JONATHAN LEAL

"I Do Math to Take the Edge Off"

A Conversation with Project.JDM

Picture multi-colored dots bouncing across a handheld screen, tracing neon arcs of varying sizes. Or RGB squares colliding with uneven surfaces in sync with the rhythms of pop melodies. Or pastel grids and lattices swirling and intersecting and folding on each other, building impressions of four-dimensional objects in three-dimensional spaces on a two-dimensional plane. Picture video clips ranging from seconds to hours long, infused with meme-istry and bedazzled by math, soothing tired eyes with topographical sorcery and seducing bedraggled minds through spellbinding motion.

If you, like me, like many, have actually seen such magic—likely late at night via algorithmic nudging amid doom scrolling ad infinitum—you've probably watched Project.JDM. Created by musician and mathematician Jairo Mora, the project became a viral sensation during the peak years of the pandemic and has only increased in popularity since. With over two million followers on TikTok, nearly one million on YouTube, and nearly half a million on Instagram, today, Project.JDM stands out in a niche-rich yet increasingly oversaturated content creation industry, bringing brainy, mesmerizing videos that blend polyrhythmic intensity with geometric process and easy shareability. The videos are a balm for the anxious, the stoned, the overworked, the curious.

On its surface, Project.JDM's viral success might be said to have as much to do with platform savvy and pandemic-era digital funneling as oracular fascination and aural tricksiness. But beneath that surface, what's fueled the project's reach has been the seemingly unceasing force giving form to the machine: the perpetual motion of Jairo Mora's imagination.

I spoke with Mora recently about the history and focus of his digital project. During our conversation, we touched on his surprise at achieving Gen Z digital stardom, on the challenges of notating musical ideas, on the difficulties of the platform economy, and on his hopes for the future of this kind of creative work. (Full disclosure: I've also known Mora for years; we met through the same percussion circles in the late 2010s.) At the heart of our conversation lived some implicit questions: how did complex, machine-technical polyrhythms become a staple of pandemic-era popular culture? What accounts for this project's sticking power? Why?[1]

1. For more on music and virality, particularly TikTok, see Jay Jolles, "'Caught a Vibe': TikTok and The Sonic Germ of Viral Success," *Sounding Out! Blog*, April 10, 2023. https://soundstudiesblog.com/2023/04/10/caught-a-vibe-tiktok-and-the-sonic-germ-of-viral-success/

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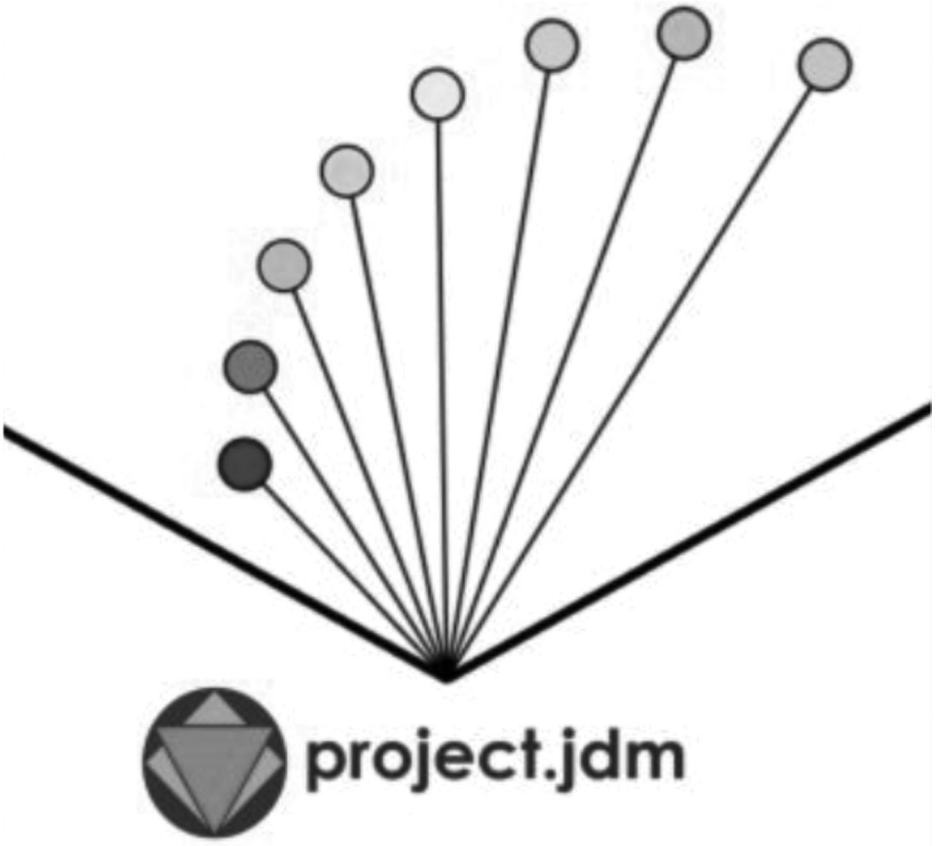

FIGURE 1. Project.JDM, 2.22.2023 (Instagram).

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JONATHAN LEAL: In late 2019, you started experimenting with videos in which you performed complicated polyrhythms live on camera—well beyond the standard two against three or five against seven stuff many musicians are familiar with. Then, when the pandemic began in early 2020, you began creating even more videos, with more variety. Did the pandemic influence your work? If so, how?

JAIRO MORA (PROJECT.JDM): The pandemic definitely gave me a reason to share educational content online. I was home, and I couldn't teach as a private tutor at that

See also the scholarship of Alexandria Arrieta, including "'This Audio Has Potential': Platform Lip-Sync on TikTok," *Journal of Popular Music Studies* (2021) 33 (4): 5–9, and "Splice and the Platformization of Hip-Hop Production: Navigating the Online Music Platform for Royalty-Free Samples," *Global Hip-Hop Studies*, vol. 2, Issue: *It's Where You're @: Hip Hop and the Internet*, November 2021, 219–36.

For more on rhythm, math, and creative approaches to music notation, see especially Godried T. Toussaint, *The Geometry of Musical Rhythm: What Makes a "Good" Rhythm Good?* Illustrative Drawings by Yang Liu. (New York: CRC Press, Taylor & Francis Group 2013).

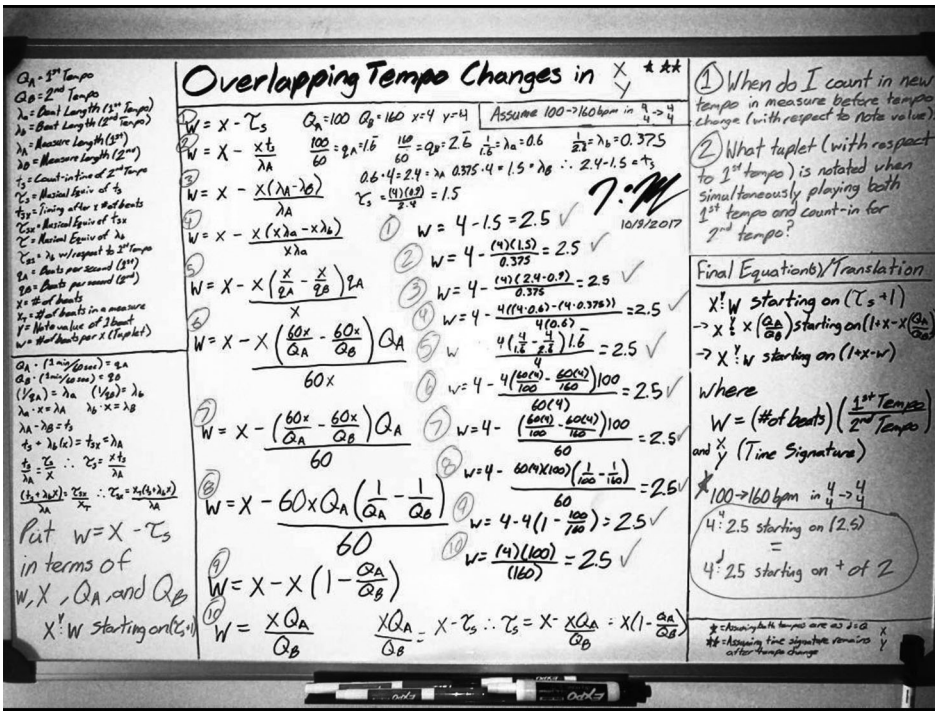

FIGURE 2. Project.JDM, 10.10.2017.

point, which is what I had been doing. I had all these rhythmic and mathematical ideas, all these concepts in me. Mathematical and musical concepts that I was creating by allowing myself to be curious—ideas that would develop into sub-ideas that I would follow, which would then branch out to even more.

When it came to the pandemic, that was a very difficult time, as we all remember. I tried to find the good inside it. "People are home. Let me see if I can craft some rhythmic challenges that can offer folks an experience while they're sheltering in place." The ideas started off simple—just some concepts to get people hooked, challenges that weren't immediately obvious. "Count quarter notes in 5/4 out loud while clapping this rhythm in 5/8 and stomping this other rhythm in 3/4." Things like that. Those challenges drew people in. Folks could understand what was going on rhythmically, but not everyone could perform the challenges. But everyone could try.

JONATHAN: Those early challenges then gave way to intense transcriptions of so-called "non-musical" sounds, which were also conversant with meme culture in an interesting way. How did that happen?

PROJECT.JDM: That was a fun time. The transcription idea arrived through a professor, Alexander Liebermann, over at Juilliard. He was creating transcriptions of bird calls, and he wanted to make one of a cicada. He messaged me and sent me a video. "Can you transcribe this?"

Up until that point, I had been transcribing things by ear, like most musicians. But this cicada recording presented a different kind of challenge, and I had to develop a new way of approaching it—something faster and based on my interests in math and computing.

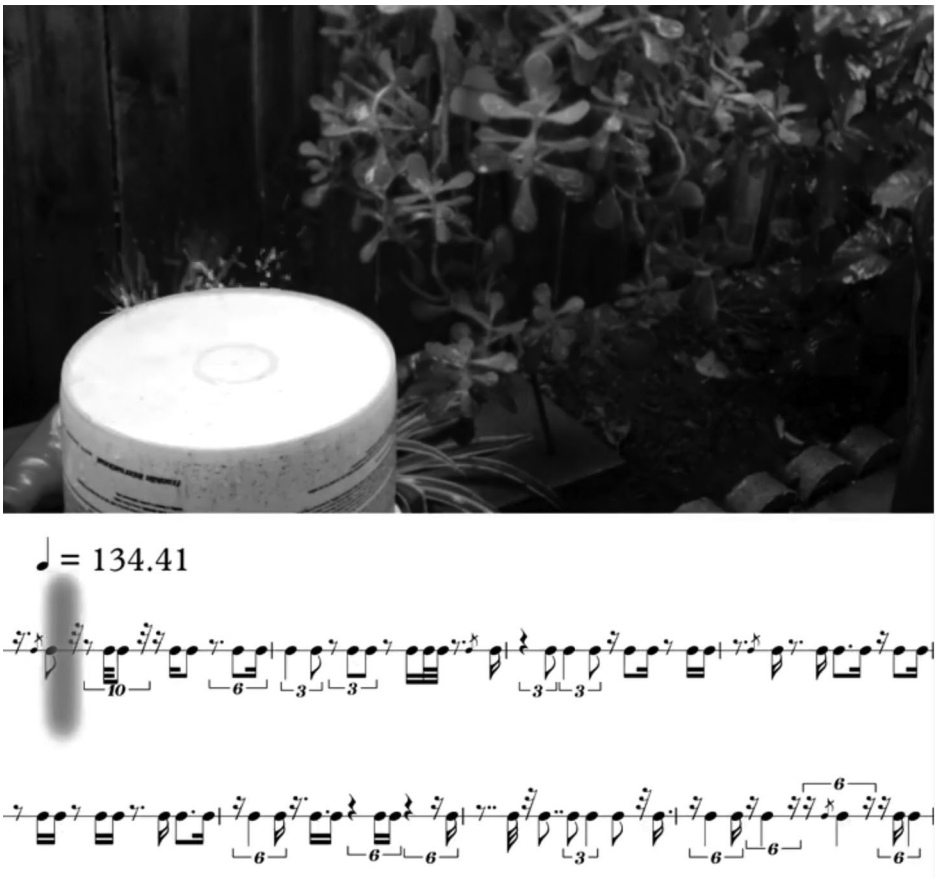

FIGURE 3. Project.JDM, 6.30.2021 (Instagram).

So I put a lot of effort into creating my own transcription tool. I essentially did a bunch of math and wrote a program that would allow me to say to others, "Okay, what tempo do you want this transcribed at? How do you want this notated?" With my program, I was able to create whatever transcription I wanted, of whatever audio, to whatever degree of accuracy I needed. It allowed me to produce crazy transcriptions of things that can't really be notated accurately by the ear alone. I wanted to see how accurately a computer could mimic human tendencies of slowing a note down just a little, or swinging rhythms the slightest bit, as well as just the unmetered sounds of the natural world. It created a whole universe of ideas.

JONATHAN: So you began uploading these technical transcriptions—at once intense intellectual exercises and fun explorations. How were people reacting to them?

PROJECT.JDM: I saw a lot of comments on the fractional tempos and wild note values I was using. 134.41 BPM, for instance. Or nested tuplets and figures across bar lines. Folks were like, "What does that even mean? How does that even work?" "That tempo doesn't even exist in the real world." Or, "You could just write this in an easier way." It was funny and revealing. Technically speaking, those fractions and note values were what I needed to write the transcription with the most precision possible. I wasn't creating those with the goal of having people play them. And despite the

confusion from some folks, a lot of people saw the vision. There were plenty of comments like, "This is crazy, I've never seen something written so accurately," or "You can hear how precise this is as the computer plays along."

JONATHAN: Exactly. Like you say, those comments reveal not-so-quiet preferences for prescriptive or descriptive notation. On the one hand: "Let me write this for easy sight reading and performance." Or, on the other, "Let me write this to test the limits of a notational system." For you, it seems like this was about the latter—about study.

PROJECT.JDM: Yes, very much so.

JONATHAN: So at a certain point in your output, there was a big jump from these polyrhythmic challenges, technical transcriptions, and also mathematical puzzles—"How many metronomes are required to play this composite rhythm, and at what tempos do they need to be set?" for instance. You moved into rhythmic visualizations and animations. How did that start?

PROJECT.JDM: Things reached a point where my ideas were getting too abstract to represent with the tools I had been using. For instance: how do the patterns in this ten-way polyrhythm interact with each other? One against two against three against four, etc. Or thirteen against twenty-one against fifty-three, etc. I had a new challenge. "There has to be a way for me to study and express what's happening with all of these variables, and to share that research with others in a digestible way." At that point, I turned to GeoGebra, an interactive graphing tool that allowed me to visualize polyrhythmic interaction. But even then, I realized there were limitations with that tool, as it only allowed me to do so much.

So I finally turned to writing original code in Matlab. Initially, I wrote something that was long and overly complicated, held together by duct tape and Band Aids, but it worked. I started creating the animations that a lot of people now associate with my project, posting them, and thinking, "Wow—I built that thing from the ground up."

What emerged was a kind of visualization that was rooted in polyrhythmic interaction, as well as geometry and motion, but that didn't really announce itself like that right away to viewers. I noticed that, especially in the comments on those videos, people didn't even notice the polyrhythms in my videos; they were just transfixed by the motion and sound, which was a cool pivot. It marked a transition for me from not just *teaching* people about layered rhythms, but actively *showing* them the rhythms and how they could manifest in different ways. That kind of illustration sparked fascination in a lot of people, which I loved, because that's exactly what I feel when I come up with the ideas in the first place.

JONATHAN: Such a great way of telling that story. So you started uploading these visualizations to TikTok primarily. And in early 2021, your channel exploded. How did that happen?

PROJECT.JDM: I had been making the animations for a couple months by then. At that point, I had posted between fifteen and twenty videos, and they were all focused on the same concepts, more or less. I was just modifying the parameters slightly. And then, almost randomly, people started sharing the videos. "Hey, what is that funny sound?" "I like when the bouncing ball hits the sides of the frame." People started posting hilarious, spaced-out reaction videos. I went from 20,000 followers to 100,000 followers within something like two days.

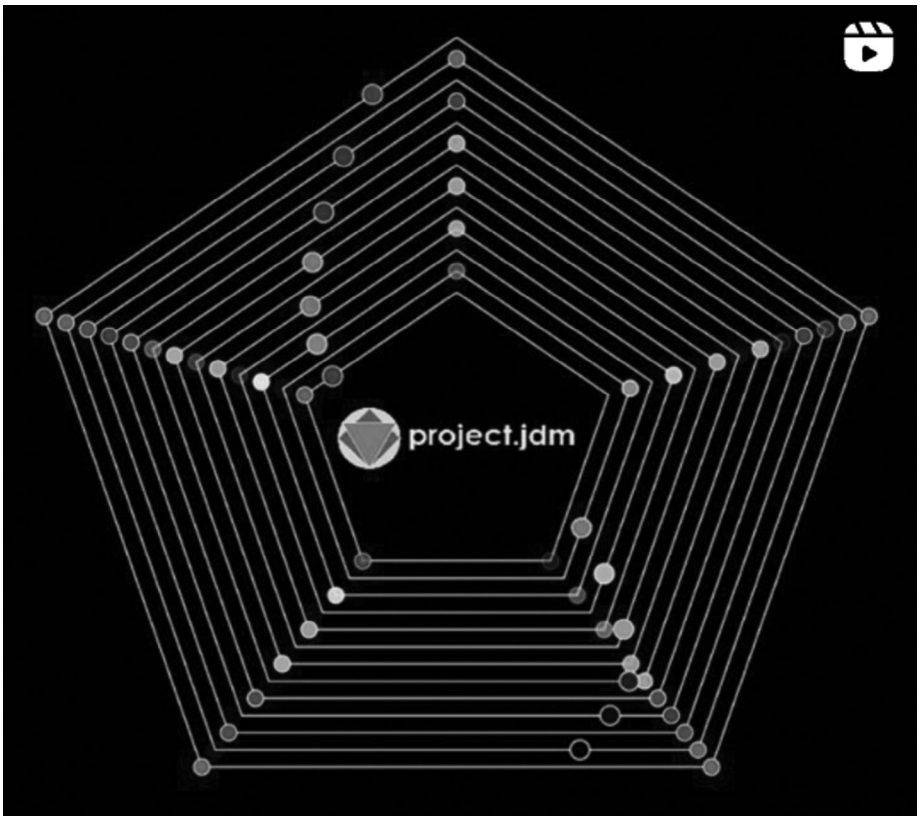

FIGURE 4. Project.JDM, 8.13.2022 (Instagram).

About two months later, I had 1,000,000 followers. It was such a crazy jump for me. Such a huge base all of a sudden. I didn't understand the process; I was just asking myself, "*What is going on?* Do people really like this? Is this just a meme that will quickly fade?" There was some uneasiness to it at first, then a kind of acclimation. "Okay. This is success of some sort."

JONATHAN: To you, what did it seem like people were experiencing watching your videos? What did the material seem to be doing for people?

PROJECT.JDM: At first, I really wasn't sure. I thought it was just something where people were watching and thinking, "Oh, cool video." But then, through the feedback, things started hitting different. People would either comment or message me and say, "This was really relaxing for me. I've had problems with anxiety, or ADHD, or stress, or depression. This is really helping. Thank you." Or even, "This is what I use to put my kids to bed. This is what I turn to when I have panic attacks. This is what I turn to when I need to feel comforted." So many of those messages rolled in. It helped me see that these videos were more than just random bits of content for a lot of folks. They were comforts in a difficult time. It was beautiful to me especially because, when I was a teenager, I had also had trouble with mental illness. It honestly wasn't really up until about five years ago that I started getting better. It took a long time to find something that worked. I know what hopelessness feels like, so I'm glad the videos were able to provide some help for other people. Again, a total surprise for me.

JONATHAN: That's beautiful. It also reveals how this project was entwined with the COVID era as a form of digital popular culture, a kind of unexpected pandemic art. Not just in terms of how it got started for you—the conditions of making—but also how it was received in a moment of widespread anxiety and forced digital connection. So many of us were alone and glued to our phones. And so many came across these videos and found peace in them.

PROJECT.JDM: Yes, absolutely.

JONATHAN: Who else was engaging with your work at that time?

PROJECT.JDM: I had some really funny incidents. Initially, as with that Juilliard professor, I constantly found myself asking, "Why would somebody at that level be interested in anything that I'm doing? This is so strange." Once, one of my buddies, a student at Cal State Long Beach at the time, sent me a screenshot of a Zoom meeting with a professor. My friend asked him, "How hard are we going to be getting in terms of the rhythmic stuff today?" And the professor said, "Like this guy," as he pulled up one of my videos. It was hilarious, and cool for my friend to say, too: "Oh, I know him!" It was wild. I'd never met these people, but they knew about my work.

People from many other countries also reached out. I once received an invitation to do a virtual clinic through Zoom for a drum group in Berlin. It was so much fun sharing my ideas and theories and discussing pocket changes and micro-rhythms. It was just the craziest thing to be reached out to by this group on the other side of the world, people who were interested in what I thought.

In terms of celebrities, Jacob Collier became a great supporter, which was wild. Brian Huskey, Adam Neely, Shawn Crowder, and others, too. A lot of the people who deeply influenced me when I was starting out in music—people who I didn't think I would ever come into contact with—started sending the love. It was such a magical and lucky thing, feeling that kind of reciprocity. I never imagined I would experience anything like that.

JONATHAN: Incredible. And so pure, too, because you didn't start this to get famous or become an influencer, yeah? You started it because you had theories and ideas.

PROJECT.JDM: Absolutely.

JONATHAN: So now, it's around 2022. At this point, you're starting to push your YouTube presence a bit more because it offers more of a financial kickback than TikTok, right?

PROJECT.JDM: For sure.

JONATHAN: Was this when you began thinking you might be able to make a living off of your videos?

PROJECT.JDM: Yes. It took what felt like a long time to reach that point, but definitely. With the YouTube shift—it wasn't just because I was interested in the money. By no means was that the case. But I did need to know, in my mid-twenties, if something that I was investing so much time in was going to provide me with financial stability. Just something to sustain my continued activities. So I started thinking, "How can I do this on YouTube?" Because at the time, I was only on TikTok, which at that moment had a creator fund, but it was meager, just cents per every thousand views. It wasn't sustainable. And shifting platforms was also challenging, as I couldn't just post the exact same thing on YouTube.

So I started cranking away at new videos. Before posting anything to YouTube, I created a backlog of about forty videos, then at a certain point, I just decided to post one every day. After a month, I slowed down a little, but stayed regular. Since then, I'd say I've posted about two hundred videos, and the channel has grown exponentially.

Eventually, I was able to get more into the livable income range, which was a huge life shift. I realized it was beginning to make me more than my day job, and that put me in a position to consider my career possibilities even more closely. I was also still having new ideas. I came up with a new concept—a bouncing square that played songs. Those did really well.

But then things changed. When it became clear to a lot of folks online that this kind of content could be lucrative in the platform space, people started taking the videos and posting them as their own. "Hey, this guy is making a good bit off of his views. Let me take some of that for myself."

JONATHAN: Definitely. Those thefts were certainly a sign of how massively popular your channels had become. That was also starting to happen when the algorithms were suddenly changing, right?

PROJECT.JDM: Yes. I really don't know exactly what happened, but I know the specific day the algorithms were adjusted: May 22nd. That's when it changed on Instagram, for sure. For TikTok, it was a little later. By mid-June, it was so bad that suddenly, all the videos that normally would have gotten five million views within a day or two were suddenly getting no more than five thousand views within a day or two. That crazy shift led me to think, "Is this just me? Am I doing something wrong?" I started checking with others online, and everybody was going through the same issue. Suddenly, it was as if everybody's views were hit by a semi-truck going ninety. I realized then that this thing I was good at and trying to invest time and energy into was suddenly going downhill. All of it was so unpredictable.

In terms of the reasons for those algorithmic changes, I think a lot of it did stem from the fact that people were ripping the content they were seeing online and trying to profit off of it. You would see a lot of brag posts, too: "I've made $20,000 this month!" But then, when you go to their TikTok pages, all you see is ripped content. I think that kind of stuff forced TikTok and other platforms to change their algorithms to keep people from exploiting the systems. But those changes affected everybody.

JONATHAN: Definitely. And amid all of these difficulties, you were still coming up with new ideas. Where are you putting that energy now? Where do you think you're going to be putting that energy when, say, TikTok isn't a thing anymore—which might be sooner rather than later, given the U.S. government's recent decisions? How do you think you'll be expressing yourself?

PROJECT.JDM: I've thought about this one a lot. For me, it gets down to: "Am I doing this for the views? Am I doing this for the audience? Or am I just doing this for myself?" I think it ultimately has to come down to me doing it for myself, first of all, and then to teaching people, as I don't want to keep information or knowledge to myself. I want to share. Which is tough in the current landscape; it's been hard to share my theories behind my animations and visualizations, for instance, because a lot of people are really just interested in ripping things off. It's been hard for me to accept that if I share everything, it's going to be detrimental to the future of my work.

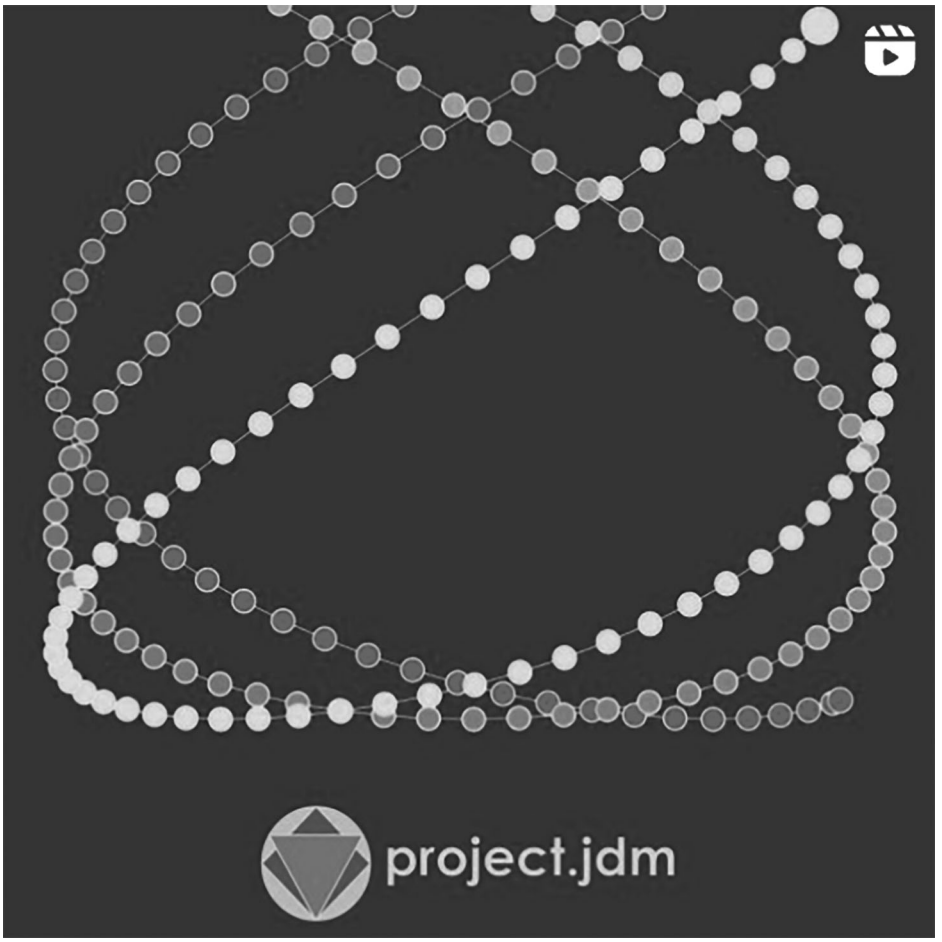

FIGURE 5. Project.JDM, 8.2.2023 (Instagram).

Sometimes, I feel like, well, if people are just going to steal whatever they want, then I might just full-on teach everyone how to code and make my kinds of videos, because that's knowledge I can provide. If I don't, copycat channels might even take that and start teaching people their own methods and saying, "Look at this original tool I came up with." Those kinds of tutorials are eventually going to be out there. But people who create and spread those copycat approaches will be missing the point, in my view. I'm an educator first and foremost, and as such, I want to encourage people to be creative, to think differently, to start with one idea and branch off into five more. To create their own unexpected forms and concepts. Not to simply remake a genre of animation.

JONATHAN: On that front: what do you really hope people learn from Project.JDM?

PROJECT.JDM: Well, I hope that people don't just look at my videos and accept any of the ideas as fixed. I want folks to constantly ask how things are done. As a creator—not just online, but in life—I always find myself saying, "Okay, I have a thought. How can I expand it? Twist it?" I think there's so much we can learn through that process.

As you can maybe tell, I'm someone who likes the search. I like being lost and looking for a path. I like finding pieces of a puzzle, not whole, ready-made solutions.

There's a part of me that feels like if I ever find a solution to a puzzle, I won't be interested in it anymore. So I often find that I just keep expanding the puzzle itself.

Over the years, a lot of people have messaged me and asked, "What books did you use to learn all the stuff you're doing? What courses did you take?" The hard thing for a lot of folks to grasp is that I didn't learn my process in books and didn't see it in my classes. I just followed the questions that occurred to me out in the world—weird ideas that at first seem like they don't add up. But they do. They all create a picture.

There's so much that we can all create if we just allow ourselves to be a little odd, to deviate from the normal. I really just hope that my project helps people find their own confidence in that way. I hope my videos help viewers ask their own new questions. ■