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CRITICAL ANALYSIS OF 3D PRINTINGTECHNOLOGY IN ART INSTALLATIONS

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Abstract

3D printing helps artists transform ideas into tangible works of art. Artists from creative and entertainment domains can truly unleash their imagination to create new and exciting objects. 3D printed art models aims to expand the horizons of design and foster a cultue of aesthetic innovation.

This research also explores the relationship of 3d printing technology and harmonizing them into work of Art .Art expression is an essential element and this is a industry which is lesser known and recognized.

Keywords:

3D Bioprinting, 3D Model, 3D Printing Resolution, 3D Printing Volume, ABS, Additive Manufacturing, Binder Jetting, CAD, CLIP,DLP,DMLS,Extruder, Fab Lab, Filament, FDM, Layer, Layer Thickness, LOM, MultiJet, PLA,Photopolymerization, Polyamide, Polyjet, Printer Bed, SDL, SLA,SLM,SLS, Thermoplastic, Wax

INTRODUCTION:

3D Printing Art - The Next eneration of Creativity:

The past decade has seen the emergence of 3D printing as a solution. We know that art is a way of expressing the old. Artists use their imagination to look at things from a different perspective.3 3D printing has distorted the limits of various aspects of construction and production. The beautiful integration and construction of 3D printing art was just the next natural step.

3D printing ideas for print artists have become concrete works of art. Artists from creative and entertaining backgrounds can release their thoughts. 3D-printed models aim to enhance design horizons and promote a new culture of beauty.

Benefits of 3D Printers in Art and Modelling:

Artists are discovering new 3D printing technology applications in their work. Visual and futuristic artists have already used 3D printing to design art installations, character, prop design and modern images.

Sparks Creativity:

3D art printing has the power to evoke ingenuity and Works as a magical site between thought and reality-like reality. Like artists, 3D printing can push a standard envelope, delivering art objects that are already inspiring and amazing.

On-the-fly Customization:

Art has great power. This transformation leads to the creation of a culture in many forms of creative art. 3D Printing provides a fast, reliable, and fast solution for this custom-run app. Art professionals such as filmmakers, playwrights, and fashion designers have begun to reap the benefits of 3D printing in their art form.

Easy Replication:

A lot of art and styles depend on the repetition of things as part of their creative expression. Repetition can be tedious and prone to mistakes and kinks. 3D printers can help artists overcome this challenge and allow them to focus on the big picture.

Infinite Possibilities:

3D Printed Art is a revival of unlimited creative possibilities; empowering artists and designers to incorporate technological ideas. In addition to this, new 3D printers have a few design limitations.

3D Printed Art: 5 Ways 3D Printing Pushes the Boundaries of Creativity

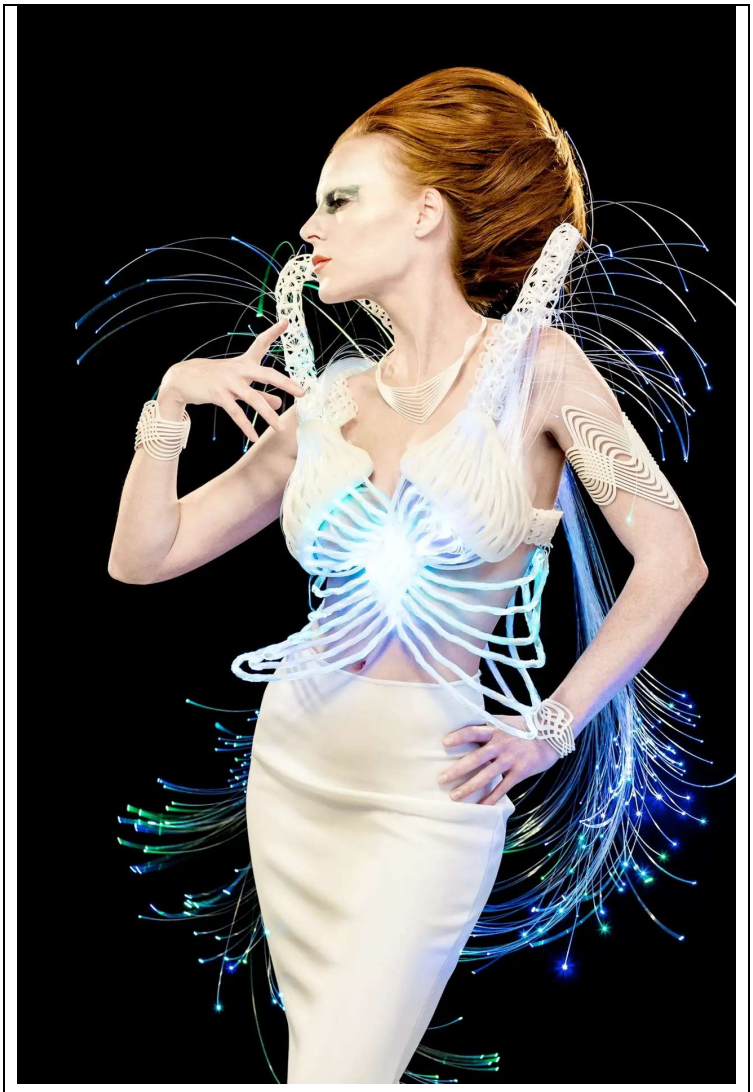
In all industries, 3D printing technology is a natural component of art, bringing new freedom to the processes of design and fabrication. It is fitting, then, that we see artists begin to recognize and apply different technological attributes to create 3D printed art.

The design freedom provided by the layer layers and the flexibility of 3D printing materials opens new boundaries for all types of artists. Low-cost 3D printing technology contributes to innovation in design and scale within fields such as art, fashion, and the art of embedding and collaboration across sectors.

The ability to accurately render complex text is one of the greatest assets of 3D printing. The potential for direct production and freeforming means that highly customized pieces can be constructed and made to a lesser extent than traditional methods. Below, you can see details of Philip Beesley's masterpiece in "Sentient Veil," an immersive, responsive immersion. The complexity of its versatile design would not have been possible without digital technology.

Speakers printed in Clear Resin on the Form 2 SLA 3D printer, as featured in "Sentient Veil."

The fashion world is another art industry that actively uses 3D printing technology.



All bespoke garment designs have been promoted and successfully produced with 3D printing techniques. Aiman Akhtar, not a fashion designer but a 3D printer, was able to take precise measurements of a model using digital scanning before using CAD to design an amazing and

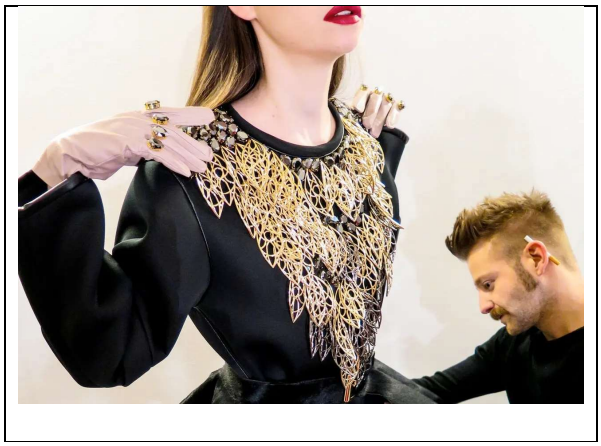
graceful fashion piece. This is one of the many situations in which the flow of digital work empowers people to create art beyond their ordinary field and beyond their previous capacity.

Aiman Akhtar's dress, designed for 3D World magazine, uses digital scanning and 3D printing technology.

Professional fashion designers such as Mia Vilardo and Riccardo Polidoro of Miryaki also use 3D printing. Fashion designers used Formlabsstereolithography (SLA) 3D printing technology to create clothing accessories that were later completed with gold and chrome roofs.

Such technology is extremely important in industries where wowing clients are key to designer success. Polidoro described his SLA 3D printer as "more accurate when I show a customer a certain type, they can't distinguish it from the actual product.

"Leaves made of Clear Resin, finished with gold and chrome plating, as created by Miryaki with SLA 3D printing technology.



2. Escaping the Limitations of Size

Artists are often pushed back to the design and performance of scale problems, both in creating very small and very large pieces. The details of small pieces of art can be so complex and the efforts of very large pieces are impossible without expensive resources. The flow of digital work removes some of these limitations.

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Jewelry, for example, is the industry that relies heavily on 3D printing, enabling jewelry designers to produce more intricate designs than would otherwise be possible.

Detail of a jeweler customizing the design of a ring during the CAD design process.

Jewelry designs used to be restricted by the possibilities of hand carving. Thanks to a precisely controlled laser, SLA 3D printers can capture extraordinary design details—delicate filigrees, raised text, and detailed pavé stone settings—with amazing sharpness, giving designers much greater freedom when creating a new 3D printed art design.

3D printing's equivalent ability to print larger structures of equivalent intricate complexity is ideal for installation artists.

Philip Beesley used 3D printing to create short runs of highly customized pieces for the speakers in "Sentient Veil".

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Philip Beesley is one example of an artist who has greatly incorporated workflow into his art. In "Sentient Veil", you have been able to produce short pieces of custom-made pieces of speakers embedded in this artwork precisely. In the event that he wishes to create a larger installation next, he can print large parts in one building without the required assembly by combining space-building materials — like hinges, extension features, and moving parts — into his 3D model.

3. Raising Standards in Prototyping and Production

Artists using digital technology are changing their approach to prototyping and production, whether they work with small or large media.

Many jewelers now use the same technology to customize customer pieces by creating prototypes quickly inside the house. The ease of storage, access, and duplication through digitally stored designs makes it possible the production process less expensive for jewelers, too.

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Artists who want to create more copies of small works find the ease and speed of digital invention the most powerful production strategy. For example, jeweler and ceramic designers can design, use, and produce a large number of identical objects, based on a single, easy-to-maintain digitally stored design.

3D printing makes it easy to store, access, and duplicate using digital-stored designs and produce sophisticated parts of scale.

Erasing Boundaries between Artistic Disciplines

Because 3D printing is so versatile and the materials used are so diverse, the separating pieces of different categories are made with technology as well. The Nervous System "Porifera" project is one example

Nervous System's creates unique art, jewelery, and home building materials using computer mash-ups of science, mathematics, biology, and architecture. Their project receives inspiration from unexpected sources, such as biological processes, which are written in new forms using CAD and turned into pottery using different Ceramic Resin material.

The Nervous System has used Ceramic Resin to create a cellular tea set. Intricate design would not be able to create with traditional ceramic designs.

It is free from the limitations set by standard design and production techniques, even their most common geometric designs have structural integrity and durability when created using a 3D printer. Digital tools are the cornerstone of their project room and proof that 3D printing can inform the whole ethos of an art project and influence its choice of production method.

Another notable project to integrate the various fields empowered by the digital workflow is the work of Benjamin Dillenburger and Michael Hansmeyer. Founders of Digital Grotesque, these men incorporated their passion for the design and use of a computer into 3D printed art. Their collaborative sites, promoted by Antoni Gaudi, were completely 3D printed. The result is a complete demonstration of a large but complex creation that is possible with 3D printing.

Detail of a CAD rendering of Digital Grotesque's "Grotto II" (Source: digital-grotesque.com)

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The materials used to create 3D printed art also vary widely. Resin varieties are used for efficiency by the Nervous System and Miryaki, while Grotto Grotesque grottoes are printed using five tons of sand.s

Revolutionizing the Art Restoration Process

Digital technology does more than just design and produce entirely new creations. With them, the impossible restoration of historical art is now taking place.

First, art restorers use 3D scanning to examine antiquities before restoration. They work with digital modeling software to recreate non-existent objects by using existing parts of sculptures as a basis for subsequent restoration to reduce the risk of translation. Returners have used 3D printing to create quality control and preview views, as well as final retrieval of assets.

Thanks to this digital workflow, entirely new standards of accuracy are being established in restoration. Just as with the creation of original art, the digital tools adapt to both small-scale

restorations (many of them too small and with fine details, or based on non-artistic practices, to be repaid by hand) and very large.

The missing pieces in this multi-use object are designed for 3D scanning, printed and painted to match the color of the images prior to installation.

We are now beginning to see how valuable 3D printing technology is to artisans, sculptors, designers, and installation artists. What is even more interesting is that people from completely different backgrounds, such as computer science or mathematics, find themselves empowered to create 3D printed art using these digital tools.

The technical ability to overcome obstacles is one of its key features. Its growing popularity will see many artistic dreams become reality.

3D printing in art: an evolution of the concept

The advent of 3D printing technology in the 1980's opened up a world of possibilities not only to the industrial level, but also to creative development. From the reduction of certain technologies and the opening of more patents, artists on a daily basis have been able to get very close to additional production technologies. But a big problem has arisen. To what

extent can 3D printing be regarded as a work of art? Does it open up a whole new dimension to what we consider to be the work of art? What natural opportunities have come?

One of the biggest benefits that has already emerged in 3D technology is the opening of new inspiration fields. This has led to the emergence of well-known techno-artists or bio-artists, who are now able to really emerge from the hands of 3D technology. But doubts remain when it comes to these new styles and their concepts such as art and the development of new artistic ideas.

After the first decade of 2000, the first art exhibitions featured 3D printed pieces. Initially it was presented, not as pieces of art, but as opportunities to create new technologies. It wasn't until 2015, when they were showcasing 3D printed pieces as real works of art. Over the past two years there have been exhibitions with a new idea of 3D printing. One such exhibition is "Print Earth", at the Pompidou Center in France, which focuses on the possibility of "Transforming / Creating", showing the world a new concept of 3D technology in art. Another example is the installation of 3D printed art at the iLight Marina Bay Festival in Singapore.

The artist, who first came up with a different perspective on the use of 3D technology in art, is Gilles Azzaro, a French artist called "Voice Sculptor". Specialized in 3D printing of sounds, phrases or expressions. It highlighted in 2013 the 3D printing of an audio version of Barack Obama's speech in 3D, later digitized.

A 3D-printed piece of Obama's speech measuring 1.51 meters and requiring more than 350 hours of printing was the beginning of Azzaro in the industry. "These first steps have given me the good fortune since June 18, 2014 I was privileged to present this work to President Obama at the White House and it has given me many opportunities around the world,

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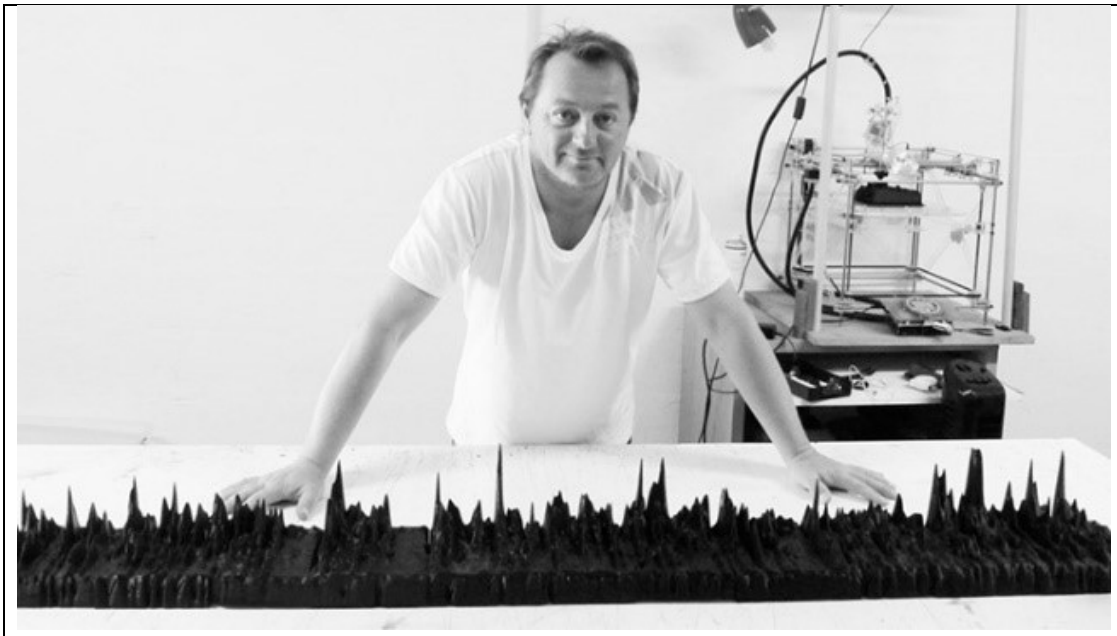

In the same years, NeriOxman, a researcher, artist and visual artist of MIT Media Lab, was introduced to research the design of tangible structures to create new forms that are environmentally encouraged with the help of additional production. It was already considered in 2009 in ICON magazine "A leading figure among the most influential artists and artists who shape the future". And in 2016 the Cultural Leader at the World Economic Forum.

He describes part of his work as "The distinctive personality, which works today between genealogy and genetics, between machine and body, between mating and growth, between Henry Ford and Charles Darwin," he commented in his 2015 TED Talk. .

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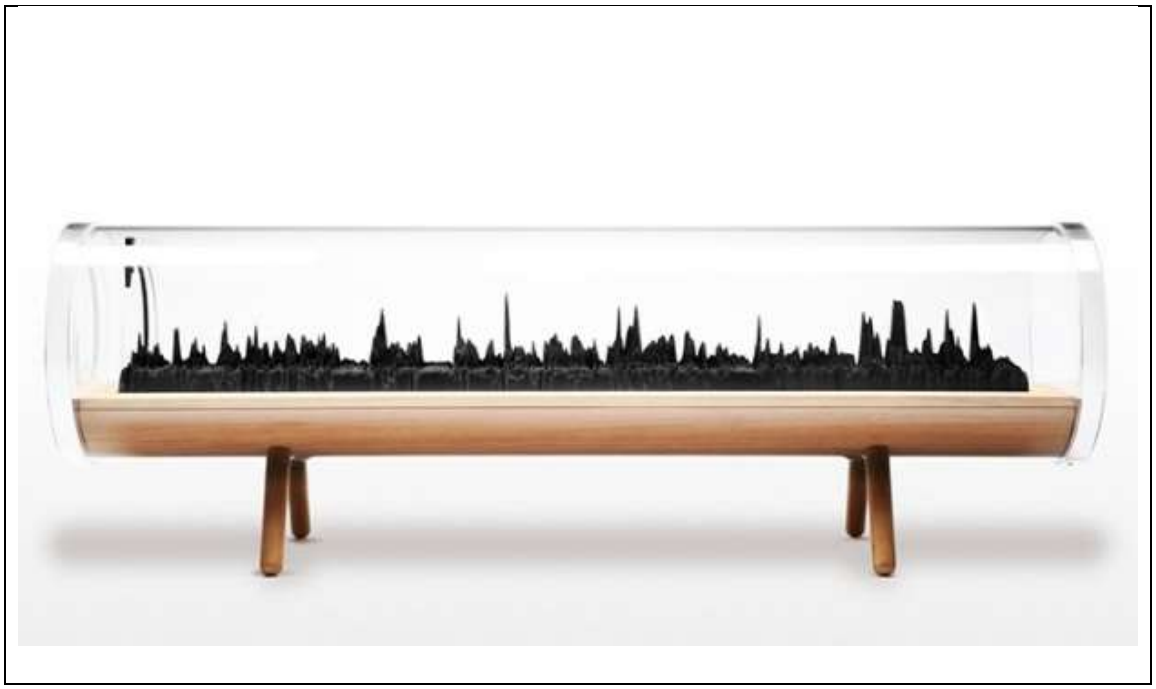
Thanks to the use of new technology we can better understand a person or it is the arrival of technological benefits that allows us to do this. The emergence of this relationship gives us ways to understand art more closely.

Technological advantages giving a new conception for art!

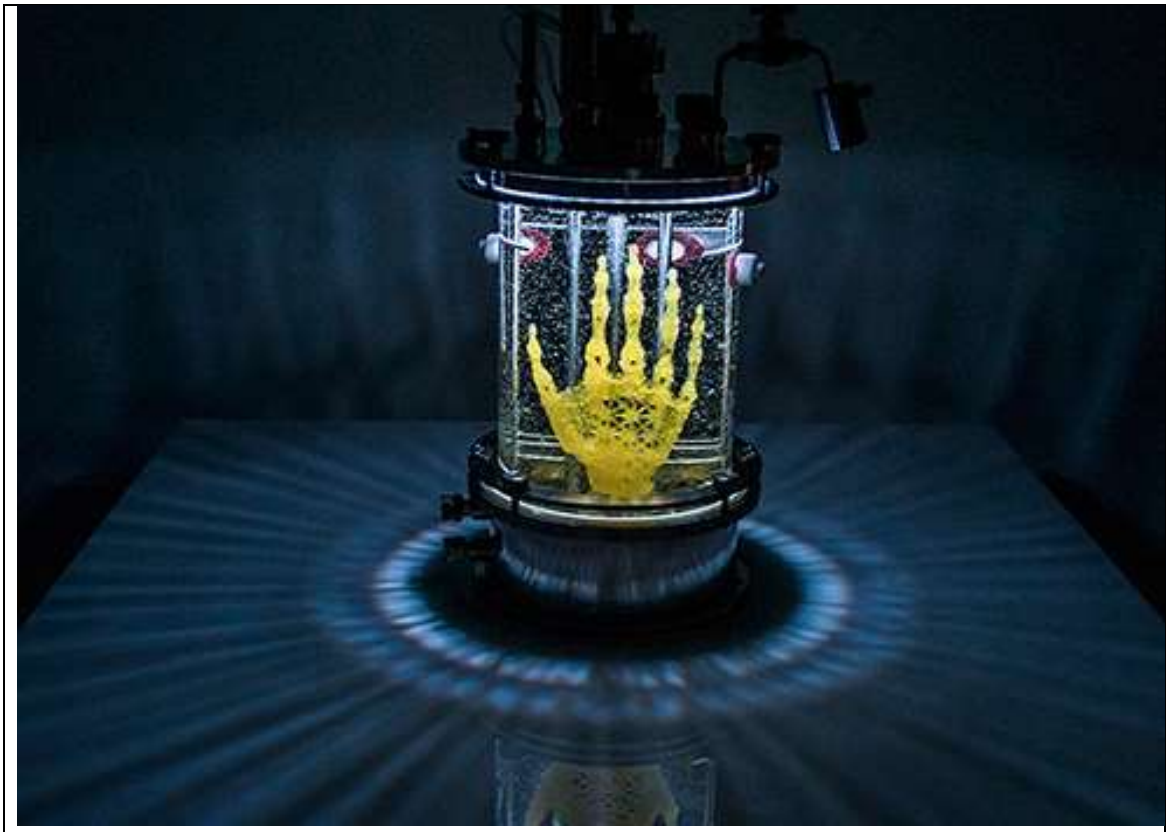
This new opening to 3D technologies benefits artists in many aspects. From allowing,them to simplify tasks such as the Spanish artist VíctorMarín who sculpts with the help of 3D technologies, to artists who have managed to explore with materials such as NeriOxman or Emerging Objects, who have developed small stools when reusing tires.

In the case of Gilles Azzaro without the arrival of 3D technologies, he couldn't have become a "Voice Sculptor". This artist, who has 5 3D printers of FDM technology, has achieved that thanks to the use of additive manufacturing technologies his work is like "imaginary topographical landscapes".



"Thanks to this technology, I was able to get a direct picture of these vocal songs, which have enough layers to enhance the natural beauty of these words in 3D. Art and math work together perfectly "

There is also a group of artists who have been able to take a new approach to exploring art from these technological benefits, such as Amy Karle. After creating a 3D printed hand (link) with the help of stem cells, this bio artist offers a combination of the two fields.



Karle uses what he sees as "descriptive technology," in which he incorporates applied production technology "because it has the potential to create more physical effects, such as the ingenuity of how nature is created and developed." For this artist the use of new technologies allows him to get closer to natural species.

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For Karle the greatest technological advantages have been the use of 3D printing, "opening new doors for imagination and unimaginable construction, technological advancement and process outcome", said the artist.

The future of 3D printing in art

By now the relationship between 3D printing and art is already real. From students to highly experienced artists they have begun to use 3D technology with creativity. In addition to the rescue of many previous works, which is a field that has been remarkable for some years, 3D techniques have opened the door to artistic exploration.

Thanks to the production technology used in many fields such as the medical industry, the development of building materials, 3D printing in construction and so on. It allowed artists to explore areas where previously it was unthinkable, beginning to introduce themselves in bioprinting production as Amy Karle did, or in the creation of new things and their relationships with nature like NeriOxman. This is a new generation of artists, bio-artists,

techno-artists, materialists, who want to make fun of nature with new technologies and this is just the beginning.

Ways Artists Use 3D Printing

Both well-marketed and good artists are constantly exploring new ways. Their reaction to 3D printing was unpredictable. They enjoyed hearing and trying in this new way.

3D printing is a remarkable way for modern artists to create outstanding pieces of art that not only reflect the message they want to send but also make their art easily accessible to art lovers.

The various techniques they have used for 3D printing in their drawings may seem highly technical, but anyone can make their own drawings with a limited amount of time spent in training.

3D Sculpture Brought To a New Level

Images are always 3D. However, it takes years to learn the skills needed to create these works of art. 3D printing technology allows artists to use their drawings or images to create stunning sculptures directly from a computer.

In the past, an artist would draw on their sculptural ideas and develop something out of the ordinary. If an artist found a problem in a photo, they would solve it before starting the picture. After that, if their solution was wrong, they may need to talk to it again as they turn the drawing into an image.

The great advantage of 3D printing is that artists can solve all their design problems as they import information from their photos into a computer. Once they have processed the program, they can send it to a 3D printer, and it will print the item without resolving the problem again.

In addition, many artists work in small studios or spaces. They can't keep all the essentials needed in traditional shapes. 3D printers and equipment require less space.

One Step beyond Photography

3D printing elevates images on the surface of the image, and this gives the texture and feeling a real depth to the image.

While this may seem limited to family and personal photos, consider the possibilities with art photos. A beautiful beach photo can be printed in 3D. Waves will come out of the picture, like birds and people.

Or you can create your own beach scene using a design program to create an image from a combination of other images. Your natural state can be transformed into an obscure first image.

3D Printing and Realistic Visualizations

Many artists create functional models or drawings of their art before they create the final piece. 3D printing allows them to see what their art will look like before they start work in the final phase.

As mentioned earlier, 3D printing allows artists to solve problems. However, in this context, it also allows them to see what the piece looks like before the work begins. It enables them to make any aesthetic changes before production.

Every artist who tries to say something about their art, whether it's a political statement or enhancing the scene, has a message they're trying to convey. By using 3D printing, they can be sure that their message will meet exactly as they want.

Commercial artists are often called upon to produce 3D art for film production. Also, 3D printing allows you to create art, even if it requires realistic images of specific characters, places, or resources. If they need to make repairs, it can be done in the design phase on the computer.

Art Reproductions, See What The Old Artist Saw

The production of beautiful and famous paintings is a worldwide phenomenon of art. However, what if you could see your favorite image in 3D? You can find the depth, perspective, and values of painting or painting as the artist sees them.

If you look at the reproduction of the painting, you will see that everything looks the same. This is because most reproductions are not a digital copy of the image.

However, with 3D printing, you can reproduce the perfect painting with brush strokes and fabric paint texture. You can see how much paint the artist has applied to the various parts of the painting.

This not only makes for good productivity, but also instructs people in educating people about the history of art and techniques.

Bringing Cartoon Characters Into People's Hands

People love cartoon characters. When a cartoonist creates a sympathetic character, the market seeks a 3D model of the character.

In the past, the artist authorized a company to produce a sculpted animal or a plastic image. It also meant that the character had to be popular enough to allow for production and marketing costs.

With modern 3D printing technology, cartoonists with lesser-known characters or niche markets can also create 3D reproduction of their characters.

These models are not only good for sale, but also increase brand awareness and increase the cartoon market - and the artist does not have to wait for run production. They can quickly create a fan image while on a comic-con or at another social event.

How 3D Printing Democratizes Art

1. The cost of advanced art education and art resources is expensive and continues to rise. 3D printing is one of the ways in which many artists can use new technologies to communicate their message specially and economically.
2. For example, here are three programs, free to use, that many artists find useful:
3. Blender.
4. MatterControl 2.0.
5. Slic3r.

3D Printing Artists

Additional production or 3D printing is the process of making a solid three-dimensional object in almost any situation from a digital model. 3D printing is achieved through augmentation process, in which successive layers of objects are laid down in different ways. More and more artists and sculptors in particular are using this technology.

Photo by 3D Printed Hanging Mobiles by Marco Mahler and Henry Segerman

Marco Mahler and Henry Segerman

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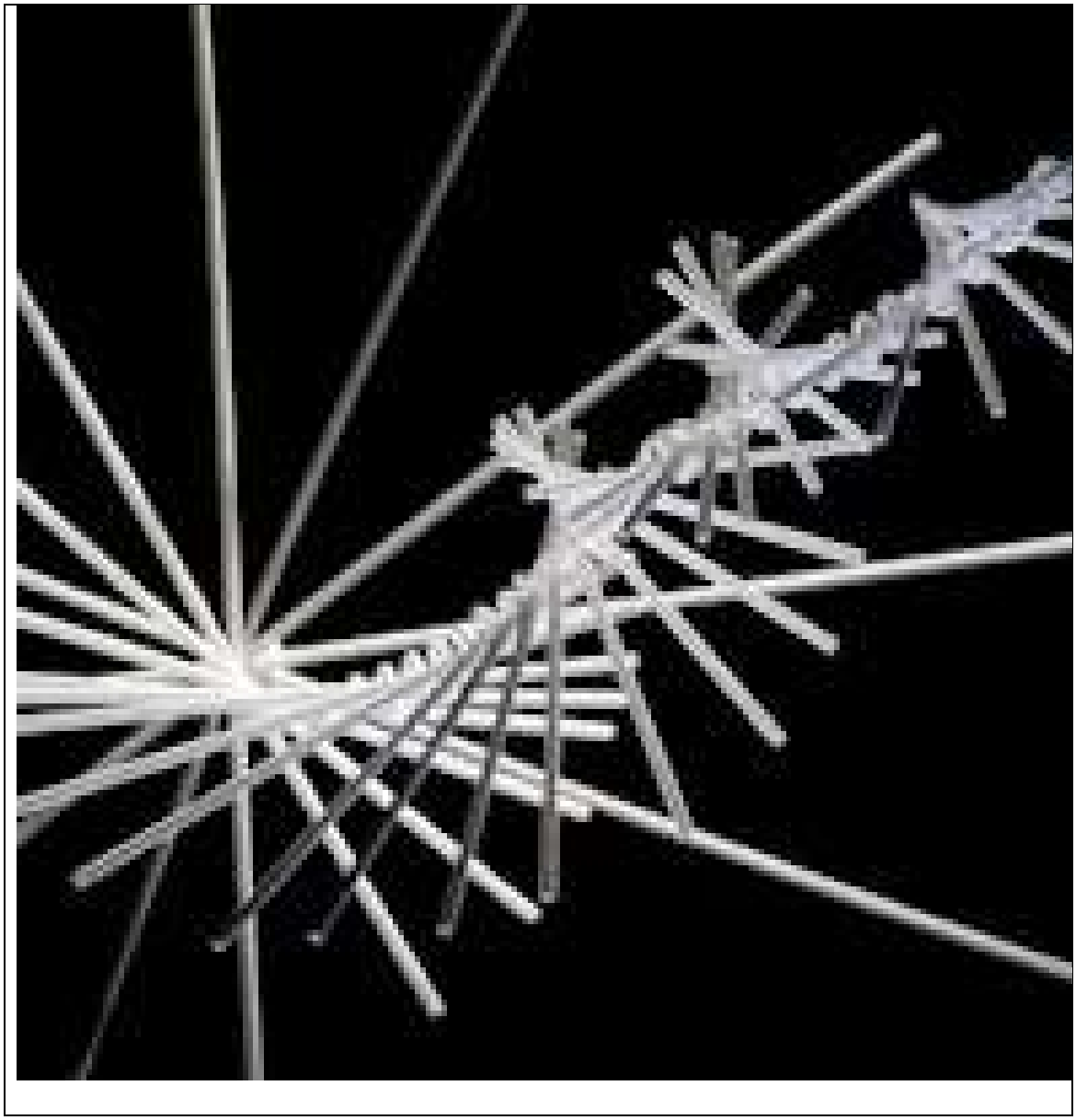

A collection of 3D printed mobiles, the result of a collaboration between Marco Mahler, a mobile-based sculptor, and Henry Segerman, a researcher in the Department of Statistics and Statistics at the University of Melbourne. Designed in the spring of 2013, they appear to be the first fully printed 3d mobiles in the world.

Image of 3D Printed Sculpture by Joshua Harker

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Joshua Harker is a well-known American artist and is regarded as a pioneer and exhibitor in 3D art and art. Her sculpture Crania AnatomicaFiligre holds the record for the highest paid kickstarter sculpture project. His work is among the nearly 3,000 collections that include work from famous artists such as Andy Warhol, Ron English, Shepard Fairey, R. Crumb, and Robert Williams.Bathsheba Grossman

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Bathsheba Grossman is an artist from Santa Cruz, California, who makes statues of copper and stainless steel. 3D printing is his main method but he also works with less laser damage to the glass. He describes himself as an artist who explores the region between art and mathematics. His work is about living in three dimensions: working with balance and balance, from origin to infinity, and always finding beauty in Geometry.

Photo of 3d printing art by Nervous System

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The Nervous System is a productive production studio operating at the crossroads of science, art and technology. We create using a novel process that uses computer simulations to produce designs and digital signage to identify products. Inspired by natural phenomena, we write computer programs based on processes and patterns found in nature and use those programs to create unique and inexpensive ones. art, jewelry, and housewares.

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Theo Jansen

Theo Jansen is a Dutch kinetic artist. In 1990, he began what he is known for today: building high-powered PVC highways, known as Strandbeest, air-conditioned models for artificial life. The 3d printed types of kinetic images are a good example of what 3D printing ultimately can do, and continue to emerge with the installation of the Propeller Propulsion program.

Image of 3d printed artwork by Eric Van Straaten

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Physical expression of form and content is the greatest force of Eric van Straaten's work: while images always have a certain digital feel to them, the pieces contain a strange character. Equilibrium on the kitsch edge, the quality similar to the marzipan metal sounds great with the apparent purity of the place.

Photo of 3d print sculpture by Cosmo Wenman

Cosmo Wenman has the vision of digital scanning technology from museums around the world, making free files and leading information available online for free. His goal is to allow anyone with a 3D printer to produce these unusual works of art in their homes, or in the classroom. In fact, you already have a lot of artwork to check if it is available.

Image of 3d printing sculpture by Nick Ervinck

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Studio Nick Ervinck uses tools and techniques from new sources to test the power of carpentry, 3D printing, construction and construction. With his unique practice, a strong interest in the construction of the space is evident. Nick not only focuses on the private sculpture, he also asks about its landscape and points to the amazing experiences and space creation.

Photo of 3d print art by Linlin and Pierre-Yves Jacques

Linlin (China) and Pierre-Yves (originally from France) are young artists who have been able to combine their cultural differences and artistic skills to create an unexpected artistic collaboration. These artists met many years ago while studying art - he brought a master's degree in digital design and he, a diploma in 3D video creation. The chemistry between the two artists accelerated, creating works that respect the environment, knowledge and emotions of the people.

Photo of 3d printed artwork by Monika Horcicova

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Monika Horčicová is one of the few emerging artists in the Czech Republic. Born in Prague, he currently lives in Brno where he studies at the Faculty of Fine Arts at Brno University of Technology under the tutelage of Prof. Michal Gabriel. His work looks at the themes of infinity; a repeated cycle of pregnancy and death. Instead of viewing bones as a sign of illness, you are endeavoring to show them as things that can be good if we look at them properly

Louis Pratt

Louis Pratt's method of recording is novel and ground breaking. It starts with 3D (human) scanning forms from the real world to the digital world. With these computerized forms you use digital carpentry tools to use scanned data. It explores a wide variety of algorithms and uses them in modeling.The data is then quickly retrieved from the cyber space into the real world.

Photo of 3d printing art by Isaie Bloch - Eragatory

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Isaïe Bloch, founder of Ergatory, focuses on her ongoing research and design goals in the link between craftsmanship and production added within a wide range of creative fields including architecture, fashion and plastics. He won the 'Artist of the Year Award' at the 2013 3D Printshow in London.

Photo of 3d printing sculpture by Gilles Azzaro - Housing by Patrick Sarran

Gilles Azzaro, a French artist who unveiled his latest work at 3D Printshow in London this year. Photo printing: Barack Obama - Next Industrial Revolution. The 3D printed image is a three-dimensional structure of President Obama's voiceprint. A 3D voiceprint highlights the excerpts from President Obama's February 2013 State of the Union Address.

Photo of 3d printed artwork by Lionel Theodore Dean

UK designer Lionel Theodore Dean believes in adversity. His materials are not overly square, often pressing the boundaries of functional categories all industrial designs adhere. Working with advanced printing techniques such as laser sintering as a resident designer at the University of Huddersfield, Dean realized that these methods were perfectly capable of producing high-quality materials suitable for the consumer market.

Endorses creativity

The 3D printing of art reveals the ingenuity embedded in the artist's mind. Often, when an artist tries to produce a piece of his art in the way he has seen it, he will be limited by traditional and handcrafted production processes. When using 3D printing, the artist is no longer limited by the type of production method. The only limitation is the lack of knowledge in 3D modeling due to the 3D model required for printing. Fortunately, this is just a short-lived obstacle. There are many free and accessible resources for 3D modeling in no time.

3D printing in the comic book industry

Comedy is also a form of art. The comic book industry is currently bigger than ever when comedy was transformed into great blockbuster movies. A comic book artist, David Wenzel, who worked on comics at Marvel and DC, took jokes just one-step away from 2D and 2D printing to see 3D objects. 3D printed his characters to show them in the biggest comics in the world. These 3D comic book characters were printed with a full-color stone for display to over 150,000 visitors.

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3D printing experimental art structures

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ZahaHadid Architects were pushing the boundaries of additional production art with the 3D printing facilities of Milan Design Week. Their 3D engraving " Thallus " has a complex floral design with the help of a computer. A computer aid that made construction possible by producing complex geometries. Thallus was made of a 4-mile-long [7 km] fiberglass and could only be made of a 3D printer with six-axis printing technology. These 3D printers are perfect for these types of designs.

Large-scale 3D printed artwork

Art can be created on a large scale and due to the production of additions. This is often done in pop art that follows the feeling of being kitsch in some way. Artist Paco Raphael has created this pop-art deer clip. This deer has a lot of detail and 3D is printed on a large scale, which is common in pop art where the boundaries are explored between art and ordinary mass objects. Paco's thinking about 3D printing his masterpiece is due to the desire to place deer in many urban areas such as New York City, where natural elements are sometimes lost.

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3D printing art with ceramic

Kate Blacklock is an artist who uses 3D printing to recreate clay. His work is constructive, sensitive and accurate. 3D printing gives a whole new kind of freedom to artists in terms of shapes and geometries.

The arts will always use the latest production methods to set new boundaries. In the future, 3D printing will improve significantly and will use new features. 3D printing is already possible with concrete materials and molecules! We can only expect artists and composers to see this inevitable development and be curious to see how it can be applied to the arts. When you print 3D your art will not be limited to design; you can make changes on the go; you can create complex structures and you will create exactly what you have in mind. The art goes hand in hand with product development and packaging. Each of the above applications can also apply to your business. Sculpteo has ways to help you produce what you have seen. Just download your 3D model here, and wait for your art project in a few days. If you want to keep up to date with additional productions and new features that can be used in 3D printing that can also be used for works of art,

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