



## Golan Levin on the Potentiality of Blobs

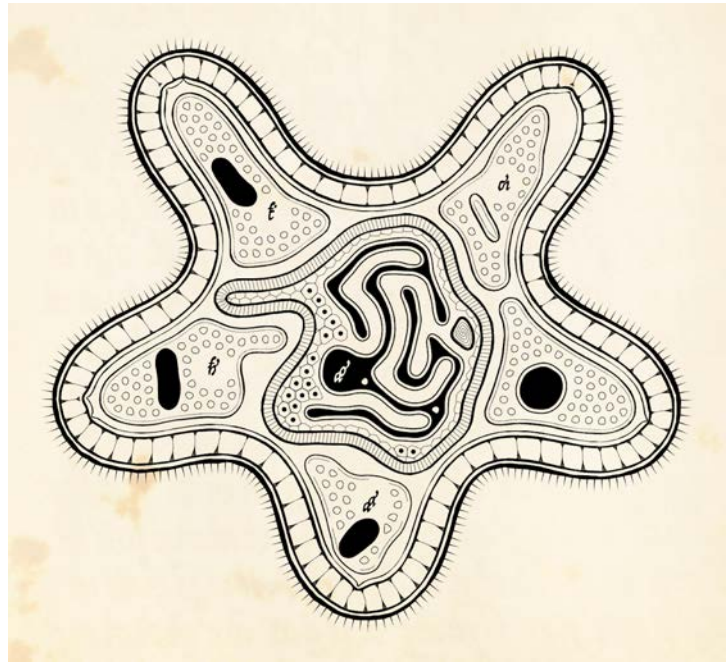
Artist and educator Golan Levin dips between anecdote and insight with Monk Antony (Peter Bauman), covering Levin's Art Blocks Curated release *Cytographia*, his drive to unleash the latent capabilities of computers and his role inspiring and promoting open-source art toolkits.

### About the Author



#### Peter Bauman

Peter, an arts writer, is responsible for Le Random's editorial branch.



Golan Levin, *Cytographia* (Detail, Still, Test output), 2023. Courtesy of the artist and Art Blocks

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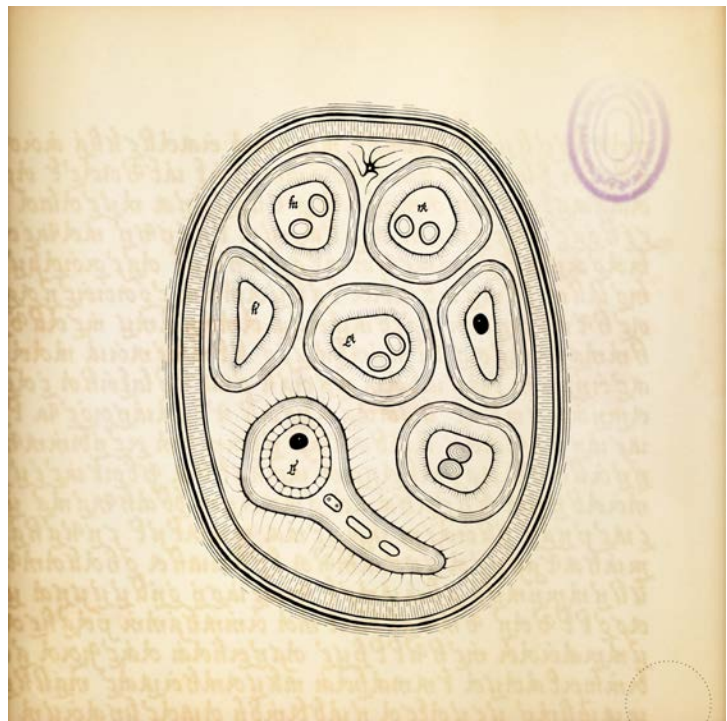
*Artist and educator Golan Levin dips between anecdote and insight with Monk Antony (Peter Bauman), covering Levin's Art Blocks Curated release Cytographia, his drive to unleash the latent capabilities of computers and his role inspiring and promoting open-source art toolkits.*

**Peter Bauman:** In [an epic Twitter thread](#) going back over two years about *Cytographia*, you provided insights into the implementation and motivation behind the project, frequently referring to it as “my novel.” *Cytographia* seems to be the culmination of various threads in your thirty-year oeuvre, including research into blobs, artificial life and asemic writing systems. How do you see this project fitting into the broader context of your artistic career?

**Golan Levin:** Ultimately, the whole thing starts with a love of books. It is a convergence—a weaving together of many different things I’ve been interested in. I managed to ride out the entire NFT wave. I’m finally presenting it now that we’re in a bear market because I just

years. It was sporadic work where I would come back to it but I got to mull on it for a long time.

As to why I refer to it as “my novel,” first, I wrote a book with Tega Brain, *Code as Creative Medium*, which is a guidebook for educators. That book took eight years to make so I would joke about that as working on a novel as well. Sometimes projects take a long time. I have also found that in my life, I work slowly. I don’t make a lot of things. I wish I did but I make a small number of things. Sometimes projects take me years. Then it is also a tongue-in-cheek reference to Cory Arcangel’s *Working on My Novel*, a novel of tweets by people claiming to be working on a novel.



Golan Levin, *Cytographia* (Still, Test output), 2023. Courtesy of the artist and Art Blocks

**Peter Bauman:** You mention your love of books, which must relate to the level of care you paid to the project’s paper. A conversation we had in December with AGH’s Kim Asendorf, Andreas Gysin and Leander Herzog re-kindled the skeuomorphism debate. What was your motivation to blend skeuomorphism with digitally native elements such as real-time animation and interactivity? *Cytographia* appears to address both perspectives of the issue, demonstrating there isn’t a one-size-fits-all approach.

**Golan Levin:** Paper has been one of the odd hot-button topics for this project. That is maybe one place where I did get some interesting

also shared similar thoughts about this.

One of the things that I wanted to do, since I knew I was going to make a project that was going to be a little more ambitious, was that I wanted every aspect of it to be something that I had chosen and was under my control. Ideally, these aspects would be generative as well.

I wanted the same for the background. As early as 1995, I started making interactive and computational new media art, working in Macromedia Director when people were just preloading images or fixed media assets.

My work from the late-90s was a reaction to the making culture that assumed that multimedia was constructed from preloaded assets like sprites and background images. I was like, "No, the computer is a dynamic medium that can generate things on the fly."

In projects like *Yellowtail*, I was trying to show that you don't have to have preloaded forms. You can have computationally generated forms that are synthesized on the fly with substance and produce shapes that weren't loaded off a disk. When the NFT thing started and people started to publish computationally generated art on the Internet, I would see some people actually preloading background images of paper. This pushed some old buttons for me. It defeats the point of what the generative medium is about if you're going to have a pre-loaded background like that.

For flat backgrounds, while I can see why someone might say that's the intrinsic property of the medium, it's as ready-made as anything. It's as ready-made as calling "circle" in p5.js. That's not your circle. It's everyone's circle. You didn't make that circle. I wanted to make everything myself. If I was going to have circular elements, I was going to compute them myself with sine and cosine and all that.

I was going to make my own circles. I was going to make my own lines. I was going to make my own background. I was going to make my own writing system. I was going to make my own shapes, which is where I went to blobs. I wanted everything, to the greatest extent possible, to not be ready-made.

it to you. So I wanted to make these backgrounds myself.

Why do we not accept paper but we love noise? When we make noise, what we are doing is imitating the natural world because we like to see that with our perceptual apparatus. We like to have some texture, some noise, some variation. I call it paper but I actually prefer the word “ground.” My art professor colleagues say, “What’s the ground that you’re working on?” It’s a surface. It’s light colored and it has some noise that gives it perceptual interest, gives it something that tickles the eye and is not a flat background where you can see the f—g floaters in your eye. It actually gives you some information with its organic variation.

**Peter Bauman:** You mentioned the organic variation of paper but it applies to another career-long interest of yours, blobs. What drew you to these quirky forms and has kept you interested for thirty-plus years?

**Golan Levin:** I’m a product of my time. When I started making interactive media in 1994–95, I was working with Director, as I mentioned, later Flash, Java and so forth. The assumption that companies like Macromedia and Adobe made in the mid-90s was that the kinds of tools artists would want to create with would be premade assets like images and videos. They assumed we would need control of ready-made shapes like circles, ellipses and fonts. I think it’s very accurate to say that is in part why Processing was born. Processing in its full-flowered implementation was a reaction to the limits of Flash and Director in terms of the assumptions that they made about artist tooling.

What Ben and Casey knew was that the computer was capable of vastly more than Adobe would lead you to believe in terms of the flexibility and malleability of dynamic digital form.

They showed that you could actually control the individual vertices of a polygon. You don’t just have to be stuck with ellipses and rectangles. That’s why Ben and Casey made that a first-order feature in Processing in 2000. But in the mid-90s, I was already feeling those limits. That’s why I was inspired by a colleague of mine, Scott Snibbe, who had made a wonderful project called *Motion Phone* (1995), where you could draw gesturally with circles and squares. You could create these real-time animations with fixed shapes. But I didn’t want to just be working with these right-out-of-the-tube shapes like ellipses and rectangles. I wanted to work with shapes that *I* defined. That is where *Yellowtail* and *Polygona Nervosa* (1997) came from.

interactive forms. It put blinders on what you thought was possible or it imposed such a steep limit on what you could do. If you want to have a rotating square in Director, you're going to have to pre-render a whole bunch of images of it. I was like, "No." That's what compelled me to want to learn how to code.

The ability to customize shapes led me to blobs, which are bespoke and unique to every person. Everyone is going to make blobs that are really uniquely theirs, that are going to be, however you're going to make it, because there's no right answer; there's no correct way to do it. There's no single algorithm to make a blob. I could list six different ways of doing it. That's what drew me to these quirky forms.

Laura Hyunjee Kim has a wonderful book about blobs, *Entering the Blobosphere*. It's just on my shelf. Let me read a passage from it:

"A blob is a raw, amorphous form. A blob is a potentiality. A blob is a faceless provocateur. A blob is an approximate materialization. A blob is a dynamic flow of multinodal awareness. A blob is a skeptic's handshape, an obscured sense of energy, a mysterious sensation of play, an ontological conduit."

It's just beautiful. This relates to the body as well. I am more like a blob than I am like a circle or a rectangle. So I think that when we see blobs, we see bodies. This connects to giants in art who have done the same, such as Hans Arp, Hilma af Klint or Paul Klee. They were working with blobs and exploring these evocative forms.

A blob is evocative. I'm sorry. A circle is a venerable form but not an evocative form.

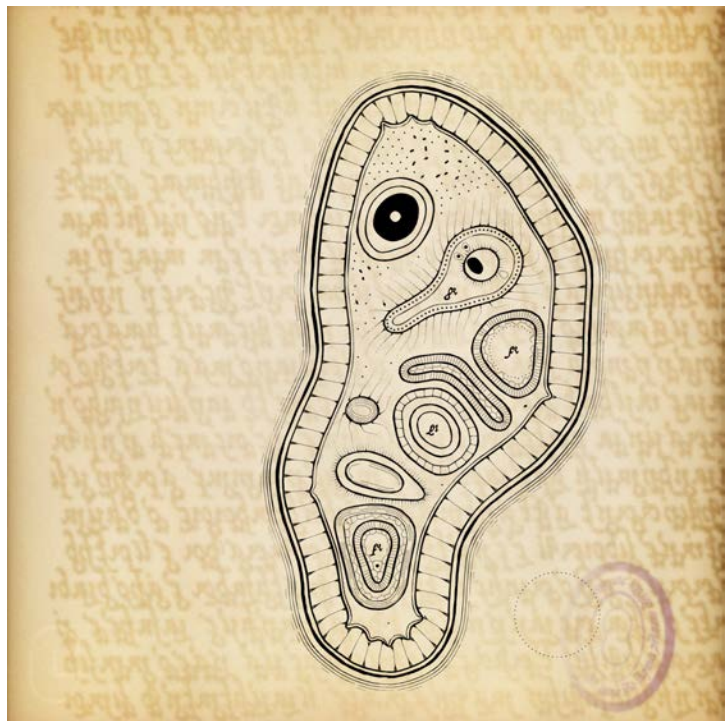
**Peter Bauman:** *Cytographia* has additional components besides paper and blobs. It even has an asemic writing element, incorporating generative letterforms loosely based on 16th-century typefaces by Ludovico degli Arrighi. Can you delve into the significance of this historical reference and how it contributes to the overall narrative and visual language of the project, especially considering the intersection of technology and traditional craftsmanship in the context of your artistic practice?

**Golan Levin:** I've had an interest for a long time in nonsense



research with Cassidy Curtis and Jonathan Feinberg called the *Alphabet Synthesis Machine*, which allowed you to use a genetic algorithm to synthesize your own nonsense writing system. The great Italian artist designer Bruno Munari also had a wonderful script of an uncontacted civilization and plenty of people have done similar work as well.

In *Cytographia*, I knew that I wanted to make these diagrams and they would have to have labels. I didn't want even the script system to be something ready-made that you could ignore. I wanted everything to defamiliarize you. If you use recognizable letters, then you miss an opportunity to defamiliarize the viewer and have them look at something with fresh eyes. So I created an entire generative writing system. But in the final version, it only appears on the backside. If you look at some of the mints in the *Cytographia* project, you see the ink from the other page showing through the paper, a real phenomenon that happens in older books. Essentially, there's this entire generative writing system and you don't even see it because it's on the other side of the page.



Golan Levin, *Cytographia* (Still, Test output), 2023. Courtesy of the artist and Art Blocks

**Peter Bauman:** This attention to craft—I wonder if it goes back to your days at MIT. You studied at the legendary Aesthetics + Computation Group at the MIT Media Lab under the direction of John Maeda with classmates like Casey Reas and Ben Fry. How did you end up there? I heard Maeda recruited some

**Golan Levin:** In the mid-90s, I worked at a little-known, but at the time, kind of notorious research laboratory called Interval Research, which was the private think tank of Paul Allen, specializing in multimedia research. I was employed doing what would later be called interaction design or user-interface design. I was also an idea-hamster. I was a young guy making prototypes of experimental new media projects and that's where I learned to code.

I was there from 1994 until 1998. And over the course of those four or five years, I really learned a great deal about designing interactive systems. It was there that I realized the work that I wanted to do involved making: using those systems to make art. Interval had a lot of people come in and give lectures. John Maeda was one of them who came blasting through one day, probably in 1997. I had been following what he was doing with his students starting in 1996 at MIT Media Lab with the very first group of Aesthetics + Computation students. What they were doing at the time was really remarkable. First of all, the web was a smaller place but they were working on it in public. From 1996, every single week, every single student would publish their assignments as Java applets in the browser.

ACG was doing things I had never seen before. They were doing dynamic form; they were doing computational typography. Nobody else in the world was doing anything like it. Everyone else in the world, including me, was looking at this one website going, "Holy sh— — t."

Reed Kram was there, as was Matt Grenby. They were making these really interesting, dynamic Java applets. Our eyes were glued to it. So when John came through to visit Interval, I introduced myself to him. Then I showed him the stuff I was up to, things like *Yellowtail*. He was like, "Very interesting. I welcome your application." I started there in '98 at the same time as Ben Fry, who was also a master's student. Casey came a year later.

**Peter Bauman:** Speaking of Casey and Ben, you have intimate connections to both the development of Processing at MIT's ACG as well as OpenFrameworks at Parsons. First, about Processing: you were doing your own thing at the time, working on visualizing audio. But did Ben and Casey ever run things by you when developing Processing? Were you involved with it in any way?

also my former student, just got working online. You can actually now play with DBN in the browser. This was announced only in October 2023. Now you can actually see projects that Casey Reas, Ben Fry and I made some twenty-odd years ago. DBN was John Maeda's concept. And it allowed you to do interactive, computational and generative form on a canvas that had very specific limitations. And John is like the ultimate Bauhaus guy in terms of really liking simplicity and stark limitations. With DBN, you were limited to grayscale; you were limited to a canvas that was 100 x 100 pixels. It was kind of like a no-fun zone because you couldn't make stuff that's full of sexy colors. That's because it was specifically a pedagogical tool.

Casey and Ben were like, "Yeah, this is great but we actually want to make art bigger than 100 pixels." And John was like, "Well, that's your business. If you want to make things that are colorful, artsy, big and whatever, go ahead." Casey and Ben wanted to make an actually useful tool and not just a conceptual learning environment. They started working on it close to the time that I was graduating so I didn't have a lot of direct involvement in it. But *Yellowtail*, for example, has been a demo in processing since 2000. They looked to me to provide examples like that sometimes. I was probably one of the very first people to teach with it, other than Casey and Ben themselves. I was teaching with processing at Columbia University in the fall of 2000, as well as at Cooper Union, Columbia and Parsons, where I was knocking around in New York City as an adjunct for a few years in the early 2000s. I would provide feedback to them and just help evangelize it.

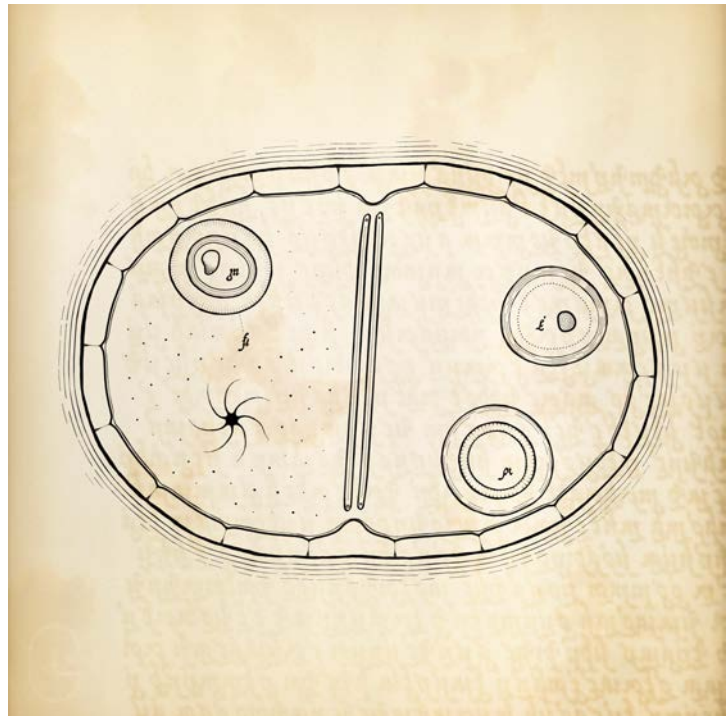
My involvement with Processing also included organizational support. When I was at Carnegie Mellon and became director of a laboratory called the Studio for Creative Inquiry, I was using the resources of that laboratory to help support open-source software tools for the arts, like Processing. I'm this kind of weird hinge point between Processing and openFrameworks. We had an internal toolkit at MIT called ACU that was developed by Tom White, David Small and others. This toolkit was C-based. When I graduated, I took it with me and used it to make high-performance, full-screen, very-high-frame-rate, OpenGL-based graphics. These were things that Processing, Java and Flash could not do. When I started working with Zach in the early 2000s, professionally making interactive art, I was like, "Listen, Processing is all good but if we want to do high-frame-rate, full-screen, multi-screen, audiovisual stuff that uses computer vision, we're going to need to use something like C++.

So Zach received ACU from me and he was like, "This is great! Can I share it with my students?" And I said, "It's not really mine to give." So Zach was like, "Well, f— —k this. I'm going to make something of my own." He borrowed a lot of the good ideas from ACU and added a lot of other good ideas to create openFrameworks around 2005. So I was there at the birth of both of these things.



for both of them were ill-advised because I thought, “How can you google the word “processing?” But I’m happy to admit I was wrong. You can google the word “processing” and get Processing [laughs]. Another way I supported the community that I’m proud of was a few years ago when I created a report with Lauren McCarthy on GitHub about what’s necessary to support open-source software toolkits for the arts.

I also helped organize conferences like *Art && Code*, where I was bringing people together to have conversations about what it means to make open-source software tools for the arts. In 2009 I ran the very first *Art && Code* and it’s ongoing to this day. The conference brought together the people who were creating programming environments for artists. Zach was there, Casey was there and Ben was there. Luke DuBois was there from Max/MSP/Jitter. Dan Shiffman was there. It was an interesting group of folks working on all sorts of different tools. This was one of the first times I was able to organize something that leveraged my resources and ability to bring people together to have conversations to advance the state of the art in open-source software toolkits for the arts.



Golan Levin, *Cytographia* (Still, Test output), 2023. Courtesy of the artist and Art Blocks

**Peter Bauman:** You were building these communities and bringing people together in real life to support the community, which has been invaluable. Talk to us about teaching Zach Lieberman at Parsons. What did you learn from each other?

like to say I taught him everything I know. He taught me everything just by his example afterwards. I've learned a lot from Zach as well.

**Peter Bauman:** In your MIT thesis, you reference Thomas Wilfred's *Lumia*, writing: "[Wilson] also argued that the rules governing static composition and color harmony do not apply to form and color in motion: 'If a Lumia composition is stopped at any point, an analysis of the static image may show both form and color out of balance from the painter's point of view.' [Wilfred 1947, 1948]." How do the rules governing static and animated images differ?

**Golan Levin:** I love this quote you pulled from Wilfred, which is that if you stop something at any one point, it might actually look *bad*.

The thing about *Cytographia* and a lot of my work is that I'm much less interested in how it looks, despite my attention to surface in this case. I'm more interested in how it responds, how it interacts, how it feels and how it talks to your perception of motion, behavior, possibly intelligence or will.

When you see flocking, you see a will of sorts or goals and there's a kind of response. How does it respond if I poke it? What does it do back to me that then leads me to a new place as an interactive observer?

**Peter Bauman:** When you talk about audience and participation, issues such as the (finished) art object arise. Where do you think it lies in your almost entirely digital work?

**Golan Levin:** Wow, a phenomenological question here! A well-known collector of computer art recently contacted me and was like, "I want some of your stuff. Give me all your stuff." And I realized I hardly had anything physical to give him because I'd made a big f— —g mistake for the last 25 years, which was that I always thought, "Oh, I only want to make the only thing that matters." I was only interested in the intrinsic properties of the medium. One day I was literally sitting next to Casey, who was making these beautiful printouts of his art. This was twenty years ago.

I remember looking at Casey like, "Are you f— —g crazy? Prints? What is this, the nineteenth century? Prints? That's so quaint. That's so

it's generative. It has to exist only as software. Well, I have nothing from 20 years ago—almost nothing. Casey's prints, on the other hand, still "work". He was really wise to capture his software this way.

Where does the art mainly lie? In my case, the answer is, in a way, the cloud of people I've influenced. Perhaps it's somebody who had a wonderful experience with my work, going, "Wow, that was great." And then that's gone. I don't have a printout of something physical.

I've got to tell you a funny story that happened to Zach and me. We did a bunch of collaborative projects together between 2002 and 2007. For one, we were invited to have a solo or two-person show, if you will, in Japan at the NTT InterCommunication Center (ICC), which is a major art and science cultural facility in Tokyo. They've been showing media art for thirty years. So Zach and I were really honored to have this exhibition. We packed up a whole bunch of boxes and suitcases, then shipped them all to Japan. When we got there and were setting up the exhibition in this amazing facility with amazing people and equipment, they handed us the poster. It was this big f— —g yellow poster with "For kids" in big letters. They had billed us as the children's exhibition [laughs]. We were looking to be taken seriously!

Then groups of children actually started arriving at the exhibition. They were experiencing a kind of interactivity or feedback-and-response with our interactive systems that was entirely new to them. They participated in creative play that we had developed that they had not seen in their media experiences. That led them to new places. The possibility that we may have greatly influenced some very young children with that exhibit was quite real, given the hundreds or possibly thousands of children that encountered the space. When you say, "Where does the art mainly lie in your work?" [He makes a vanishing-in-a-puff gesture]. It doesn't really exist anywhere but it exists in the children who have that experience. Zach calls it "the holy shit" face, where they have this expression of "Oh my god." *That* is where the art lies—in this moment of pure experience and the way that it's carried in people's hearts.

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Golan Levin is an artist, engineer and educator exploring the intricate intersections of code, visual culture and critical making. Presently, he

like the MIT Media Laboratory and Ars Electronica Futurelab. Levin's work encompasses a captivating blend of the whimsical, the provocative and the sublime across various mediums such as online platforms, installations and performance art.

Peter Bauman ([Monk Antony](#)), an arts writer, is responsible for Le Random's editorial branch.