STRAIGHT TALK

with Carter Hodgkin

Carter Hodgkin creates paintings, animations, and mosaics inspired by particle physics and natural forms. Hodgkin has exhibited her work internationally for over three decades at institutions including the Bronx Museum, the New Museum, White Columns, ZKM/Center for Art & Media (Germany), Nature Morte New Delhi (India), Cheryl Pelavin Fine Art, Sweet Briar College, Pratt, and Joyce Goldstein Gallery. Hodgkin has created mosaic commission pieces for Queens College as part of the Percent for Art program, and for Neiman Marcus. Hodgkin lives and works in New York City.

By Julia Buntaine
Editor-in-Chief

JB: As an artist you visualize the physics of particles through painting, animations, and mosaics. How did you come to creating work about physics?

CH: After art school in the late 70s, I lived in San Francisco. I was focused on painting and had no special interest in science or technology. But I was exposed to computer programming and digital imaging emerging from Silicon Valley and was impressed by the idea of encoding images into bits and bytes. I saw it as an extension of the reductivist approach to form by Post–minimalist artists such as Sol Lewitt and Dorothea Rockburne. I was influenced by systems and information theory that post–modernist artists were exploring, and read about artificial intelligence as well as catastrophe, complexity, and chaos theories. I also visited a physicist friend who worked with super colliders at the Stanford Linear Acclerator, producing bubble chamber images of atomic particle collisions. I absorbed what was around me; I wasn't seeking it out but my exposure to these things influenced the direction of my work.

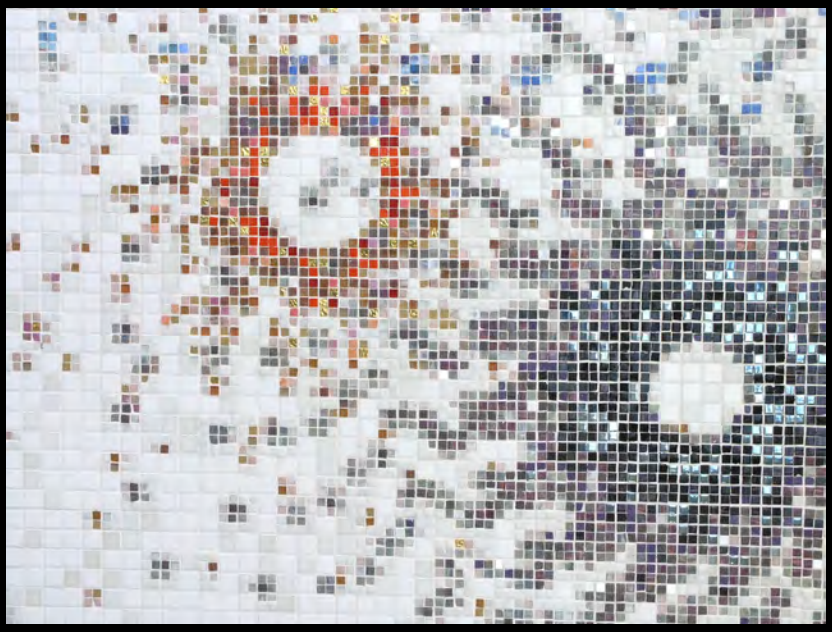
When I moved to NYC in 1980, the discourse about photography and *The Work of Art in the Age of Mechanical Reproduction* made me think about the digital world I had been exposed to in San Francisco. I thought the emergence of a digital medium was equally important in any discussion about representation. Visualizations emerging from the intersection of technology and science interested me in the way the "real" world was being encoded—reducing and abstracting the visual field into a binary system. I looked for ways to represent and incorporate this emerging digital visual language within painting and its historic tradition. I began to incorporate medical imaging and bubble chamber photographs into my work. I was interested in the complex ways in which invisible scientific phenomena are represented and how we understand them via computer technology. When I discovered I could manipulate computer code to simulate particle collisions, it opened up a new avenue of being able to explore electromagnetic phenomena and particle physics to create fully abstract work. It is my hope to reinvigorate abstraction in a way that is formally and conceptually relevant to intellectual concerns of the 21st century.

JB: You use Processing (the coding program) to create the templates for your painting series. Can you describe how your programming translates into your paintings?

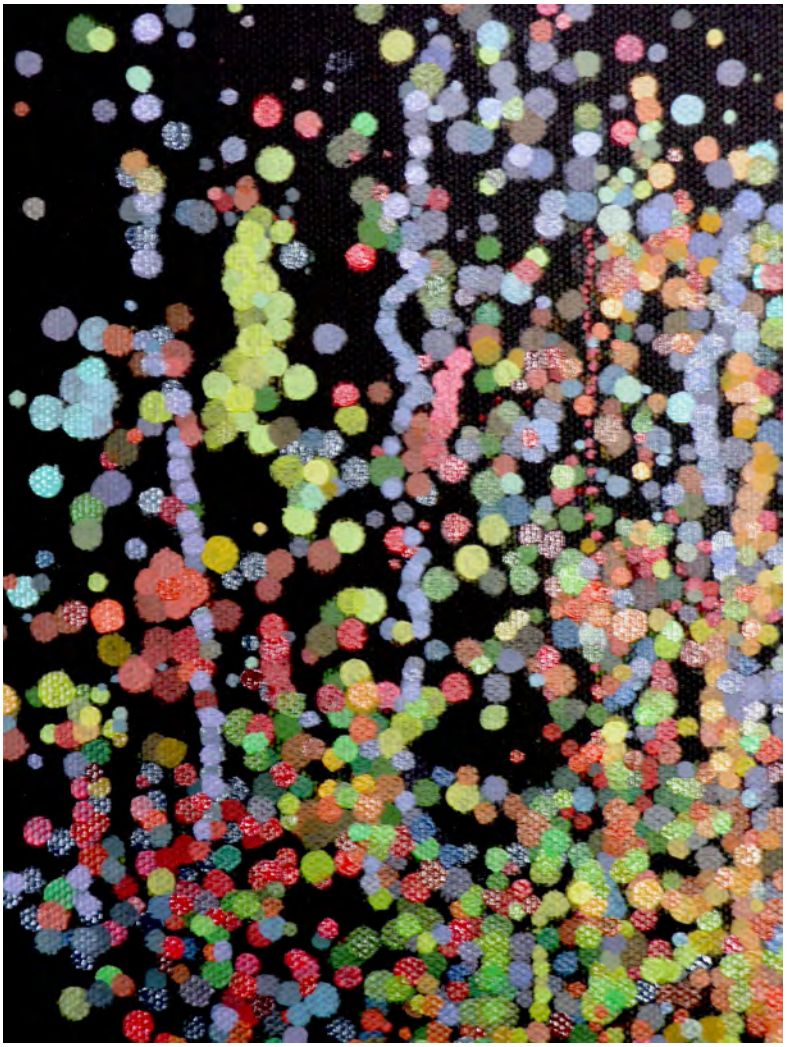
CH: I use Processing code in a drawing process, modeling subatomic particle collisions akin to bubble chamber

Closeup-Iso_034 *(2015). 14" x 14". Acrylic on linen.*

Vortex 2 *(2013). 44" x 44". Watercolor and gouache on paper.*



Queens College commission at Remsen Hall (2010). Three floors, three walls, nine columns. Glass tile mosaic.



Grand Theft Fall *detail (2009). 52" x 36". Oil paint on canvas.*

reactions. The use of code becomes a procedural drawing where I create "behaviors" for four types of particles. I change parameters of the behaviors to achieve densities of coils, spirals, and lines by specifying quantities, colors, and forces such as speed, curvature, and gravity. After the parameters are set, a collision unfolds randomly in animated frames until I stop it to capture a frame. For instance, in *Grand Theft Fall*, I used a gravitational process to generate a sequence of falling lines that create a sense of rapid downward motion.

A collision is captured and imprinted onto paper or canvas. I tease out an image from the imprint, selecting areas to develop by painting with oil, watercolor or gouache depending on the substrate. With oil enamel, I use the thickness and gloss of the paint to build up layers of dots against a matte canvas surface. On paper, I use watercolor to exploit color transparencies which interact with the ground. In the act of painting, I emphasize touch to transform technological scientific imagery into a tactile, gestural physical presence.

The painting process becomes a labor–intensive building up of overlapping tiny dots and lines as the original image succumbs to the touch of the human hand. The repetitive painting of dots becomes meditative and contemplative. What takes seconds to create in a collision takes weeks to translate into a tactile physical presence.

JB: I'd like to talk a bit about your Queens College commission mosaic. Spanning three floors, you depict the movement of energy particles in a waterfall of colored tiles, much like the aesthetic in your "Unforeseen Behaviors" paintings. As a public art work, can you describe the process and considerations that went into this piece?

CH: In 2007, I was awarded a Public Art commission by CUNY for a new science building at Queens College. The building has three glass atrium floors facing the campus quad and the college wanted artwork which would integrate the building with the exterior while creating an engaging durable artwork for the interior.

Imagining the floors as a vertical triptych, I thought about gravity when I saw the three glass atriums with walls facing the quad. I used my drawing process in Processing to simulate an atomic particle collision occurring on the top floor, causing particles to fall dramatically to the bottom. A torrent of thousands of small, colored tiles cascade down, forming loops and circular arrays of orbiting particles along the way. I used silver, chromium, and gold tiles to reflect light and enhance the sense of motion.

I also thought about uniting the interior architecture by using the columns to extend the design along each hallway. The column design creates a continuity of movement and energy on each floor with lines of particles creating lateral and vertical movement down each hallway. The design is rotated horizontally and can also be viewed as an exterior vertical triptych rotating 90 degrees on three floors. From the exterior, the mosaic creates an emblematic image while allowing for multi–use lounge areas on each floor to stand alone as individual identifiable spaces. The project also connects the historical use of mosaic in public places with a modern digitized vernacular that unites art and science to emphasize the building's use as a science center.

JB: You use the circle as a stand–in for the particle—a visualization that science uses as well. The circle, from the art and science perspectives, is one of the first shapes humans deemed important. What first attracted you to the circle, and after repeating this form tens of thousands of times, what does it mean to you?

CH: As mentioned previously, I came at physics as a form of representation—albeit representing invisible

LED Lab: 475 Greenwich Street, NYC.

forces. In creating an image, the circle equals a particle equals a pixel. It's an elemental form of representation—a building block for matter as well as imagery. I am interested in the way form is created through a proliferation of particles/pixels/circles reacting to forces. The form is built by orders of accretion and multiplying proliferations of particles which express the speed in our lives. In my process of creating an image, I am interested in how colliding particles reveal structures and patterns of movement which I find expressive of the hyper–energy we experience today.

A lot of the structures and patterns of movement reveal forms that have been used as symbols throughout mystical traditions. One example would be the spiral, which is a continuum embodying expansion and contraction through changes in velocity. It is also a form which turns in on itself, creating a vortex of motion. As you point out, the circle (or spiral) is one of the first shapes humans deemed important. I have long speculated that it is in human DNA to code the universe, whether with high or low technology.

JB: Your series "Isotopes" differs from your other paintings, appearing like a zoomed–in view. What are you saying in these works?

CH: In this series, I am playing with scale, enlarging particle interactions, working with the transparencies of watercolor in a more painterly direction. The interior of a collision becomes a magnified microuniverse. Form is less distinct, as the borders between particles become fluid. I would point to the idea of the self–similarity of scale in chaos theory.

JB: In many ways your animations play out the act of painting dot by dot, giving the viewer the experience of the creator. How do you think your animations differ from your static works—what excites you about them?

CH: The animations give me an opportunity to explore forms growing, dissipating, and dissolving. To me, they display the act of drawing in space and time, giving the viewer an experience of creation. The use of time slows down the act of viewing, becoming somewhat meditative.

I am very excited when I see my animations displayed in large–scale settings, as I did last year at the Media Center in DUMBO or on different configurations at the LED Lab. The digital nature of my animation process makes my work scale well. The animations become large–scale paintings that move.

JB: What are you working on right now?

CH: This past fall I started working on a series entitled Reverse Gravity—ten new works in watercolor. I am reversing a gravity behavior so form is created by spinning circular movements of particles. The circular movements layer repeatedly on one another to create a density of frenetic movement—spinning in circles, so to speak—the way a lot of us may feel right now.

Page 18: Reverse Gravity 22 *(2017). 30" x 22". Watercolor on paper.*
Page 19: Reverse Gravity 95 *(2016). 22" x 30". Watercolor and gouache on paper.*