

Art, Politics, and Interdisciplinary Collaboration: A Conversation with Jeff Lieberman

By Jacquelyn Davis

Jeff Lieberman is an American interdisciplinary artist based in Boston with four degrees from the Massachusetts Institute of Technology (MIT): two Bachelor of Science degrees (in physics and mathematics), and two Master's degrees (in mechanical engineering and media arts and sciences, with a special interest in robotics). For a brief stint (2008–09), he was the host of the Discovery Channel's *Time Warp*, which offered slow-motion footage of events that could never be seen with the naked eye, often revealing surprising aspects of reality. Artistically, Lieberman is best known for his kinetic sculptures and mechanical installations—some of which have been funded by the crowdfunding platform Kickstarter. He is also an acoustic/electronic musician and professional photographer with a personal interest in spirituality and meditation as vehicles to alleviate suffering. Lieberman has a history of collaborating with others across the inventive spectrum, and he is a notable public speaker and educator. This conversation took place via email November 1–10, 2016.

JACQUELYN DAVIS: You have several science degrees focusing on complementary skill sets. It's apparent that your educational background influences your practice. How has your practice unfolded in relation to your educational pursuits? Were you an artist before you began your education at MIT, or did you begin to identify as an artist later—and if so, when?

JEFF LIEBERMAN: If you are a poet and you grow up in China, then you're going to use the Chinese language for your poetry. Throughout my life, I've learned physics, math, mechanical engineering, and robotics, and studied consciousness and perception. Naturally, those have become the language I use in my work; the "paint" I use is circuitry, knowledge about the human visual system, and math. As I learned more in any discipline, it was added to the background of imagination. But these things all started before I can remember, and I agree with Picasso that we are born artists.

JD: Tell me about your first passions in primary and secondary school. How do these initial curiosities connect to the adult that you have grown up to be?

JL: The first passion that I remember is Lego. Legos still feel revolutionary in the sense of using a finite number of pieces to construct an infinite number of expressive possibilities—but they have to work mechanically, too. So implicitly, you're engineering, learning about structures before you even know what learning is.

The second passion I remember is math. I was that kid who would come home at age nine and try to figure out a trick to adding up $1 + 2 + 3 \dots + 100$. There is a formula that makes it easy to do the calculation, and I loved thinking about problems like that and figuring them out—the hunt was a pleasure. It's a nice parlor trick, too, because I can get the answer (5,050) almost instantly in my head. The fact that there were ways to distill patterns from an infinitely complex world was fascinating to me.

JD: Some of your first projects, such as *The Drip Project [273-o73A]* (2001) and *Dani Eyes* (2002), focused on sensory investigations and the interplay between light and sound; then later, your interest in robotics (as in *Cyberflora* from 2002) and kinetic sculptures (as in *Moore Pattern* from 2007) surfaced. How do your first projects and preliminary sketches while at MIT speak to your more complex projects such as *Absolut Quartet* (2009) and *Sky Wave* (2016) that followed?

JL: Many of my early projects were just feeling into the space—into different basic questions. *Drip* and *Dani Eyes* were basic musings into capturing audio and diffracting light; *Moore Pattern* was kinetic, but with only six moving parts. In some sense, it feels like just learning the language—as in music, learning about scales. But here, "scales" are different forms of inquiry—into sensory experience—so as to gain a deeper intuition into those physical aspects. It's a funny thing about "experience." When presented with a new situation, you automatically feel into all these intangible qualities. So, although I think I'm still learning with every project, at first, I was just getting ahold of the ropes. I often think I'm still musing about the same basic riddles as I was in 2001, or even as a child.

JD: Of your earlier projects, which ones were most significant and rewarding? What lessons have you learned from these scientific and engineering explorations that take on multiple forms?

JL: Being tasked with *Cyberflora* in 2002—a project with twenty interactive robotic flowers—when I had never built a robot before, was daunting at the time. It was such a deep learning experience, not only of construction, but of getting an entire system—lighting, algorithmic sound, forty sensors, thirty motors—all speaking to each other properly. That shaped my confidence in building, especially on a timeline (we had eight months). I don't think of it now as a project most representative of my aesthetic, etc., but the rearview mirror is always dirty. I learned the intensity of complex projects, and how things are always more complex than you imagine (even when you initially take this fact into account).

Breaking Wave (2014) has been the most rewarding experience as a project. To me, a piece sets up a certain puzzle that needs to be solved—at once an aesthetic puzzle and an engineering puzzle. The puzzle here was to hang 804 rusted spheres from the ceiling, and move them in a way that went from a flat sheet into a cloud—but if you look at the cloud from two very specific points of view, your perspective reveals a hidden image. That puzzle was so fascinating to work on, to mix the



Slow Dance (2016) by Jeff Lieberman

aesthetics of “what hidden images can work and will look beautiful?” with the engineering of “how do all of these move in the way we’re prescribing, with as simple a mechanism as possible?” We ended up making a mechanical computer that you plug right into an outlet, and it can only do one thing: make this exact animation pattern. But compared to 804 motor assemblies? This puzzle was the perfect level of complexity for an eight-month-long project, where you are deeply engaged the entire time but still on schedule. I learned a great lesson from this piece about clarity and obviousness—the hidden images we created in the piece were *too* hidden—you could only find them if someone told you they existed, and told you roughly where you needed to be in order to see them. If we explore this kind of work again, we’ll likely make the images more obvious to find. It’s a great example of something you cannot know until you build it and see.

JD: How do most of your group projects begin? Who or what is the motivating force behind such collaborations? Are you the initiator, or do others approach you? I am also interested in any beneficial patterns or habits in relation to collaborative tendencies, which have, over time, led to a higher “success” or completion rate.

JL: Collaboration is critical in my work. In the last eight years of my work, I’ve only finished two pieces working alone (and even then, there are countless people giving advice and answering questions when something becomes stuck). Most of my work is a collaboration with two studios: Hypersonic, who are masters of engineering structures that are beautiful and actually work; and Sosolimited, masters of data visualization and movement/animation software.

Most projects begin with a client coming to us to ask about their space, whether it be a new building’s atrium or a museum exhibit. Often they’ve seen our previous work and want something similar, and we have a chance to communicate with them to develop something new that fits their tone and budget. The benefit to collaboration is clear, at least when you collaborate with people who have different skill sets than you—you can enter previously inaccessible territories. Also, the simple act of communication through the life of a project gets you out of your own head/perspective and creates mutations of ideas that you wouldn’t have on your own—and especially with projects that require engineering, it catches blind spots in a design before it’s too late.

JD: Of the various kinetic sculptures that you have designed and exhibited, which ones were the most challenging and rewarding? What problems have you run into with these larger sculptures? How did you solve them? Troubleshooting tactics for an engineer-scientist-as-artist may be different than an artist who associates with visual arts or a more traditional medium.

JL: *Absolut Quartet* was the most challenging because of the combination of its complexity and the fact that we were given four months to complete it. The project is an interactive robotic musical installation that plays a custom composition based on a chosen input theme. We took one day off in four months—Thanksgiving—and otherwise worked every day for fifteen hours. The first half of the project was simply getting one shooting mechanism accurate enough to hit a marimba key 99.99% of the time; the second half was designing all the percussion and wine glass instruments, and fabricating the entire machine. It was rewarding to have it play its

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(apropos) first song, Lionel Richie's "All Night Long" (1983), with only a few weeks remaining in the project, and to finally feel like we were going to make the deadline.

It's impossible to answer which one has felt most rewarding, because as I've changed as a person over time, the artwork in general is rewarding in ever-changing ways. I am glad to say we've had no complete failures. A specific engineering problem came up with *Sky Wave*, our piece for a cruise ship. Each petal was foam that was fibreglassed, sanded, primed, painted gold, polyurethaned, painted in red paint and Elmer's glue for a textured organic finish, and then polyurethaned again. We did this all in an unheated basement in New York, then shipped everything to Germany for installation on the ship, which we thought would be unheated. Well, when the ship set sail, the petals started to develop pimples, where a ten-centimeter section would just pop up off the flat surface. It turns out that the ship was heated once it set sail, so the bottom layer of primer needed a hotter environment to cure before being placed onto the ship. When it finally did, it off-gassed, creating little mini-bubbles in the petals. Over two months, every single petal was covered in pimples. We had to remake the entire set of ninety-nine—almost 250 hours of work.

JD: Who and what are the creative/intellectual/theoretical influences that have pushed you into the directions you have taken? Some of these must stem from your time as a MIT student, but what/who are the others?

JL: Nature is the biggest influence on me, and watching how my mind and perception systems work through processes like meditation and introspection. But if I can use this as a chance to give a shout-out, it would be to the work of Arthur Ganson. He had an exhibit at the MIT Museum that I saw before entering MIT, and it was the first time I felt as though I saw art and engineering happening at the same time. It took another five years for me to even begin implementing that, but it opened up a whole world of possibility for me.

JD: What problems or concerns do you harbor in relation to the art world as it stands? Do you feel that there is ample room for interdisciplinary artists such as yourself? Are you recognized by "the art world" in the way that you would like, or do you feel that there is disconnect or, in some cases, a lack of recognition—considering the fact that your practice is molded by science and technology? One could say that artists who work in more conventional mediums such as painting or drawing are better understood and, in turn, translated, critiqued, and universally marketed.

JL: I once gave a job talk to be an arts and technology professor, and the first question after my talk was: "But is it art?" I knew immediately that it wasn't a place I wanted to work. Those sorts of issues don't cross my mind. An image of some experience enters my mind, and I want to make it. It's a straightforward process even if the possibility is constantly evolving.

I am lucky to consider myself an artist who almost never thinks about "the art world." Most of our commissions come from companies, who want art but for a specific goal of their own, which forms a great constraint so that we never have to think about how our work will affect or work within the art world. I think that influence might stifle some of our decisions. It makes me curious, though, how our work

would be interpreted by the art world. I haven't thought about that in quite some time. There probably is a disconnect on both sides.

JD: Not only are you interested in engineering, robotics, and technology, but you also possess knowledge revolving around spirituality and well-being. In the 2011 TEDx Cambridge talk "Jeff Lieberman On Science and Spirituality," in podcasts, and in public lectures, you have discussed your fascination and investigation with energy—how it relates to the cosmos and affects individual consciousness, attitudes, and behavior. How do your interests in religion, spirituality, (and "karma"?) connect to your enthusiasm for the scientific and analytical? These spheres are not easily conjoined.

JL: I think this is a phase in our culture, in which these issues are so separated. Five hundred years ago, it was not so, and I think in the future it will be not so again. Science is merely a tool, a lens, a specific method of questioning, to try to bring the infinite complexity of reality into a set of distilled patterns. And meditation and self-inquiry share elements of scientific experimentation: follow these instructions and see what happens to your perception. Funny enough, I distrust science more these days, the sureness people seem to have about the current materialist paradigm which is (in my opinion) on the brink of collapse. What science currently misses is the explanation of experience—if we are all a bunch of waves and billiard balls bouncing, where's this *experience* happening, which is the most fundamental thing we actually know? As an artist and meditator, I see how these worlds intertwine. And I think spiritual traditions and techniques reveal potentialities in human beings that we hardly discuss in our culture, in terms of who we are, how we understand our own experience, how we empathize with others and feel connected, and how we reach our deepest sense of joy. I look forward to the day when science is widely accepted as an aid to those practices—a field of study already quite active but still in its infancy.

JD: Recently, you have had success securing funding for your forthcoming project *Slow Dance* on Kickstarter. Many Americans use crowdfunding to support projects, but I've observed that this method is not often used in other Westernized countries. I'm also referring to my personal experience with crowdfunding—as an American in Scandinavia—which fell short; in Northern Europe, this mode is not taken as seriously as a valid fundraising option by those who instead choose to depend upon government grants or personal capital. Tell me more about your views on crowdfunding—as it relates to the art world, as well as your notions of value, inflation, and competition.

JL: I love crowdfunding! It's incredible—no-middle-man simplicity. If people are never going to want what you're making, you get to find that out before you invest a lot of your time, and if they do, you no longer have to use your own savings (often nonexistent) to bring the project to fruition. After doing commission work, where I created pieces that exist in one place in the world (sometimes private), I became extra interested in the possibility of pieces that could be in the home of every person who desired them. It's not the kind of thing I would have risked investing two hundred thousand dollars in for production, unless I knew it was going to be desired. So it worked perfectly for me.

JD: Your recent collaboration with the collaborative art and design studio Hypersonic produced the static sculpture *Constructive Interference*

(2016), which can be viewed at the Learning Innovation Center at Oregon State University. This sculpture differs from other sculptures in that it appears kinetic, but there are no moving parts. Tell me about your interest in the unreal, distorted, and fantastical, as these traits seem to embody illusion and, to a degree, deception.

JL: Our initial proposals for the OSU space were too complex for them to maintain. The idea of a static piece came to mind—one that appeared kinetic as you moved through the space, since your perspective (angle) of the piece would be constantly changing. This was a perfect opportunity to create a moiré pattern, which implicitly changes based on one's position.

I love illusions; they are such a quick way for someone to recognize that what they perceive is not reality, that their mechanism of perception is responsible for the illusion. For years I've seen static illusions and thought of ways to make them kinetic. You could say there is an element of deception, but the most enjoyable part is that it is the person's faculties of perception themselves that are doing the deception! This has been true for my pieces based on moiré effects, persistence of vision, anamorphism, or even gestalt.

JD: What is your opinion on the relationship between art and politics? Do you feel these two spheres are interconnected and influence one another, or do you see them as divided realms that function independently, without consequence of each other?

JL: I almost never think about politics, until we're in a situation like we are in the United States today and the stakes feel so high. So maybe I underestimate the connection between politics and art. But I don't fully understand the question, unless you're talking about a political state that flat out condemns artmaking?

JD: Certain political states exist that not only condemn artmaking but more subtly hinder creativity by promoting only digestible, socially acceptable forms. In Sweden, for instance, graffiti art is not recognized by the government as a valid art form. Rather, graffiti is seen as a desecration of public space, so Sweden persuades citizens to both refrain from creating it and report new appearances; the country has a "zero tolerance" ban. Do you feel that there is a correlation between one's (or a nation state's) political views and the ability to create? Can one's perspectives on freedom and expression affect one's ability to actualize ambitions? To an extent, I am also interested in whether or not your decision to vote in the most recent US presidential race—and for what party and candidate—reflects your views on the assumed vs. actual connections between art and politics.

JL: Definitely. Different bans and taboos will affect people's ability to manifest specific art forms, and will likely influence their imaginations as well—imagine being behind the great firewall of China, or living in North Korea, for example. The whole worldview is altered, constrained.

I'd like to think we haven't reached that kind of limitation in the US—yet. But given that Trump was elected two days before this question surfaced in the conversation throws a lot of new uncertainty and possibility into things—and calls to mind former leaders who silenced dissenting views. I hope we are able to retain our freedom of expression, but I'm not confident it will go unaltered in the next four years. My vote was irrelevant because we still use the Electoral College,



Breaking Wave (2014) by Plebian Design and Hypersonic

and I live in an uncontested Democratic (60.8% according to the *New York Times*) state of Massachusetts. I'm hoping that the insanity of this election cycle helps put the nail in the coffin of some of our outdated systems (the Electoral College and the two-party system in general).

JD: Regarding the state of the world today versus the state of today's artworld: do you have suggestions or observations that individuals, creative or otherwise, should consider when trying to more harmoniously navigate their way through one or both of these worlds?

JL: I'm not even an expert at navigating my own world, much less someone else's view of the world! To me, the heart always points us where we want to go, and the mind usually influences us with possible pitfalls and fears. I try to have as clear a view of my mind as possible, so that it doesn't block the actions of my heart. This is not easy, as the mind is a constant trickster.¹

JACQUELYN DAVIS is an American writer and curator based in Stockholm; she is the founder of valeveil, which is devoted to strengthening creative connections between the US and Scandinavia.

NOTE 1. For more information about the work of Jeff Lieberman, visit <http://bea.st>.