotchlite fabric which he translates on a computer screen.



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The fascination with internet. So, many artists have been fascinated with the internet and many have been working around the idea of the internet, this is one such example. Logically much of modern production that is somehow tied to science is concentrated on the internet and the online world that altered art scene in so, many ways. Providing an opportunity for literally anyone to display his work and for this audience to seek out a piece that interests them. Not to mention the way the internet impacted art market.

So, internet has impacted all of our lives it has impacted the artist it has, impacted the audience it has, impacted people who work with a science and technology it has impacted everyone. Petra Cortright creates her painting in order to explore issues of online consumption rendering them and in aluminum and making endless modification to the computer file until she is satisfied with the result. So, this is how she creates a artwork.

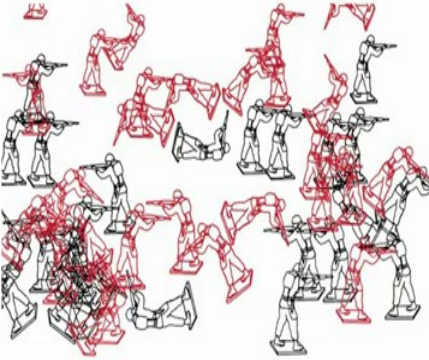
Another internet obsessed individual is Parker Ito, a man who relies on the reflective quality of 3M Scotchlite fabric which he translates on a computer screen. So, people have been working into in various ways so, with the computer with internet to create different kinds of artwork.



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Pure Digital Production

We also have to mention the medium of strictly computer-based art, a technique that is completely exclusive to modern times. Some of the most interesting and successful computer inventors out there are Charles Csuri (considered the father of computer art and computer graphics), Kyle McDonald (an artist/hacker), Sara Ludy (she actually does magic tricks with pixels) and James George (explores the ways how we see the world through technology), but there are also creatives like Jodi, Phillip David Stearns and Jon Rafman who experimented with the potentials and boundaries of computer art.



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Your digital production. So, this is another example where digital artworks are created. We also have to mention the medium of strictly computer based art a technique that is completely exclusive to modern times. Some of the most interesting and successful computer inventors out there are Charles Csuri considered the father of computer art and computer graphics, Kyle McDonald an artist and hackers, Sara Ludy, she actually does magic tricks with pixels and James George explores the way how we see the world around through technology. But there are also creatives like Jodi, Philips, David Stearns and Jon Rafman who experimented with potentials and boundaries of computer art.

So, I am sure many of you have also done tried doing artwork digitally with your own imagination, this is another branch of art now where which is digital art and this is one such example.

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### The Aesthetics of Computer Drawings and Paintings

We should also mention creative practitioners who have not based their creative digital efforts on conceptual theories but instead decided to focus on pure visuals and wonderful aesthetics – standing out for the beauty of their animation pieces, we mention Bobby Chiu, Cristiano Siqueira, Daniel Conway, Cris de Lara and Tae young Choi.



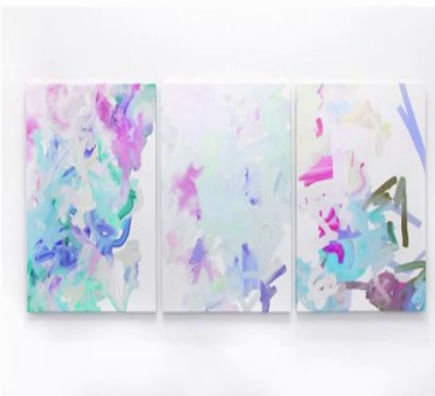
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The aesthetics of computer drawings and paintings; we should also mention creative practitioners who have not based their creative digital effort on conceptual theories, but instead decided to focus on pure visuals and wonderful aesthetics. Standing out for the beauty of the animation pieces; we mention bobby Chiu, Cristiano Siqueira, Daniel Conway, Cris De Lara and tae young Choi. What is this another section where people are doing computer drawings and paintings.

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### Combining Traditional and Modern

Michael Manning starts every single one of his works with a computer program, acting out the experience of dabbling in oil paint and later printing them, imitating the physical appearance of an actual acrylic brushstroke. In many ways, Michael Manning's practice in painting, video, sculpture and computer-based work explores the relationship between technology and the analog.



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So, there are other people also who are trying to combine traditional art with the modern and different results are created when this kind of combination come together. Michael Manning starts every single one of his work with a computer program acting out the experience of dabbling in oil paint and later printing them. Imitating the physical appearance of an actual acrylic brushstroke. In many ways Michael Mannig's practice is painting, in painting video sculpture and computer based work explores the relationship between technology and the analog.

So, here there are people who are you now trying out different methods of combining the traditional methods of painting with modern methods, this is one such example. So, this art is actually starts is painting with a computer program, then dubbing with oil paint and later taking a printout of them. So, it creates different kinds of results different kinds of artistic results.

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Technology and Performance Art

Technology in performance field largely emerged with Fluxus and Gutai, two international 1960s avant-garde movements that attempted to establish new artistic vocabularies – in this day and age, there are many performers who rely on technology to make the most out of their shows. One of the most impressive artists of this type is undoubtedly Chris Milk, a man whose pantomime-like performances have been astounding audiences for years.



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In this day and age there are many performers who rely on technology to make the most out of their shows. One of the most impressive artist of this type is undoubtedly Chris milk. A man whose pantomime like performances have been astounding audience for years.

So, there are many artist in the present world who likes to incorporate technology in during the performances whether its lights, whether it sounds, whether it's other multimedia there are artist. So, who likes to incorporate lot of technology in day performances um, but at first it was started by two movements fluxus and Gutai during the 1960s.

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Photography and Film

Photography and film are two similar mediums that are almost always mentioned when discussing contemporary techniques that use technology to their advantage. With numerous filmmakers and photographers out there, we shall name an interesting and unusual Ben Tricklebank, a young author who decided to make use of his extensive scientific knowledge and talent for shooting films to make interactive movies in which the viewers are responsible for which course the film will eventually take.



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### Incredible Shows of Rafael Lozano-Hemmer

There are also various artists who set up installation pieces based on science, depending on effects only modern technology is able to provide them. One such creative personality is Rafael Lozano-Hemmer, a Mexican installation master whose impressive laser pieces have been astonishing audiences worldwide.



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Incredible shows of Rafael Lozano-Hemmer. There are also various artists who setup installation pieces based on science depending on effects only modern technology is able to provide them. One such creative personality is Rafael Lozano-Hemmer a Mexican installation master who is impressive laser pieces have been astonishing audiences worldwide. So, the artist have also used in the shows lot of technology, lot of lights sounds etcetera one such is Rafael Lozano-Hemmer a Mexican installation master, he uses a lot of lights and technology to for a shows.

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### Manipulating the Sound

Much of the sound artist also quite dependent on the technological advancements, as the works of such artists like John Wynne could never be realized if the science did not intervene. Controlling sound may be much more complex and diverse than what you may expect, so make sure to check out artists such as the aforementioned Wynne.



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Manipulating the sound. Much of the world; much of the sound artist also quite dependent on the technological advancements as the work of such artists like John Wynne could never be realized if the science did not intervene. Controlling sound may be much more complex and diverse than what you may expect, so make sure to check out after such as aforementioned Wynne.

So, here are there artist who like to experiment with sound and if we did not have the science behind the sound, if we did not have the technology behind sound, the artist would not probably would not have been able to do such experiments with their art. So, this is one more example where science and technology has aided or been used by the artist for their artworks.

So, friends in today's class we have seen how science and technology can be brought together along with art to produce different kinds of effect. This is one of the focus of this course is to see how science and technology can be incorporated or science and technology can be expressed or science and technology can be brought together to have a dialogue with art and what are the responses that this produced.

But I should also mention that much of this work I have picked up from it is cut see many of the sources that are available on the internet because books are rare in this field. So, I have given you the sources and slides go and have a look at it and you will find more information about them in the sites. So, as just as the focus of this course is on folk art so, today we have done artwork which are not considered as folk, but in the next class let us see how folk art can also be brought together with science and technology and what responses they can be produced.

So, see you in the next class.