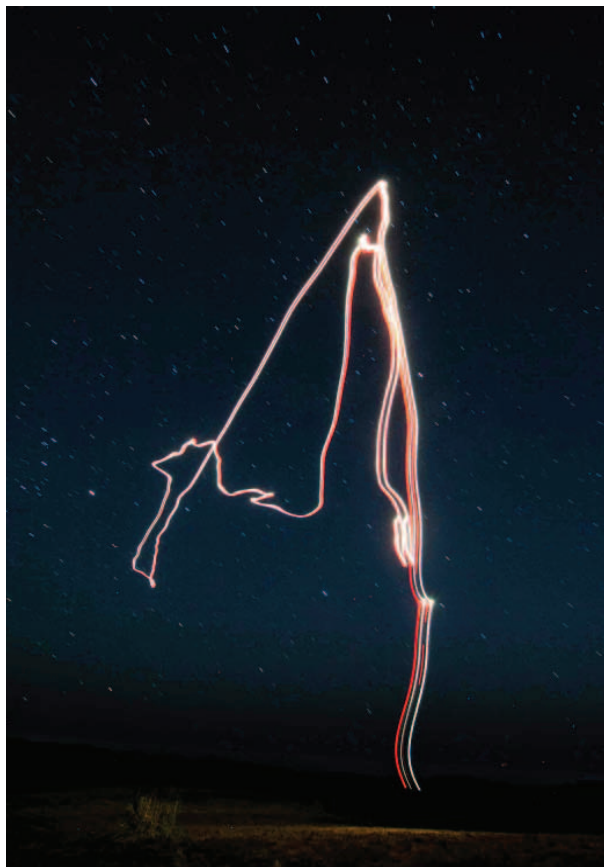


David Bowen, *landscape 37.363944–122.299333*, 2016. (© David Bowen)



David Bowen and Adam Zaretsky, *flight of the centiSperm*, 2016.  
(© David Bowen. Photo: Weidong Yang.)



David Bowen, *37.364063-122.300926 @20m-37.353716-122.306756*, 2016. (© David Bowen)

## EXPERIMENTS AT DJERASSI

David Bowen

### LANDSCAPE 37.363944–122.299333

This still image is from a video of point-cloud data streaming from a three-dimensional camera installed in an outdoor location on the Djerassi property. The video display consists of thousands of individual points, creating a 3D model of a living stand of trees. The color of the individual pixels shifts from blue to green in response to their relative distance from the camera. This color shift illustrates the dynamic depth of the three-dimensional field, giving the scene an artificial appearance and producing a formal contrast between the natural forms and the digital system collecting the data. As the system monitors and collects data from this location, it relays an incomplete physical representation of a dynamic living organism and its fluid environmental conditions in digital form.

### FLIGHT OF THE CENTISPERM (WITH ADAM ZARETSKY)

Human DNA was combined with the DNA of a centipede. Relative electrical flow was measured over time from the DNA-producing data as the cells decayed. This data was scaled and correlated to latitude, longitude and altitude, respectively. The coordinates were uploaded to a drone, which flew autonomously based on the DNA instructions. The image is a long exposure of the nighttime flight, showing the course the drone took as it was driven by the data collected from the DNA sample.

### 37.364063-122.300926 @20M-037.353716-122.306756

This is a photographic compilation consisting of more than 300 individual photographs taken during a 1.5-kilometer drone flight adjacent to the Djerassi property. The title refers to the starting and ending GPS coordinates of the flight.

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## THE DJERASSI FOG

Matteo Farinella

I have always struggled with the definitions of art and science. To avoid categorization, I often take refuge in the fact that what I am doing—creating comics about science—is probably equally dismissed by both artists and scientists. Ironically defined by Art Spiegelman as “the bastard offspring of art and commerce” [1], comics are indeed a strange medium that escapes categorization (not illustration, not literature) and traditionally does not like to take itself too seriously.

However, the time I spent at Scientific Delirium Madness 2016 in the company of so many brilliant scientists and artists who all somehow defy definition made me reconsider my own medium. I became convinced that it is not *despite* comics’ lack of definition but *because* of it that they can be so powerful. Using a medium that does not have many expectations attached to it enables me to reach a new audience for science.

So I decided to embrace the ambiguity of comics and accept that state of “not knowing” that Stuart Firestein describes in his book *Ignorance* (2012) [2] as the prerequisite for any original discovery. This is why, during my residency, I often ended up drawing the fog as a metaphor for my experience at Djerassi. The beautiful California fog that, while in our language often becomes a symbol of uncertainty and confusion, also provides the breeding ground for the most magnificent redwood trees.

Matteo Farinella

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### References

- 1 A. Spiegelman, “Birth of the Comics,” *The New Yorker*, 26 December 1994, p. 106.
- 2 S. Firestein, *Ignorance: How It Drives Science* (New York, NY: Oxford Univ. Press, 2012).



Matteo Farinella, *Djerassi Fog*, ink on paper and digital colors, 2016. (© Matteo Farinella)





Christine Metzger, *1895–2015: California Drought*, knitted fabric, 2016. (© Christine Metzger)



Christine Metzger, *Research swatches for 1895–2015: California Drought*, dyed fabric, 2016. (© Christine Metzger)



Christine Metzger, *1895–2015: California Drought* (detail), dyed fabric, 2016. (© Christine Metzger)

## KNITTING TIME TOGETHER

*Christine Metzger*

As a geologist and a textile artist, I used my time at Djerassi to explore new ways to present scientific data and records of climate change via knitted fabric and natural dyes. My work focuses on how landscapes responded to climate change in the geologic past and how that information can be used to understand future climate change. I'm increasingly interested in imagining how that unavoidable future (and current!) climate change will shift our ecosystems and landscapes. How does the visual map shift with the shifting climate? How can that be recorded and preserved? What might future reconstructions of California look like, and how can this information and data about climate change be presented in novel and communicative ways?

*1895–2015: California Drought* is a 12-foot-long knitted fabric that presents the 121 years of California drought data in different hues of naturally colored cotton. I made 10 colors of yarn by washing four shades of commercially available, naturally colored cotton—grown in California, in some of the driest parts of the Central Valley—in alkaline solutions of various concentrations. Using my knitting

machine as a primitive computer to “plot” the data, each 12-row stripe indicates one year of data. The variations of the cotton colors indicate how wet (green) or dry (brown) the year was using the Palmer Drought Severity Index.

The pattern of the fabric changes from light greens (slightly wet) and browns (slightly dry) 100 years ago to darker browns (long extreme drought) and brighter greens (rare extreme wet periods). The long- and short-term variances in the data became evident through the physical act of knitting the fabric. The resulting work—both performance and piece—is an accurate depiction of the data but is more compelling and evocative than any x/y plot chart could be.

As a Scientific Delirium Madness resident, I am grateful for the opportunity to work, collaborate and play in a creative, dynamic environment and with 11 clever and compassionate people. My work, and my heart, remain deeply transformed.

*Christine Metzger*

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## PERIPHERAL ENCOUNTERS

*John MacCallum and Teoma J. Naccarato, with performers Laura Boudou and Stacey Pelinka*

### BEFORE

We arrived at Djerassi with history together. We had been collaborating for two years on a long-term, practice-based research and creation project. In this project, we employ biosensors as a means to intervene in our choreographic and compositional process, in particular with regard to understandings of bodies and time in performance. In the current piece we are creating, we use electrocardiogram (ECG) sensors worn by dancers to generate tempos for musicians in real time. The impossible nature of the task given the musicians to follow the highly unpredictable pulses derived from the ECG calls into question the nature of their relationship to performative and clock time. Similarly, the incongruent relationship between the simplicity of the ECG signal and the complex biophysical process it is intended to represent disrupts the value systems by which bodies are measured and defined.

### THE GIFT OF TIME

On our first day at Djerassi, the residency was described to us as “a gift of time.” And yet, time played tricks on us over the course of a month, expanding and contracting like an accordion. The generosity of the context—people, nature, food, studio space—allowed us to research *peripherally* and *unintentionally*. Collaboration spilled beyond our designated working sessions, such that sharing a coffee, dinner or glass of wine under the stars with any of the 12 artists and scientists present inspired perspective and progress in our artistic research. This residency was truly a gift of shared time.

### BREATH PRACTICE

Every morning, post-coffee, we entered the studio for an intensive breath practice. The focus on breath came about initially because we are working with ECGs in our artistic research. Over time, however, we became interested in the physicality of breathing itself and in the extreme states of exertion and relaxation that performers can achieve through guided or self-directed scores for breathing. Additionally, a performer's use of breath affects treatments of body weight in movement, and, subsequently, the temporal unfolding of the choreography.

### RELATIONAL LISTENING

Late one evening, in search of a title for our next show, we played the game where you open a book to any page, place your finger blindly on the text and read it aloud. In a collection of poetry by past Djerassi resident Susan Wicks, we were inspired by the phrase *peripheral numbness*. All week we had been struggling to articulate the indirect quality of



Studio sessions with dancer Laura Boudou and flautist Stacey Pelinka at Djerassi, 2016. (Photos: John MacCallum)



Morning breath practice at Djerassi, 2016. (Photo: John MacCallum)

listening and the relationality we desire between dancers and musicians, as well as between performers and media. The metaphor of peripheral numbness directed us toward somatic approaches to listening to/with/through the body and to/with/through multiple moving sensations and agents in the environment. We explored numbness not



as a loss of feeling or sensation but as a tingling reminder at the edges of our perception that we are in continuous reconfiguration with our surroundings. In the following weeks, we worked with dancers and musicians to craft a methodological progression for *relational listening*, which continues to be an important aspect of our practice-as-research.



Performance of Study #3 at the Djerassi Open House, 2016.  
(Photo: H  l  ne Caujoie)



Performance of Study #4 at Djerassi Open House, 2016.  
(Photos: Teoma J. Naccarato)

## MEDIATION, IN RELATION

Our collaborative research is very much about contextual relationships between performers with one another, with media and with spectators. We view the role of the audience in creation and performance as one that actively shapes the context of the work. We use media—in this case, ECGs, click tracks and mirrors—to intervene in the context and therefore in the qualities of relation that emerge.

## PERFORMANCE STUDIES

During our time at Djerassi, we created two short performance studies that we shared at the July Open House. Both studies are grounded in the practices we are developing around the relationships between breath, weight, time and listening. The two studies described below (the third and fourth from our long-term project) are in some ways each other's reciprocal. In the first, we use a fundamental bodily function—breath—to explore the mechanical nature of clock time, while in the second, we explore the biophysical time of the heart through music and movement.

### STUDY #3: SCORING BREATH

Each performer wears headphones and breathes in time with a click track that varied smoothly and independently over the course of ten minutes. As the trio breathes together, rhythms diverge and converge to create musical textures. During the peaks and valleys of the score, the effort and coping strategies of each performer become visible, especially given the heightened pressure of a performance scenario.

#### STUDY #4: DANCER/FLAUTIST SKETCH, WITH ECG

The audience sits in the round, facing the exterior of the room, while the dancer moves in the center. Each guest has a handheld mirror that they direct to view fragments of the choreography, piecing together movements from their own perspective. The dancer wears an ECG from which a real-time, highly variable click track is produced for the flautist. As the flautist and dancer perform from their respective scores, the relational listening techniques in our practice inform a shared construction of time, involving temporalities of physiology, movement, music and environment.

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Teoma J. Naccarato

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*Laura Boudou*

*Stacey Pelinka*

*Project blog: <<https://ccinternaltime.wordpress.com>>*



Juanita Rockwell, my view above the keyboards, photo, 2016.  
(© Juanita Rockwell)



Asa Calow, impromptu barn lecture on AI, 2016. (© Juanita Rockwell)

## CRITICAL MASS

Juanita Rockwell

I'm writing a play with songs called *Splitting Atoms with a Butter Knife: a play with songs* that is set on the day an atomic bomb was dropped on Hiroshima. We enter this world through the imagined voices of women whose work led to that detonation, from the ghost of Marie Curie to a young woman in Tennessee cleaning up radioactive waste with a cotton mop.

In anticipation of Djerassi's geographic isolation (and airline luggage limits), I spent days maniacally downloading and scanning everything in sight: interviews with Manhattan Project physicists, WWII rationing recipes, Appalachian folk songs, 15th-century texts on Japanese Noh drama. . . .

The view from my studio is soul balm. Whenever I look up from the keyboards (in addition to a ukulele and bamboo flute, I've brought a midi keyboard, an accordion and an old borrowed electric piano), I'm mesmerized by the expanse of sky and land—and sometimes water, when the fog lifts to reveal a slice of the Pacific. I feel the exhilarating wildness, and yet my front door is less than 10 feet from my neighbor's. He swears he can't hear my accordion, although I think this may be kindness—or great headphones.

Djerassi's cavernous-yet-cozy former cattle barn invites us to morning coffee together, and silent rumination and the clack of laptops, but there is always potential access to expansive conversation or collaborative play.

I'm obsessed with alternatives to standard Western dramatic structure,

and this residency's divergent points of view are ongoing inspiration. Riffing on ideas from Adam Zaretsky's *centi-Sperm* project (<[bit.ly/2kPgRrE](http://bit.ly/2kPgRrE)>) and David Bowen's *Fly Tweet* sculpture (<[www.dwbowen.com/flytweet/](http://www.dwbowen.com/flytweet/)>), neuroscientist Matteo Farinella and I talk about how brains—and cultures—process “story.” We collaborate on a brief mock-1950s sci-fi comic book, inspired by those cartoon expressions of nuclear anxiety that proliferated during the cold war. I notice that writing in “panels” can invite a structure that is more dependent on collage and juxtaposition than a strictly cause-and-effect linear narrative.

Later, working on a song about the Manhattan Project's mass spectrometer for separating uranium isotopes—code name: the Calutron—I imagine each line of the lyrics as an individual panel of comics, floating in clouds above the accordion bellows.

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Weidong Yang, an experiment  
with light and movement,  
2016. (© Juanita Rockwell)



## POETRY AND SCIENCE

Hannah Star Rogers



Dear National Science Foundation,  
You were everything I ever wanted  
when I was finishing my PhD, and I have  
no idea why I didn't pursue you further.  
I liked the way you asked me how I liked  
my research. You even asked about the percent  
of the checks for my apparatus versus travel  
and what went to my father University—  
the modern dowry—still sexy in a vintage  
lingerie sort of way, even if it was just  
about buying off my ideas, preventing me  
from becoming a private sector girl. I know  
you still have paperwork for me, and it  
helps to know that I could always come  
back—that you'd always come back for  
another look at my details, especially if  
Congress finally does that comprehensive  
audit they are always talking about.

What does science offer art? What does art offer science? How are these two knowledge categories constructed and how have they managed to create powerful holds on our understanding? My research as a Science and Technology Studies scholar tries to address these questions. At Djerassi, I spent time discussing these issues and interviewing the other residents. What interested me most was that every resident already had a background that brought together ideas from art and science or design and engineering. When institutions like ISAST and Djerassi plan to bring artists and scientists together, it is worth considering whether this is often already a third space for individuals whose professional lines are not so clearly drawn.

In addition to my scholarly research, I am a curator and a poet. My current project, *American Letters*, is a collection of lyric epistles inquiring about the relationship between the personal and the bureaucratic, between our ideals, hopes, loves and worries about America and the consequences of dealing with its institutions. During the residency, I particularly focused on those institutions with

a science connection, like "Dear NSF," "Dear USDA," "Dear Department of Energy," "Dear FAA," "Dear BP," and "Dear 3M."

Djerassi's Open House gave me occasion to bring my interest in science and poetry together in a project that explores our relationships to science. The participants entered a strange post office where they were invited to write a postcard to science. People wrote silly, heartfelt and unusual postcards to NASA, Tesla, T-rexes, USDA APHIS, cancer, Albert Einstein and the moon.

This is a play on the strictly bounded communication tropes present in current science education, which encourages us to think of science as an oracle rather than as a public institution that we can influence. Too often, people, typically assumed to be students, are encouraged to ask a scientist a question within defined parameters of what "science" is able to answer. In this post office project, "science" was put in the position of receiver or listener, suggesting that science communication should be a conversation.

Hannah Star Rogers

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Maja Spasova, *CALLING YOUR NAME*, performance, Djerassi Foundation, 24 July 2016. (© Maja Spasova)

## CALLING YOUR NAME AND OTHER WORKS

*Maja Spasova*

During the Scientific Delirium Madness Session at Djerassi, in the great company of wonderfully gifted people, I worked on multiple projects.

The new body of work that emerged from this period is marked by the challenging and inspiring conversations that arose in such an environment.

In the sound installation *TODAY*, as well as in *CALLING YOUR NAME* (a short film and performance), I explore the possibility of an entirely open situation, where chaos, anarchy and constant change are at play. Minimizing my power as the artist, I give the authority to the participants. Thus, I create a kind of raw material that can be experienced, thought of and recombined in many different ways.

*TODAY* is a sound installation based on multiple voices and random dates from past, present and future. Several channels of nonlinear time, fragmented to presumably exact entities, slowly create a volume of information, finally to dissolve into an absence of time.

The short film *CALLING YOUR NAME* was shot during several séances with the fellows of Djerassi as actors.

On 24 July, during Djerassi's Open House, I realized the performance *CALLING YOUR NAME*; the visitors were invited to take part.

After a short presentation of the idea and just a few words of instruction, the participants were free to create their own interpretations of *CALLING YOUR NAME*. Logically, the choreography was unpredictable and the outcome a complete surprise. Flow, multitude and mobility became the characteristics of this new work.

At Djerassi I also worked on the concepts for two new trilogies:

- *RED DOTS*—an upcoming series of performances around the globe
- *DROPS IN THE OCEAN / IN THE VOID / NEW MOON*—a series of environmental works, including elements of installation, performance and happening

Not last, in an ecstatic state of mind induced by the beautiful nature, I made more than 100 drawings.

Thank you, Djerassi!

*Maja Spasova*

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## CENTISPERM

Adam Zaretsky

**Goals:** To electroporate whole genomic DNA from a centipede into the center of human sperm.

### Materials and Methods:

1. Mix sperm and DNA in the electroporation vial (cuvette): 10 microliters of centipede DNA to 50 microliters of desalinated sperm.
2. Put cuvette inside the Eppendorf® Electroporator 2510.
3. Set voltage.
4. Press button twice to fire the machine. Wait for beep.
5. Apply refresh media (Glaceau XXX 10% açai-blueberry-pomegranate flavored vitaminwater® filtered with a 3-micron Gelman Filter).

**Discussion:** The centiSperm is a new media for the production of New Media Art as well as a post-human artificial insemination product. Without local volunteers to carry a nonconceptual, time-based new media sculpture to term, the centiSperm was applied as a glaze. I glazed one of Celia Olsen's famous homemade donuts with centiSperm twice daily for five days. I also used centiSperm to glaze a ceramic sculpture of Uranus's Castrated Penis. Queer transgenic human rights are presaged by the story of Έκατόγχειρες, Hekatonkheires, also called the Centiman'es or the Hundred-handers. I dub Centiman'es the patron titan of aberrant transgenic humans. Thank you, Kronos, son of Gaia, for castrating your father, Uranus. Uranus was not able to love his differently embodied body-art-babykins.

The Djerassi residency had a nice collaborative arc.



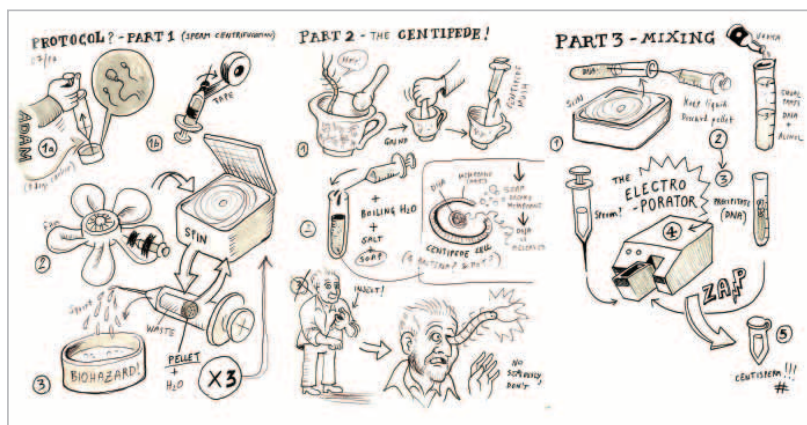
(Above, left) David Bowen and Asa Calow, *Flight of the centiSperm*, centiSperm Conductivity Data Acquisition, along with an autonomous drone path based on centiSperm data instructions, 2016 (<bit.ly/2lQK86e>). (© David Bowen. Photo: Weidong Yang.) (Above, right) Maja Spasova, Drawing from series: *Spirits of Djerassi*, pen and ink, 2016 (<bit.ly/2kvixHy>). (© Maja Spasova)

Matteo Farinella made some fabulous underground comic-inspired illustrations of the process. David Bowen, with Asa Calow (Relative Capacitance Advisor), developed the Jizalizer 3010. The centiSperm electrophysiology signal was translated into an XYZ/time-data plot. The dataset coordinates were uploaded to a drone that flew autonomously based on the DNA instructions, leaving an LED trail of four-dimensional semidata in the sky (above, left). Maja Spasova observed the centiSperm project and then took to drawing—or channeling the lives of—the centiSperm. Some are intertwined with each other. Some have wings. Some are forming into embryos. Some are flying in the sky.

Thanks for the support from Bulldog Bio Inc. for the Bridge Electroporation Cuvettes, Marist College Summer Research Grant and the John P. and Susan D. Diekman Fellowship.

Adam Zaretsky

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Matteo Farinella, *Comics of centiSperm Lab*, pen and ink, 2016 (<bit.ly/2kXJclW>, <bit.ly/2lTE4Xu>, <http://matteofarinella.com>). (© Matteo Farinella)



Adam Zaretsky, *Castrated Penis of Uranus*, centiSperm-glazed ceramic RetroFunkart sculpture, 2016 (<bit.ly/2lQHtcl>).