On the Fringe:
SciArt in New York

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The logo of this magazine is a Venn diagram that represents the worlds of art and science as two intersecting circles. The overlap is where SciArt resides along with other kinds of cross-talk between artists, scientists, and their practices. SciArt could never be called science, and is at the end of the day Art. Despite that, its public affiliation with science is the stronger of the two: SciArt is more likely to be displayed in science museums, universities, or conferences than in galleries and art museums.

"The challenge for SciArt is to have some resonance outside of that little intersection," said artist Jonathan Feldschuh, a painter whose work often explores themes from physics, in reference to the Venn diagram. "What I'm interested in doing as an artist is to make art that resonates in the larger art community, not just with people who are interested in art and science."

We decided to investigate how SciArt fits into the larger art world. Although there are many cities internationally with thriving art scenes, New York has been the center of the art world for over half a century, and thus is the location of our investigation. To explore this huge question, we spoke with various SciArt authorities about related ideas: In what venues does SciArt appear? What are the obstacles keeping SciArt out of mainstream galleries? On the other hand, what are the factors that bring SciArt, occasionally, to the fore?

I. What's in a name?

If there were no category "SciArt," distinguishing it from art in general, then it would be impossible to ask how SciArt fits into the mainstream art world. But it would also be impossible to talk about science-based art as a kind of art. In some cases, SciArt is a term applied by magazines like this one to certain works, a categorization that the artists themselves may not necessarily care about. "Artists are people," said artist and educator Ellen Levy, former president of the College Art Association and currently a special advisor for the Institute of Doctoral Studies in the Visual Arts. "I don't think you need to break it down into these divisions. Yes, SciArt is involved with science. It's also involved with broad issues of psychology, with interactions between people. It's involved with the same things that [other arts, like] opera are involved with: memory and reflection and life and death issues. Art has universal themes and should not be restricted."

There can be a stigma associated with classification, as is sometimes the case with genre fiction. "If you fit into a genre," said Feldschuh, "there are people who say, 'oh, I don't read mysteries, I don't read romances.' If I were a writer, I'd say, 'This is literature, it's not science-fiction or something,' even though it might look like that. I'd want it to be seen as literature. I want these to be seen as paintings in the broad tradition of paintings."

On the other hand, some people love mysteries, or read only mysteries: specialization has its benefits and uses, one of which is filtering an unmanageable number of potential reads. Likewise, with 100+ galleries in New York City alone, the art world is too big to navigate without some filter. The term SciArt, in calling attention to the subject matter of concern, helps artworks that relate to science distinguish themselves and come together to form a movement.

II. What is SciArt?

What is that category, exactly? What is SciArt? Is it art for which science is the subject? Is SciArt a style, a way of representing things? Instead of representing the world abstractedly or minimally or impressionistically, representing it as data? Is it a kind of documentary work, recording the world using not cameras but microscopes and magnetic resonance imaging (MRI) machines? Does science become the artistic medium, as with much BioArt, in which art can be created using biological tissues and cultures?

"All of them," said Levy. "Or parts of them. It's whatever the artist wants to take from it."

"The Sci in SciArt is often changing in my work," said Laura Splan, a New York-based visual artist whose work relates to the human body. In her work, Splan has approached science in a variety of ways including using blood as a drawing material, altering medical devices to absurd proportions, using antique medical atomizers to apply paint, and weaving doilies based on the symmetry found in viruses.

BioArt, the biology-based sector of science-based art, does have a specific, if broad definition; Suzanne Anker, BioArt pioneer, wrote the definition of the term for the Oxford Dictionary of Art. BioArt is a "renegade child of the way in which art addresses the most important issues in the future of the planet," said Anker. "It's neither media-specific nor geographically-based. It's a contentious term." Anker's definition has three facets: art generated through the tools of biology, such as microscopes and MRI machines; art created using digital means, including art made using computer algorithms or artificial intelligence; and art made with wet-lab material.

While what truly defines a work or artists as "science-based" is best determined on a case-by-case basis, SciArt generally covers any scientific topic in either subject matter, method, or both, and oftentimes includes new technology made for scientists used for the creation of art.

III. A Center of Gravity

The simplicity of the Venn diagram belies the fact that the relationship between science and SciArt is very different from the relationship between SciArt and art. SciArt does not compete with science. It does compete with other art.

SciArt is welcomed within the world of science with good reason. Science and art have deep philosophical ties. Maryam Zaringhalam, graduate student at Rockefeller University and founder of ArtLab, a blog created to bring science and art together, said, "As a scientist, I have a deep respect for the artist's ability to distill down enormously complicated concepts and questions—many of which have fundamentally intrigued scientific thinkers for centuries—into a work of art for anyone to stop and experience. It's that stripping down and overall shift in context that has really drawn me to the art and science intersection, especially given that I'm constantly looking to share my fascination with and awe of the natural world." This attitude is common among scientists when talking about SciArt, and has given rise to work created through science/art collaborations, such as those featured in the "Imag(in)ing Science" show at Indiana University. SciArt is consistently welcomed into institutions devoted to science and science-related themes, such as the New York Hall of Science, in Queens, the New York Academy of Sciences, in Manhattan, and the Observatory, in Brooklyn.

"In the art-science world, unlike the New York art world as a whole, the center of gravity is more in museums and nonprofit spaces," said Feldschuh. "There are a number of galleries in New York that I would consider to have a particular focus on art-science or technology in art, but there are more museum opportunities, and the museum shows that I personally have had have come from museums that have had more of an art-science background." Daniel Hill, a painter whose work deals with the way com-

plexity can arise in art made by following simple rules, agreed: "I don't recall ever seeing an exhibition at a gallery that was billed as SciArt. A SciArt exhibition will most likely be found at university galleries and science based intuitions, like the New York Hall of Science or maybe the American Museum of Natural History."

IV. Different Worlds

It's a good thing for science-based artists that institutions of science and learning welcome SciArt, because despite some inroads, SciArt is a very small part of the mainstream art world.

While there are many pockets of galleries ranging from "white box" to grungy up-and-comers in New York, the mainstream contemporary art world is epitomized by the Chelsea galleries, those that line the sidewalks from 19th to 36th streets on the West Side, where the most famous artists exhibit their work and where the wealthiest customers buy it. But the mainstream contemporary art world is "only one of many art worlds," said Ed Shanken, a professor of digital and experimental media art at University of Washington. He continued, "Over the last 20 years or so a number of parallel art worlds have grown dramatically, in particular the New Media art world and the art-science art world, which are related but not exactly the same." New Media art incorporates the concepts, technologies, and social practices associated with computers and computer networking in a critical aesthetic investigation of digital culture.

Shanken, trained as an art historian, discusses contemporary art, SciArt and New Media art as being three, of many, separate art worlds that have developed, in his book *Art and Electronic Media* (Phaidon 2009). He noted that the New Media art world has developed its own set of institutions, exhibition venues, university departments, and academic conferences that are so robust that artists and scholars working in this field may not feel the need to become integrated into the mainstream contemporary art world. This phenomenon has been referred to as "self-ghettoization". New Media Art and SciArt are perceived as occupying the fringes or the margins of mainstream contemporary art, but it's such a self-sufficient, "lavish" ghetto that there's little incentive for artists to leave it:

"Many artists are perfectly content to operate just in that art world. And the New Media art world has grown tremendously in the two decades I've been professionally engaged with it myself. It has an extraordinary infrastructure for supporting the creation, exhibition and critical analysis and interpretation of this work. Artists, curators, and scholars can have quite successful careers working in this field: successful in the sense that they can travel around the world like successful mainstream contemporary artists, presenting their work, organizing exhibitions, lecturing, and publishing. But what the artists can't do is sell their work. And they can't get their work featured in magazines like *Artforum*, which really don't write about it. So there's been a self-ghettoization partly because of a really pretty lavish ghetto to occupy but also because the commercial engine of the contemporary art world continues to mostly ignore it."

V. Barriers to the Mainstream

While the SciArt fringe is certainly thriving, it's hard to think that if a science-based artist were offered a show at a mainstream venue that they would turn it down; the galleries are spacious, well-funded, well-advertised, and well attended. The venues of non-profits, universities, and science-geared museums are fitting, and crucial, but a show in a mainstream gallery would inarguably expand the reach and impact of SciArt enormously. So why is it that SciArt remains on the fringe?

"The Chelsea galleries," Anker said, "are still very interested in looking at irony, popular culture, and traditional forms of painting and sculpture, and SciArt rocks the boat. It also assumes that the artist has a rational streak, which goes against the kind of mistaken identity of the artist as a free spirit." There is a certain wish for anonymity and freedom of interpretation of art in most exhibition spaces, exemplified by the fact that in Chelsea, and most other galleries, labels never accompany individual art works.

Along those lines, the educational aspect of SciArt may in fact turn off mainstream galleries and their particular audience. In contrast to the "open read" much of the art world promotes, SciArt has a built-in specificity to it, often walking the line between art and illustration, mod-

eling, dioramas. It is common in SciArt shows for a short description to accompany a work, enhancing the aesthetic and conceptual experience of the piece by grounding it in its scientific context. Depending on your background, learning might just be a prerequisite to understanding the complexities of the artwork, in the same way that in order to truly appreciate a difficult book, you'll probably have to look up a few words while reading.

In the SciArt world, didactic potential is valued and sometimes even required, as is the case at the MSB Gallery, located within in New York University's Langone Medical Center, where work at the intersection of art and human biology is shown. In their 2013-2014 call for exhibition proposals, the gallery stipulates that the art should "use medicine and science as the subject and language to create aesthetic works that are provocative and educational." As gallery director Jodi Moise said, "There's a real emphasis to educate." Moise invites doctors at the medical center to attend openings of exhibits that relate to their work or the subject of their work; sometimes the doctors even "make a few remarks," Moise said. To Moise, art's potential to educate viewers about science and medicine is an asset.

There's also the question of what SciArt educates people about, ie., content. Responding to the question of how the gallery is received by the mainstream art world, Moise commented, "When we're doing something that's very scientific, a general mainstream gallery may not feel that it's appropriate." She later clarified that appropriate was not the right word but that some themes might not be "embraced by a general audience." She referred to the gallery's previous show, by Lisa Feldman, on ostomies, holes connecting internal organs, such as the colon or small intestine, to the exterior of the body and usually requiring bodily waste to be shunted into a waste disposal bag. "That's not a subject that everybody embraces, for the most part. However, the artist did it in a very very tasteful, artistic fashion." Anker noted that one reason people may not embrace SciArt is that it reminds us of our mortality. "The public is afraid of anything that is medical or scientific in nature because it brings out the unconscious response that they may have to their own mortality." When asked if it was the graphic nature of some medical art that might not be embraced by the mainstream art world, Moise commented: "I think a lot of galleries today are going for conceptual art."

Do those galleries even realize that much SciArt is conceptual art? In Shanken's view, it's less that the mainstream art world rejects SciArt; it's that they are ignorant of it and fail to see how it overlaps with what they are doing and talking about. Shanken mentioned a controversial article, "The Digital Divide," in *Artforum* September 2012 in which Claire Bishop, a professor in the art history department at CUNY, asked "Whatever happened to digital art?," with the caveat that she wasn't talking about New Media art. Shanken and others took offense because, "by failing to acknowledge that new media art is contemporary art, she recapitulated the "Digital Divide" she ostensibly was trying to bridge."

Cynthia Pannucci, who founded Art Science Collaborations, Inc. (ASCI) in 1988, echoed this idea that the mainstream art world was ignorant and therefore afraid of SciArt. "These gallerists," Pannucci said, recalling the time of ASCI's founding, "they felt intimidated by the work because they couldn't talk about it. And when you're making a living selling art, you have to be able to talk about it with potential buyers, get people excited about it, and even though they may have been excited by what they were seeing, they were intimidated by not knowing about the technologies involved .... Even art writers won't write about that which they cannot appear to be intelligent about."

Art made of living, or formerly living, materials also raises ethical concerns, Anker pointed out. What are the rules for displaying live works of art in galleries? What about works of art involving the human body? As for displaying live art in galleries, Anker said, the question is: What happens if it dies? Or what happens if you have to kill it, a question that Museum of Modern Art curator Paula Antonelli faced when she needed to cut off the nutrients to a miniature coat made of living mouse tissue, as Carolina A. Miranda reported for *ARTnews*. *Victimless Leather*, by Oron Catts and Ionat Zurr, was a living work of art. "'Life' is often at stake in the proper execution of the display and preservation of SciArt," Splan commented, on this

subject. "And when the stakes aren't that high, there can still be complicated, expensive, and cumbersome technical requirements that could perhaps overwhelm curators at non-SciArt venues."

VI. Areas of Overlap

The place where art and science overlap the most is the university, where a whole range of disciplines coexist in a single institution. In reality, university departments may be somewhat segregated even within one school, but in theory, a university seems ripe for SciArt because it already has the Venn diagram's two components. Columbia University just began hosting a series of public talks about the intersection of art and science this fall, called CUriosity[3], which brings artists, scientists, and science-based artists together to discuss topics such as "The Cell in Art and Science," "Epidemics," "Movement," and "the Brain." Rebecca Jones, who organizes the series, commented:

"I think university culture and the academic community is set up to accept and develop new philosophies and ideas (such as the SciArt movement), as this is what keeps the institutions alive and innovative. This also makes them more likely to support interdisciplinary study, as the dialogue it creates nourishes the academics and students who study there."

Both science and art have their own sets of specialized equipment, be it a PCR machine, a pottery wheel, or a copy of Final Cut Pro, and the expense of equipment could discourage people from branching out too far. That barrier is thinner at universities, says Jones. "Universities have an advantage as they already have lab spaces/tech support at hand, as well as a vibrant community of academics in both the Arts and Sciences to develop collaborations with external partners." Many universities now host artists-in-residence, like Nene Humprey's residency at NYU and Joyce Cutler-Shaw's at UCSD. Some universities offer courses that combine art and science. Suzanne Anker, in fact, is responsible for the new laboratory for artists housed with the School of Visual Arts, New York, offering classes that teach art students how to engage with the scientific method. Ed Kerns, professor of Art at Lafayette College, teaches art classes to interdisciplinary students, often from the sciences. Ellen Levy will be conducting a seminar on art and neuroscience this coming spring at The New School for Social Research. Additionally, the initiative STEM to STEAM, from RISD, pushes for the inclusion of Art & Design (in addition to Science, Technology, Engineering, and Math) in the U.S. education agenda.

Another advantage for science-based artists to being in academia is that it provides an alternative to the art market, said Shanken.."Many professionals in the New Media art world and art-science art world have academic affiliations, so they don't need to earn a living selling art. They are in a professional situation where they are actually at greater liberty to experiment."

The Pratt Institute, with its five schools including architecture, art and design, and liberal arts and science is an interdisciplinary institution like a university. Accordingly, Pratt Manhattan Gallery seeks to represent all of these disciplines in its exhibitions, says gallery director Nick Battis: "One of our ambitions for the gallery is to look at our exhibitions from a cross-disciplinary standpoint, and up till now, that included those [disciplines] that are studied at Pratt: architecture, design and art... Sometimes a design exhibition will include artists, and sometimes an art exhibition will have designers who are producing art. We've taken it one step further in opening it up to science." The gallery just had a SciArt exhibit, "SPLICE," a collection of artworks related to themes of medicine and the human body, which included a sculpture in which brains sit atop high heels, a video based on an MRI of an artist's brain, medical illustrations, and a room in which a viewer lies down on a bench and experiences a set of vibrations. Pratt Manhattan is planning an in-depth exhibit about art and neuroscience, "Sleuthing the Mind," curated by Levy, in the fall.

While Pratt Manhattan remains only one of a few galleries with an explicit interest in holding science-based art shows, that is not to say that there is no SciArt in galleries at all. "The fact is, there's plenty of SciArt in mainstream contemporary art; it just isn't called that," Shanken said, mentioning as examples the work of James Turrell, whose light-based work appeared at the Guggenheim this summer, and Alexis Rockman, whose paintings depict the way humans interact with plants and animals and who is represented by Salomon Contemporary, in Chelsea.

It's unclear if mainstream venues exhibiting science-related art value it for the scientific concepts it addresses or for other reasons, such as aesthetics. "The venues I have worked with in NYC," said Splan, who has exhibited her work in venues from Chelsea to the New York Hall of Science, "have generally prioritized points of entry that are informed by conventional aesthetics of art and design over institutional aesthetics of science and medicine." We asked the galleries their views on these issues, but despite numerous inquires to major New York museums and galleries both mentioned and unmentioned in this article, we did not receive a reply on the subject.

VII. Rallying Around Important Topics

SciArt made inroads into the art world around the same time science made inroads into popular culture. One rallying point was genetics and genomics in the 1990s, now known as the decade of the gene. In 1994, Anker curated an exhibit at Fordham University entitled "Gene Culture: Molecular Metaphor in Contemporary Art." In 1996, *Art Journal*, a publication of the College Art Association, put out an issue, guest-edited by Levy with Berta Sichel, on "Art and the Genetic Code" that reached a very wide, largely academic audience and quickly sold out. Anker remembers many exhibits in conjunction with the announcement of the rough draft of the human genome, in 2000. "Probably the most famous one," Anker said, "was 'Paradise Now,' which was at Exit Art," a SoHo Gallery that has since closed. The 50th anniversary of the discovery of the structure of DNA occasioned science-related art exhibits in 2003. That year, Anker and Dorothy Nelkin published the book *The Molecular Gaze: Art in the Genetic Age*.

"For whatever reason, there's been more difficulty with receptivity to scientific ideas in conjunction with artwork, but I think the attitude has changed a lot with the genome project, with the cloning of Dolly," says Levy. "There've been so many spectacular things in the public eye—for example, stem cell research—this has been incredibly compelling. They evoke wonder, inspiring both the interest and even jealousy of artists who try to duplicate and borrow the language and processes of science."

SciArt is starting to make appearances in mainstream art magazines. As mentioned earlier, last March *ARTnews* published an article entitled, "Weird Science: Biotechnology as Art Form" which discusses BioArt as an art practice that replaces the studio with a laboratory, and mentioned several places where BioArtists work, such as Genspace, the NATLab at SVA, and SymbioticA of Australia. While the author limited the discussion to BioArt, to see this type of discussion happen in a major art magazine is an important first step.

The factors that prevent SciArt from claiming territory in the mainstream art world, from SciArt's pedagogical aspects to its biohazard potential, label conventions, obscurity, and/or a possible stigma of classification with a "logical", "left-brained" discipline are, of course, impossible to measure or even disentangle. Subject matter aside, galleries may reject some SciArt—and this would be true with any art—because it just isn't as 'good' as the competition. The thing is that it's impossible to put the subject matter aside. What makes something good is in the eye of the beholder—but the beholder may well be influenced by mainstream conventions about content. All of these factors could also be related to the broader cultural context of the role of art in our society. As religion used to be both the center of culture and the subject matter of art, there is the growing idea that as science gains prominence in our culture at large, SciArt will become more and more central to the art world, a topic we discussed in our very first issue.

"Everything takes time," said Pannucci, "and those artists that are at the forefront of pushing boundaries—that has always been the case that their work wasn't understood... [for SciArt] I don't think it's any different, really, and I do think that {a change is} coming because these scientific issues of sustainability and climate change and environmental issues are in our face right now and they're not going away, and everybody across the board is already impacted by them and will be much more... In that sense, there is a bright future for artists that deal with science topics."

Pratt Manhattan Gallery's Battis reinforced this explanation: "We've sort of accepted that artists define our culture—help us to define and understand culture—so why can't we apply that to science as well?"