THE SERIOUS RELATIONSHIP OF ART AND TECHNOLOGY

Both **technology and art** define and continue to reshape the world we live in. Re-imagining what we know as real or as a solid ground, pushes not only our opinions and understandings of nature to the limits, but with **new inventions and experiments,** both the mind and the body, the language, and the world itself seems to be making room for a different sphere and fresh rules. Governed by the **new aesthetics,** the virtual, the scientific and the logic that is beyond belief, **technology in art challenges our perceptions** and that is what creativity and science are all about. If we are to understand that creative production reflects the period of time we are all in, how are we to grasp the growing number of young contemporary authors that base their practice on the presentation of **immaterial and ephemeral** things?

- How it All Began
  The Beginning and The New Media Art

- Important Names and Movements
  Trends and Artists Whose Work Would Not
  Be Possible Without Technology

- Learn the New Media
  Where to Master Both Art and Technology

The change of artworks' nature along with the shift in the public interaction and the reshaping of the museums and exhibition spaces are making more room today than ever before for some of the most amazing examples of **digital art, kinetic pieces,** and works that explore the internet and online existence. The sci-fi mysteries of various movies that were mind-blowing just a decade or so, today shape the face of our reality. This part of the innovative computer-basedface, the traditional paintings and sculpture cannot capture to its fullest and that is why the fresh materials, such as **data, pixels, mathematical and engineer formulas** are the **tools** number of contemporary creatives reach for.

Steina and Woody Vasulka – Feed Fields Back, selected still frames. Image via radlab.com

The Beginning of the Story

The truth is that technology has been providing creatives with original ways of expression since its beginning. The major shifts, like the transition from the analogue to the digitally created expression, or to even go back further in time, the birth of Impressionism, the famous silkscreen prints of Andy Warhol, or the disturbing performance works by **Stelarc** would not be possible if technology and science, parallel to the creativitis' road, did not push for original production and new frontiers. Creatives like scientists explore materials, people, culture, histories, religion, and the gain knowledge transform into something else. One of the earliest personas associated with scientific research is the famous **Leonardo da Vinci**, and to the investigating mind of the 17th-century, we owe the invention of the microscope and the telescope. Along with the investigation of eye's perception and the color theory, the birth of photography, and the moving pictures of Walt Disney, nothing else has helped to transform activities such as painting, drawing, sculpture, and music then the invention of the computer between 1936 and 1938. With it, a completely differentun understanding towards the creative production was born.
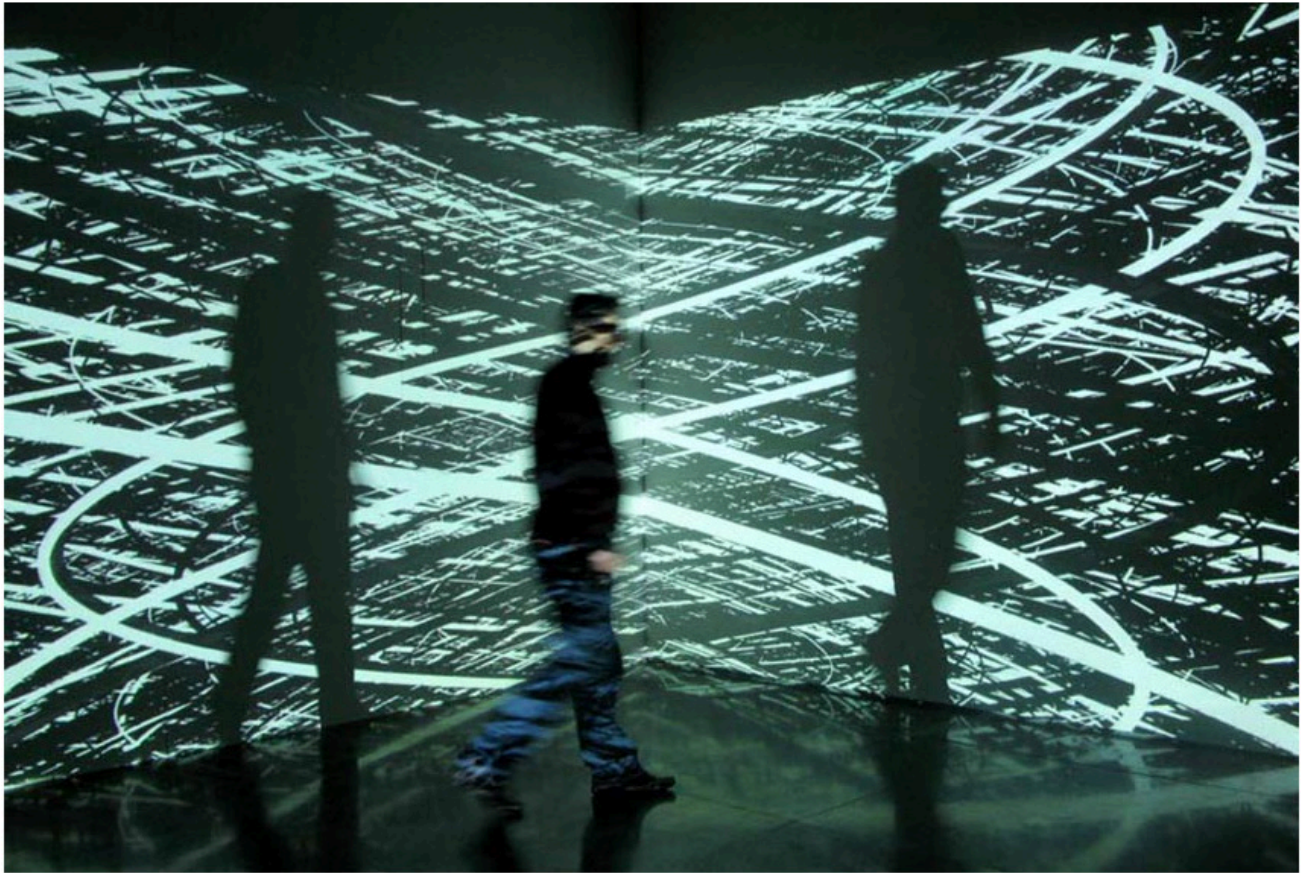
Dallas's Arts and Technology Building of The University of Texas. Image via utdallas.edu

A Disputed Relationship

After everything you've read above, it is quite obvious that technology is **redefining art** in innovative, often strange ways. As is the case with all mediums and genres, the critics and audiences here are just as divided into those who believe science's impact on creativity is a positive or a negative moment in art history. When this discussion arises, there are usually many raised eyebrows that openly criticize such an approach claiming that technology only manages to break the bond connecting the author with the piece, as well as making the entire process of creating art much easier and more trivial. This is, of course, entirely false.
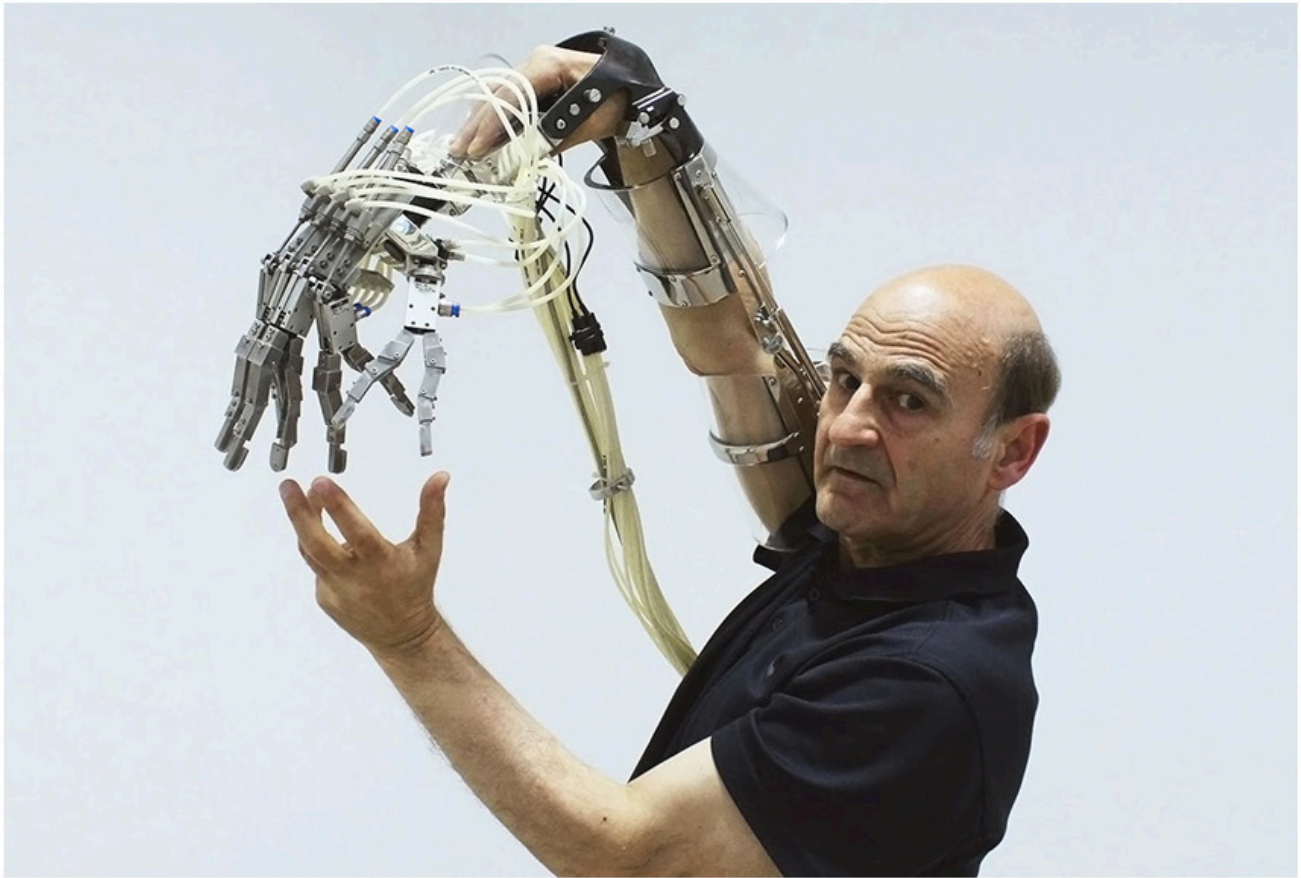
Firstly, as long as the artists standing behind their pieces stay creative and imaginative, there is no cause for concern. Secondly, art does not have to be complex or difficult to make in order to be grand – think Malevich or Duchamp. In fact, the entirety of modern art was dedicated to proving that the process and aesthetics of a piece are completely secondary when compared to the idea placed behind it. It is all about the experience the author delivers to the public, changing how the viewer thinks, feels and views the world, makes them think or simply provokes them. These aspects are what really counts and it has absolutely nothing to do with the techniques that the author chooses to use. With that being said, we should definitely not be intimidated by the technological presence in art as it does not impact the very core of creating and experimenting – instead, we should simply sit back and enjoy the impressive variety modern times can offer.

Pascal Dombis – Irrational Geometrics digital art installation-. Image via wikipedia.org

The New Media Production

Since the 1960's the term **new media art** was coined and it was used to describe practices that apply computer technology as an essential part of the creative process and production. Placing the term under a vast umbrella known as **new media, computer production, video art, computer-based installations,** and later **the Internet** and **Post Internet art** and exploration of the virtual reality became recognized as artistic practices. The term, in the contemporary practice, refers to the use of mass production and the manipulation of the virtual world, its tools and programs. As such, designers and artists for the production of commercial pieces or for more elaborate and conceptual works implement **many different computer programs,** such as 3D modeling, Illustrator, or Photoshop. The engagement of technology and science and the application of its language spread into space and many computer-based installations fuse the conceptual and the new media. With the constant technological developments, the fresh aesthetic was formed and many of the creatives that have chosen to create in the virtual arena of the Internet, comment upon the fusion of the virtual and the real, and question the communication and accessibility of their works in the parallel world. The innovative developments opened up a fresh playground, where different authors could merge different skills and tools and offer to us, as their public a completely original perspective of the present we all share.

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Stelarc – Portrait of the artist. Image via i.ytimg.com

Trends and Creatives Whose Work Would Not Be Possible Without Technology

Regardless of what your opinion concerning the relationship between science and art is, it's a genuine fact that technology offers something that young aspiring authors always desired – untouched grounds to explore, to discover something completely their own and sever ties with whatever is considered to be traditional, giving an opportunity to push the established boundaries. This has been true ever since the first modern steps of technology – for example, how the invention of lantern influenced luminism, or how color tubes allowed painters to paint Plein air and later led them to impressionism, or the time **Joseph Nicephore Niepce** invented primitive photography and influenced creativity for over 200 years now. As was the case in those periods, the modern time has its own inventions and innovations that are influencing various creatives, effectively being a reflection of the time in which it was made – an essential part of art's nature that will never change. There are many contemporary authors who have decided to say no to brushes and chisels, boldly deciding to venture off into the unknown and test themselves in original techniques that were impossible only a couple of decades ago.

Rafael Lozano-Hemmer – The pulse Room. Image via newamericanpaintings.com

Artistic Chemistry of Kim Keever

The honor of starting out our list of modern authors who depend on technologies goes to Kim Keever, a modern-day hydroponic equivalent of Jackson Pollock. This American author 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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Kim Keever – Abstract 6777b, 24×35, 34×50, 2014. Image courtesy of Kim Keever

## Eric Standley's Papers and Lasers

Keever learned how to manipulate chemistry thanks to his NASA experiences and scientific background, something that can also be said to some extent about **Eric Standley** who grew up in a household of engineers. 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 – A close-up of Eric's laser-made work – Image via thisiscolossal.com

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.
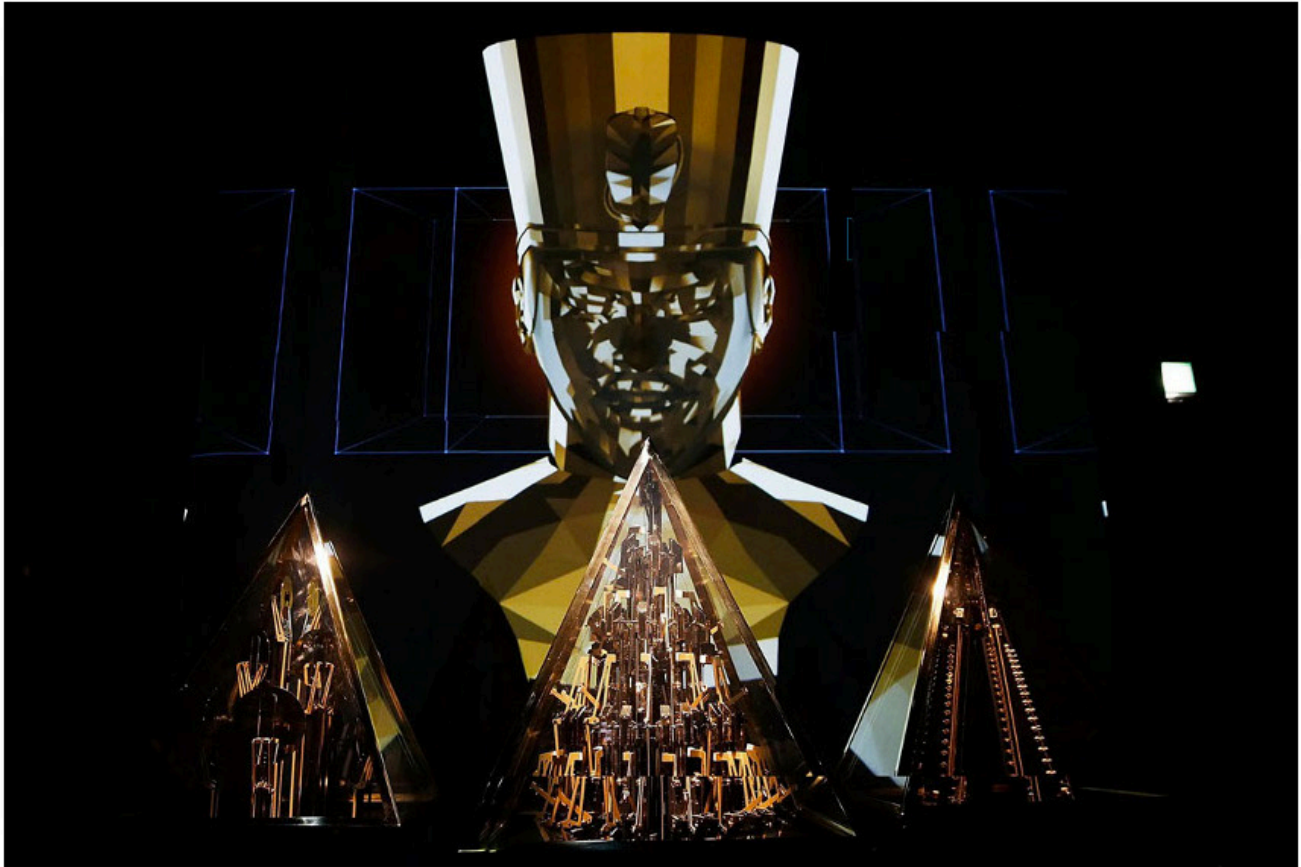
Yuri Suzuki – Pyramidi, 2014 . Image via metropolismag.com

Cai Guo-Qiang and His Explosions

A bit more extreme than previous authors on this list, **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.

Cai Guo-Qiang – Elegy. Image via publicdelivery.org

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.

Left: Petra Cortright – LZ, 2015. Image via Petra Cortright / Right: Parker Ito – The Agony and the Ecstasy, 2012. Image copyright of Stadium gallery, New York

Pure Digital Production

We also have to mention the medium of strictly compuer-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.
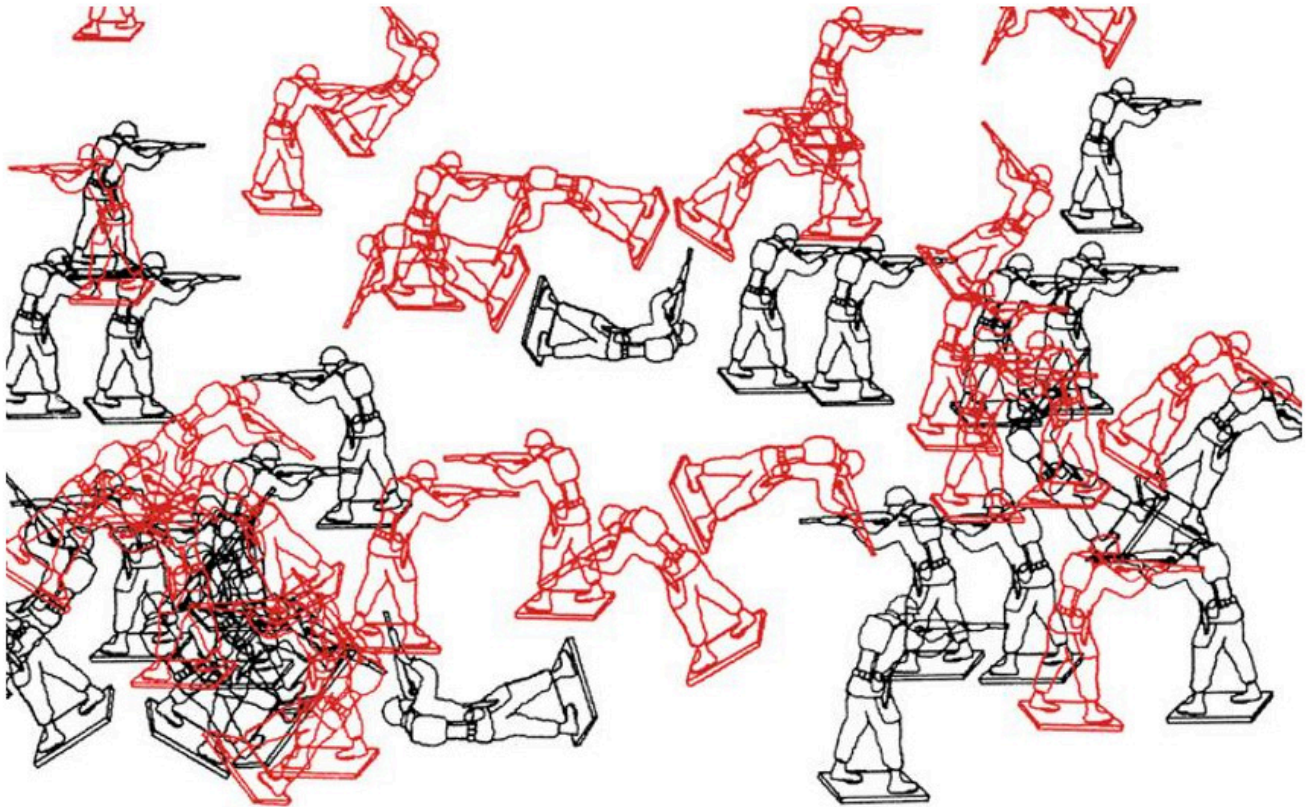
Charles Csuri – Random War, 2011. Image via lanfrancoaceti.com

The Aesthetics of Computer Drawings and Paintings

We should also mention crative practisioners 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.**

Cristiano Siqueira – An untitled vector illustration. Image via fridayillustrated.com

Combining Traditional and Modern

Earning a place in this article due to the playful nature of his artwork, **Michael Manning** is a man who 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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Michael Manning – Untitled piece. Image via smartobjectsla

Technology and Performance Art

Technology in performance field largely emerged with Fluxus and , two international 1960s avant-garde movements that   Gutai 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.The aforementioned Cai Guo-Qiang also authors performance pieces, often combined with his already explained technique of using explosives.

Chris Milk – Treachery of Sanctuary, 2012. Image via Bryan Derballa

Photography and Film

The honorable mention goes to photography and film, the 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.

Ben Tricklebank – Untitled #4 (Light Echoe Print Series), 2014. Image courtesy of Gazzeli Art House

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.

Rafael Lozano-Hemmer – Vectorial Elevation in Vancouver, 2010. Image courtesy Rafael Lozano-Hemmer

Manipulating the Sound

Much of the is also quite dependent on the technological advancements, as the works of such artists like **John Wynne** sound art 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.

After this list that actually only scratched the surface of the incredible amount of artists who work alongside technological discoveries, it is obvious what the goal of such contemporary artists is – use the platform of new technologies and create a base for new bold directions.

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John Wynne – Installation for 300 speakers, Pianola and vacuum cleaner , 2009. Photo Credits sensitivebrigadecom

Where to Master Both Art and Technology

When it comes to learning and advancing in an art form that requires a solid knowledge of technology, the learning curve seems to be a bit steeper when compared to one of more traditional arts such as painting – shortly put, it may not be all down to practice. Whilst you are able to be a self-trained sculptor or a drawer with realistic chances of becoming effective at what you do, arts that require technologies are a whole different ball game – an aspiring artist should really consider the option of attending classes or seeking mentorship. Regardless of where you live, you should be able to find a school or an institution that will enable you to make either the first or the next step in your development. You will be able to meet similar minded individuals, broaden your horizons, work in teams and master new techniques in a much shorter time frame when compared to the period needed to figure some things out on your own. In order to point you in the right direction, we wish to name a few proven institutions around the world who offer opportunities to advance your skills, masterfully balancing between artistic theories and technological approaches. Every faculty on this list will offer you, the student, an opportunity to enhance the desired skills to their maximum.

The **Arts and Technology (ATEC)** program at the University of Texas at Dallas is dedicated to, as their motto states, merging the innovation processes of artists, scientists and engineers by exploring experimental models through new technologies.

The University of Florida College of the Arts offers an interesting program called **Art + Technology** that concentrates on integrating the language and methods of science through a prism of art.

School of the Art Institute of Chicago's (SAIC) also has a fantastic section dedicated to training artists of the future, **The Department of Art and Technology Studies.**

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University of California, Santa Barbara, also has a similar trans-disciplinary program that fuses mixed media, computer science, engineering, electronic music and virtual art research, practice, production, and theory.

Parsons School of Design in New York offers a BFA in Art, Media and Technology, an interdisciplinary course of study through which students explore the dynamic intersections of design, art, media, and technology.

Carnegie Mellon College of Fine Arts has a highly praised course highlighting the intersection of arts and technology.

Louis Riel Arts & Technology Centre (ATC) in Winnipeg place a priority on quality, industry-driven training in a professional culture defined by high expectations.

Centre for Arts and Technology in British Columbia is an excellent choice if you desire to perfect areas of film-making, animation, audio engineering, fashion design, event management, interior design, photography or graphic design.

Saxion University of Applied Sciences in Netherlands has an Art & Technology program which emphasizes the creative uses of technology. Keeping everything above in mind, it is completely fine to try and learn modern techniques on your own – furthermore, it is even encouraged if you are the type of person who enjoys such an approach to learning.

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Editors' Tip: *Information Arts: Intersections of Art, Science, and Technology (Leonardo Book Series)*

Providing us with the first comprehensive survey of international artists who incorporate science, biology, kinetics, telecommunications, the computer, and the physical sciences, the book also incorporates the relevant art theory and personal statements of the surveyed artists, hoping for a better understanding of the new artistic practice. Examining the artist's role in the society, the author of the book Stephen Wilson considers the idea that the creative figure must be an active partner in determining the direction of research and pushes for the final fusion of science and technology as a vital tool for the understanding of the world.

Written by Silka P and Andrey V.
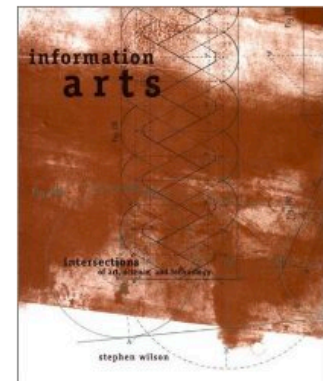
All images used for illustrative purposes only. Featured image: Naum June Paik – Electronic Superhighway. Image via blogs.setonhill.edu; Tatsuo Miyajima – Mega Death,1999, installation view, Japan Pavilion, 48th Venice Biennale;Yayoi Kusama's Infinity Mirrored Room at Broad Museum; Ralfonso – "Dance with the Wind" Kinetic Sculpture at 2008 Beijing Olympics in front of "Ice Cube" Swimming Stadium; Rosaline de Thélin, TIME SMILES, Homos Luminosos, 2008 – 2010

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