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Experimental Filmmakers take 3-D to New Dimensions

by Rosalie Chandler

Over the past year or two, I've had the pleasure of connecting with two highly regarded experimental filmmakers about their 3-D work. It started with an email from the Museum of the Moving Image (MoMI) in Astoria, NY, in the winter of 2016.

I knew the name Ken Jacobs from film school. Along with Stan Brakhage and Michael Snow, we studied him as one of the important figures of the avant-garde film movement of the 1960s. When I saw his name with a "First Look" 3-D film screening in an e-newsletter from the Museum of the Moving Image I rallied the troops from the New York Stereoscopic Association to check out this big name in experimental film. We saw the world premiere of two

new pieces, *I'm Telling You* and *Hydroelectric Dam*. These experimental 3-D shorts were shot on the Fuji W3 camera.

A year later in January 2017, we found ourselves at MoMI again for a similar screening of Ken's new films. This round of work was 3-D but certainly not in the traditional sense. By rapidly alternating between the positive and negative of a few frames of footage, it turns out that depth can be perceived, even with one eye closed! In a formula Ken patented in 2000 (he calls his technique Cyclopean 3-D or the eternalism) a left frame is followed by a frame combining left and right, followed by a right frame, followed by a color-reversal version of the original three frames. Images cycle in this pattern

several times in films in which he compiles many eternalisms. The depth and movement created by the rapid repetition is astonishingly effective. A 3-D tree writhed like flowing lava. Ken's subjects switch between abstract and representational but all make uncanny movements in depth.

The January 2017 program featured *Reichstag 9/11*, which uses found footage of the September 11th attack on the World Trade Center and the eternalism technique to render the blocky digital images in 3-D. *Cyclops Observes the Celestial Bodies* is a 2014 piece, also shot with the Fuji, that creates an unexpected fantasy from the movement of water in the Jacob Mould fountain located in New York's City Hall Park. *Popeye Sees 3D* was another series of eternalisms with less of an obvious theme. My favorite shot was a subway scene with figures repeating their few frames of action with a slight camera pan. I studied the edge of the frame for clues as to how many frames were used. There really only seemed to be two or three different images, each shown in regular and reversed colors, creating a riot of depth and movement.

During the Q & A that day I asked, "How long have you been working in 3-D?" Since everything I had seen was shot with the Fuji W3, I expected him to say it had only been a few years.

"Since before you were born, kid." The crowd laughed and I became determined to learn more.

Jacobs began his artistic career aspiring to be a painter and studied under Hans Hoffman, the important

Still from Anaglyph Tom (Courtesy of Ken Jacobs).



and influential Abstract Expressionist painter, soon after completing his service in the Korean War. Hoffman made his students very depth conscious. Jacobs recalled, "We were definitely working in a 2-D environment and Hoffman wanted the 2-D surface to be respected. He made you very aware of the distance from the nose to the knee to the foot and yet he kept insisting that the picture we painted was going to be flat. So there was always this contradiction of being conscious of depth and painting flat."

"At the same time, he's famous for the statement 'push and pull.' He's saying there are colors that, when they're close to each other, will create an illusion of space, they push and pull. How do you not go into spatial illusion with that, right?" Ken asked.

Ken went on to explain that, while painting was his original passion, a free pass to the Museum of Modern Art (MoMA) that was available for his high school class to borrow planted the seed for what grew into a long career in filmmaking. He took advantage of the pass so frequently, that eventually his teacher told Ken to just keep it since he was the only student in his Brooklyn public high school who used it. Ken was surprised and delighted to find that MoMA screened a variety of films in a theater in the basement on a regular basis. There his whole world expanded as he spent hours watching films



Ken Jacobs after a screening of his work at The Museum of Modern Art. (Stereo by Rosalie Chandler)

by Charlie Chaplin, Buster Keaton, the Russian and French avant-garde and early masterpieces like *Metropolis* and *Greed*. Ken recalled that the museum provided a brief printed background on *Greed*. He was dismayed to learn that he was seeing less than a two-hour selection from the original eight-hour movie and that the original material had been destroyed.

Ken continued, "I had seen some good movies at the neighborhood theater in Williamsburg, too. *Midsummer's Night Dream* (1936) Tod Browning's *Freaks* (1932)." Over time, he realized that some of the ideas he was trying to capture on canvas (ambiguity, contradiction, multiple readings of the same image, making the finished product more important than what was being painted/record-

ed) could also be achieved, perhaps even more effectively, on film.

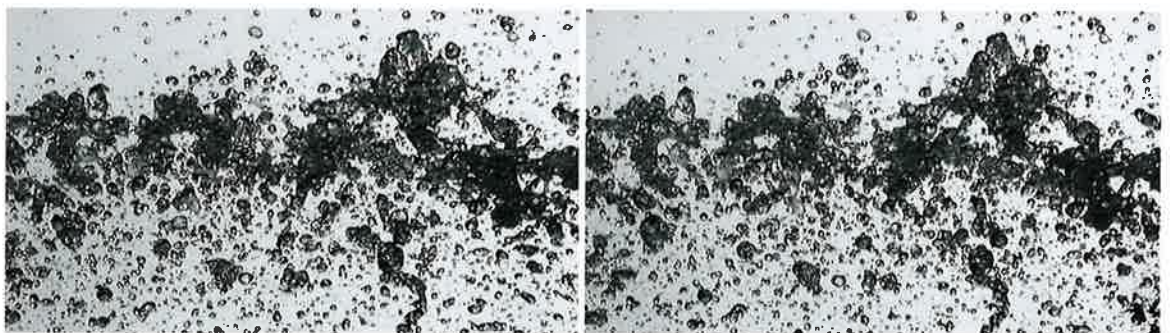
Ken participated in creating the New York Underground Film movement of the 1960s. Politically critical and sexually explicit, but also—less noticed—esthetically adventurous.

It was during this time that Ken became intrigued by a device he saw at the counter in a drugstore while shopping for his wife Flo, who was pregnant at the time. "SEE TV IN 3D; ONE DOLLAR" a placard said. They had little money but he purchased the pair of paper and plastic glasses with levers to darken one lens or the other. "It was aiming for the Pulfrich Effect but the instructions were unclear. And then, suddenly, it worked one day on a broadcast of a ticker tape parade. The screen opened and it was thrilling, but utterly mysterious," Ken recalled.

Still from *Popeye Sees 3D* (Courtesy of Ken Jacobs).



Still from *Cyclops Observes the Celestial Bodies* (Courtesy of Ken Jacobs).





Still from *Life With a Beautiful Woman* (Courtesy of Ken Jacobs).

Fellow film-maker and friend Jonas Mekas then gave him a copy of the book *Eye and Brain* by R.L. Gregory, which explained the Pulfrich effect.

"Being 3-D conscious is a very special kind of optical state. Most people take space for granted. They just try not to bump into things, you know? But they don't really apprehend space the way an artist does," Ken explained. "I made a movie called *Window* in 1964. It's a 2-D film that has a lot to do with 3-D. It uses transverse shots with the camera moving to the side to give a strong sense of movement in depth, often while zooming in depth."

Ken's first 3-D film was *Globe*, shot on 16mm in 1969 and using the Pulfrich effect. The imagery is of "horrible houses" in upstate Binghamton, NY. Ken describes a suburban development ("split level, garage and a car, no sidewalks") that he filmed while laying on the hood of a slow-moving car. This piece is a rare instance of Ken not deferring to Flo's criticism. She hates the piece because Ken paired it with an LP called *The Way to Become The Sensuous Woman*. One moves through an undulating snow-filled landscape of look-alike houses while listening to erotic descriptions "by a voice I recognize from a thousand commercials," she says.

1969 was also the year Ken created what may be his most famous film: *Tom Tom the Piper's Son*, which was admitted to the National Film Registry in 2007. Ken describes the original footage he worked with, a 1905 film by Thomas Edison, as "completely obscure and forgotten comedy/slapstick." His take on the footage

was intended to be a look at the movie in all its overlooked details. "It was really about how flat it was," Ken explained. "The contradictions of people moving in space, things happening in depth but being flat. The film celebrated the uncanniness of flatness." In 2008, Ken returned to the footage and reworked it into a new 3-D piece called *Anaglyph Tom*.

Also by the late 60s, early 70s, Ken purchased his first Stereo Realist camera. It was the first device he owned with which he could produce stereo images. In 2012, he used Stereo Realist slides from this time to create the Cyclopean 3-D piece *Life With a Beautiful Woman*, which included shots of Flo, their children and friends who "appear in the Kodachrome past."

Ken founded the Department of Cinema at SUNY Binghamton in 1969 and taught film classes at Binghamton University from 1969 to 2002 and remains a Distinguished Professor Emeritus. "It's great to have been able to teach and earn my living that way," Ken said. "I taught my students a lot about depth and a few have made pieces in 3-D. I at least taught them to be alert, cognizant and appreciative of the kind of things that were done with depth in 2-D films and painting."

In addition to using Pulfrich, anaglyph, and Stereo Realist to create 3-D, Ken has done installations with 3-D slides hanging from trees, created poems to be free-viewed in 3-D and has worked with vintage stereocards. He was very excited to get a Fuji W3 as soon as they came out and continues to use it for his

work. But before inventing Cyclopean 3-D in the digital age, he designed another system for creating and projecting 3-D film.

In 1975, Ken began using a set-up he calls the Nervous System, which is a pair of film projectors that can advance and hold film one frame at a time. By using two rolls of the same footage very slightly out of sync these double projections were directed to a single screen and rapidly alternated. A 3-D illusion is created much like the digital 3-D eternalisms he creates today. He reports that the original objective was simply rapid back and forth movements of objects appearing on film but that the unexpected dividend was an odd but convincing depth illusion. At first a shutter moved left and right covering and revealing each projector's beam. In later models a propeller turned in front of them, amplifying the depth effect.

And still later came the Nervous Magic Lantern, which does not use film at all. I got to see the Nervous Magic Lantern in action at Ken's loft and was amazed by the depth created by this device that seemed something like an old-fashioned overhead projector. Abstract bubbles and waves rolled around and seemingly off of the screen. It really looked like a 3-D film to me but I wore no glasses and was looking at a regular projection screen. After telling me he wouldn't show me how it was done, he showed me how it was done! He claimed it was top secret, yet I found an account of the technique published elsewhere, so I don't feel too bad describing the clear plastic discs Ken showed me. They were painted and textured with other materials and held between a theater lamp and single glass lens. Crashing waves, coiling smoke, extensive landscapes appeared on the screen when a simple shutter turned before the light.

When I asked how Ken chooses the vintage material he works with he simply replied, "Love." Love truly fuels Ken and his work. When I asked how he the acquired the antique film footage, Flo advised him not to answer. The footage may have been obtained illicitly, but love makes a man do crazy things! In *Opening the 19th Century* (1999), Ken uses some of the earliest known moving camera shots to turn more vintage views into 3-D. His film *The*

Guests uses one of the first films made by the Lumière brothers of guests arriving at a wedding. They stream past the camera on their way into a church in Paris, many sneaking a peek at the camera. They study you as you get to study them in extreme slow motion with the changes to each frame-pair offering impossible surprises in depth.

Two more films, *Capitalism: Child Labor* and *Capitalism: Slavery* (both 2006) draw from Ken's large collection of historic stereoviews and illustrate his passion for striking images, his sense of social justice and commentary, and his interest in bringing vintage scenes to life in the modern era, digitally animating 19th century stereoscopic views of child factory workers and black cotton-pickers respectively.

In 2013, Ken received a Creative Capital grant to produce two films in 3-D which premiered at the Museum of Modern Art. *A Primer in Sky Socialism* and *Joys of Waiting for the Broadway Bus* use stereo images shot with the Fuji W3. Because each image is held on screen for a period of time, there is no illusion of animated movement but rather a sense of being presented with individual still works to study briefly. This makes sense, given Ken's initial study of painting.

Our LA3D Club members may have met Ken and seen some of his work in 2011 when the club hosted him at the Los Angeles Filmforum at the



Peter Rose with his Fuji W3 camera in his home studio. (Stereo by Rosalie Chandler)

invitation of the beloved Ray Zone. Mr. Zone tried to inject Ken into the 3-D community but even Ken admits his work is not for everyone. I tried to come up with a tactful way to address the question of taste when it comes to experimental film: "How do you react to people who say it's too long or they don't like it?"

Ken simply threw his hands up. "He used to be angry," Flo said.

"I became resigned," Ken shared, "At some point I realized how fortunate I was to be able to work and to do things I enjoyed and that's enough. I love it. I hope other people enjoy it. It's for the adventurous. There are a lot of people in the world. Some people, strangely enough, will find this of interest."

During the show at MoMI and during our interviews at the Jacobs' loft apartment in Lower Manhattan

(where they've lived since the late 60s) Flo was on hand to supply names, facts and dates that eluded him. "You're like his personal Google, you know that, right?" I said to her at one point.

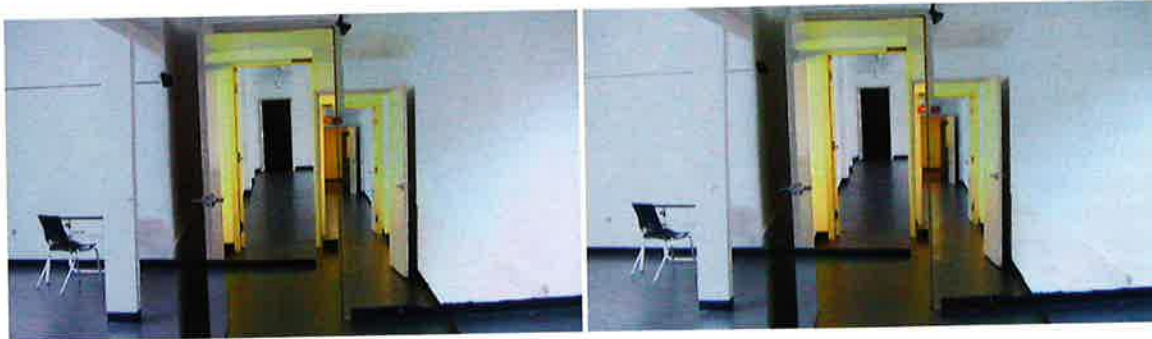
She's a lot more than that too. Flo seems to be a muse to Ken but she is also a partner in his creative process and is often credited in his work. The 2017 piece *Ulysses In The Subway*, which screened at the Museum of Modern Art, lists her among three other directors, Paul Kaiser, Marc Downie, and Ken Jacobs himself. The piece was made using visual 3-D representations of audio that Ken recorded in his neighborhood and his local subway stations. At the end, we hear Ken trek up the stairs to his apartment where he is greeted by Flo's voice. She was instrumental in the creation of *The Guests* and many

Still from *Towards a 6-Dimensional Cinema*
(Courtesy of Peter Rose).



Still from *Mummerstrut*
(Courtesy of Peter Rose).





Still from Towards a 6-Dimensional Cinema
(Courtesy of Peter Rose).



Still from Towards a 6-Dimensional Cinema
(Courtesy of Peter Rose).

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Recognize this young lad? His stereo photography career began with the single lens camera you see around his neck. Since this photo was taken, he has authored or co-authored 5 books with stereo photography as the main subject, created the owl viewer, received his Honorary Doctorate in Astrophysics, built the famous "Red Special" guitar, formed the animal welfare group "Save Me" and co-founded the rock group Queen. These are just a few of his interests. Thank you for all you do!



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other films, giving Ken advice, feedback and ideas. She is with him on many of his shoots and can be spotted in some of the pieces.

As technology has advanced, Ken has also relied more and more on his daughter Nisi "manning" the computer while editing his films. They are truly a 3-D family. (Their son Azazel is defiantly monocular, writing and directing his films based in Hollywood.)

Nisi described working with her father as complicated. "We would both treat someone who isn't family with more professional distance and manners. But we keep it relatively professional, and somehow balance that; we're also good friends. It's a struggle at times but for long periods, there is no strife and it goes easily."

Nisi went to Cooper Union for Painting and Fine Art and she began working with Ken on his films in 2001, right before the September 11th attacks. (Living so close to Ground Zero, the family was deeply impacted by the event.) For a decade, she also instructed video and sound editing, color correction and motion graphics, but since 2012 she only edits for Ken. She enjoys working in virtual 3-D with programs like Motion and After Effects. She described working with footage from Ken's homemade mounts where he rigged together two cameras on a piece of wood and metal. "We would ingest the footage and edit them

over time to stay in line, horizontally, vertically, rotation. It was really hell to keep the footage from two cameras in sync."

Both Nisi and Ken rejoiced when 3-D video cameras were introduced.

The family's next project will be to capture Ken's and Flo's Nervous System performances on video. With the advent of 4K, Ken finally feels that a recording of the two-projector system could do the visuals justice. The equipment to run the show is so weighty they stopped traveling to perform the 3-D extravaganza in 2000.

In January 2017, Ken and Flo came to our NYSA meeting where Eric Drysdale was showing a version of his mid-century panorama Stereo Realist slides to the group. It occurred to me to ask if Ken knew my former film professor Peter Rose. To my surprise Ken replied, "Yes, he just started working in 3-D. Nisi showed him how to edit in 3-D." I was blown away by the connection.

I graduated with a degree in film/digital video from the University of the Arts in Philadelphia. Peter Rose taught experimental film and a class called "Time." I had always loved his work on film and was very excited to see what he was doing with 3-D. While Ken had developed a way to see three dimensions with just one eye, it turned out Peter was creating what he calls 6-dimensional films by overlapping two 3-D images.

Peter was a child prodigy in math. He grew up in Queens and attended the Bronx High School of Science and earned a degree in math from the City College of New York. When he reached the point where math no longer challenged and fulfilled him, the Museum of Modern Art, as with Ken Jacobs, inspired a shift in the course of Peter's work. He happened to attend a series of lectures at the MoMA by Slavko Vorkapich, a Serbian-American cinematographer best known for his work with montages. Vorkapich's ideas about how film restructured time and space intrigued Peter from both a mathematical and cinematic point of view.

Peter's shift to the study of film was facilitated greatly by his father Ben Rose, who was a highly respected photographer in NYC at the time. Together they built an optical printer with which Peter used to explore something he calls "diachronic motion," which he defines as "the simultaneous presentation of an action from multiple points of view in time, made by copying sections of film multiple times, in a grid, with small temporal displacements." Much of his work has been inspired by science fiction of the 1950s and their depiction of other, higher dimensions.

Peter describes his 2003 installation *Pneumenon* at the Fabric Workshop and Museum in Philadelphia as being "about 3-D in a 2-D-ish way." While camping with his wife in the Southwest, he saw a tarp hanging on a line. "There was a tree in the distance and the sun was casting shadows of the tree onto the tarp. Occasionally, the wind would lift the tarp and you would see the tree. So, you would see the 2-D version of the tree (the shadow) and then you'd see the 3-D thing." Peter recorded that image and projected it onto a hanging silk screen. There a fan in the gallery that would lift the silk screen in the same way the tarp was lifted by the breeze in the video and changed the projection surface from the screen to the gallery wall. "It was a piece that played with 3-D because you'd see something in front of you and then the screen would lift up and you'd see something off in the distance. I see this as a kind of precursor to my current work because it's playing with dimensions of vision and 2-D and 3-D and 4-D.

Themes which have run through a lot of my work for the past couple of years."

Peter's first attempt at shooting in stereo was in 2008 using two GoPro cameras, but he found the interocular separation was too small. He ended up building his own rig with two Vixia cameras mounted about seven inches apart on a sheet of aluminum. In 2012, Peter connected with Nisi Jacobs who took over his computer one night and showed him how to format for side-by-side passive polarized viewing and he's been working in 3-D since. "I realized that there was a way of actually creating higher dimensions by taking 3-D images and playing with them in various ways."

For the New York Stereoscopic Association's April 19th, 2017, meeting, Peter Rose came up from Philadelphia and presented his 3-D work to the group. "I'm really surprised it took me so long to get to it," Peter laughs. Peter described his work leading up to his shift to 3-D and shared a piece created in 2015 entitled *Towards a 6-Dimensional Cinema*, which he described as his "sketchbook." "I have to confess much of the time I have no idea what it will look like. I'm often just shooting things and then playing with them to see which ones are interesting."

The piece opens with tracking shots down a corridor which Peter has superimposed over each other. "You get this weird kind of hyperspace. It's quite unlike anything else I've seen and there's something about the space that I find intriguing."

Some of the most interesting and entertaining moments are superimposed shots from a skatepark near the Philadelphia Museum of Art. "You end up with people skateboarding through walls. You end up with tiny figures in the foreground and giant figures in the distance. All of these impossible spaces seem to arise from the superimposition."

There are lateral tracking shots taken from buses, bikes and cars with a single camera, sometimes using a W3 or an iPhone. "If you overlap this footage and delay one track by a frame or two you can actually get very nice 3-D out of it. And then I take some of these things and superimpose them." He has

done the same thing with tracking shots from famous films such as *The Cook, The Thief, His Wife and Her Lover*.

In their roles as film professors, Ken and Peter both introduced their students to 3-D filmmaking. Both men see themselves continuing to work in 3-D. Peter screened at the 2016 and 2018 Stereoscopic Displays and Applications Conferences and in the 2017 LA3D Movie Festival and screened new 3-D work at the 2018 Ann Arbor Film Festival in March 2018. Ken recently had another screening of new work at MoMI as part of the annual First Look Festival. Hopefully, we will see work from both of them at 3-D-Con in Cleveland this year!

Check out Ken's and Peter's work on Vimeo: vimeo.com/kenjacobs and vimeo.com/user1592855. 📺

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