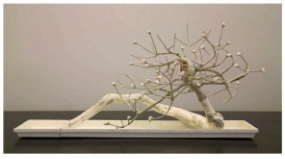
RONA PONDICK

TWO TREES

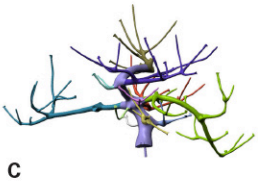
MAKING *DWARFED WHITE JACK*

By Rona Pondick



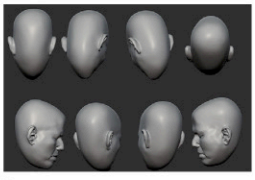
A

B

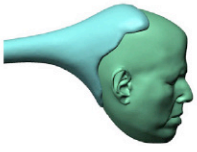


C

D1



D2



E1

E2

F

A: The photo above shows *Dwarfed White Jack* in its original state. The tray was first modeled in clay. A mold was made, and resin positives were cast. The tree root, trunk, and branches were modeled over a copper wire armature with a modeling compound that cures to a stone-like hardness. The heads were made from a previous 3D scan and 3D builds made in 1998.

The translation of the tray into metal loaned itself to milling. The resin was scanned, an STL file was made, and the tray was milled in aluminum.

B shows the aluminum tray and one section of the sculpture. The root and half of the trunk (in the photo above) were simple enough and large enough in form to approach in a traditional manner where we made a silicone rubber mold, poured waxes, and did investment casting in bronze.

Because I made the branching so complex and thin, it would be difficult to make molds of the tree canopy. I figured out I would need around 250 molds. Michael Raphael, from Direct Dimensions, believed he could eliminate the need for the molds by scanning the tree canopy at a relatively low resolution in my studio. The heads had to be dealt with in a different way. We cut the tree canopy into six sections and mounted them on a freestanding pedestal so that a 3D scanner with a long arm could pass freely around it to collect the data.

C shows the scanned tree canopy without the heads attached. It was color-coded to show the separate sections. Once we had all of this data we had to tackle many technical problems. Some branches were too thin and there were areas where digital data was missing. This had to be reconstructed in the computer where we worked together to maintain the integrity of the original.

D: I wanted the heads on the tree to be roughly ¼ to ½ inch in size while retaining a high level of detail. This is very complicated to achieve in 3D scanning and 3D modeling. I suggested to Direct Dimensions that we scan a life-sized head without skin texture at a higher resolution than the branches. We could then merge the STL file of the head with the lower resolution STL files of the branches at a later time. In **D1**, the image on the left shows the life-cast of my head cast in resin with the skin texture removed. **D2** shows stills from the STL head file.

E1 and **E2** show examples of how the head scan and tree branch scans were merged. Because the branch section and heads were going to be built with different 3D printers they had to be divided into separate STL files. In the end, there were 45 separate STL files for the heads. There were 11 STL files for the branches, in part because the branches were scanned and built at a much lower resolution than the heads.

Once the STL files were finalized we needed to find a material that we could build them in using investment casting. Many companies claimed to have materials made specifically for casting in metal. We did many tests but the builds kept exploding during the burnout process. We spent over six months experimenting with different build materials. Eventually, with the help of Jon Lash at Digital Atelier, we learned that we needed to burn out the material using a process called flash firing. Jon also introduced me to Solid Concepts, a 3D printing company, who made a material for investment casting that didn't explode.

We worked very closely with an engineer at Solids Concepts to determine how to combine the STL files into larger build sections. By bringing down the number of computer build sections we were able to bring down the cost. We had many other technical issues that we needed to resolve, including whether we should build the sections solid or hollow. We also had to increase the overall size of the builds to account for shrinkage during the casting process.

The STL files of the heads were sent to my jeweler who has a 3D printer that can build layers that are 0.0127 microns in thickness. This means that each layer is so thin that it leaves very little computer build texture on the surface.

He built 45 different heads in varying sizes and then cast bronze masters and made vulcanized rubber molds. We injected wax into these molds to make 45 heads we could merge, using hand modeling, with the computer built branches. It was very complicated to figure out the exact sizes the original computer build of the heads should be, to anticipate the shrinkage inherent in the various processes, so that the wax heads would join seamlessly with the computer built branches.

Once we merged the wax heads with the computer builds we did a number of test castings in bronze. In the bronze sections we found that there was too much computer texture on the branches, and we were losing all of our detail and undercuts in the heads. For future castings we had to adjust every single wax head by hand and exaggerate all of the features and undercuts. Because the branches were so thin we could only sand out so much of the computer texture in the resin material and had to finish correcting this in the metal by hand.

F: Once we had a successful casting of a section in bronze we did tests with my painter to see if we could paint the bronze and aluminum tray to look like white porcelain. It took a year to model the tree and aesthetically resolve it. It took another year to translate the first of the edition into bronze and paint it. On each piece in the edition we had to figure out how to take all of the cast bronze parts and weld them together in the correct spatial relationships before the sculpture could be painted. We thought many times during the process that the sculpture would never be completed and, looking back, I am amazed we figured all of this out.

I know most people think the computer will totally replace what we can do by hand. This piece underlined something I already knew. The computer is just a tool to assist, but it cannot replace what I can do by hand. I would never have been able to complete *Dwarfed White Jack* if I were totally dependent on the computer. In the end, my hand saved the piece.

TWO TREES

By Kevin Concannon

Two Trees presents the work of two exceptional contemporary artists working with computer technologies: Rona Pondick and Jennifer Steinkamp. On the face of it, their work seems to have little in common other than their subject matter. Each artist presents in this intimate exhibition a representation of a tree. Steinkamp's *Judy Crook* (2012-13) undulates elegantly and majestically transforms through a seasonal cycle as it buds, blossoms, turns color and ultimately sheds, only to begin the cycle again. Pondick's *Dwarfed White Jack* (2010-12) sits serenely on a low pedestal, a ghostly bonsai on a pure white minimalist tray, seemingly frozen in time and transported from another dimension. Careful inspection reveals that it too is budding. It is the blank visage of the artist herself, however, that is poised to blossom.

Composed of computer code and projected light, *Judy Crook* transports us to another place, a virtual forest that is at once present and absent in the gallery. Its scale and rhythmic animation seduce us; its ethereality made corporeal as we feel it in our muscles. It's not there, yet it possesses us physically, all embodied perception and muscle memory. *Dwarfed White Jack* commands a slower, but no less enveloping apprehension. Its Zen beauty and delicate equilibrium reveal its power more subtly.

Two Trees presents something of a paradox in its landscape of artificial nature. While Steinkamp's virtual tree immediately takes hold of the viewer physically, Pondick's very physical painted bronze bonsai insinuates itself into our consciousness more slowly. Recognizing the human faces extruding from the dwarf limbs, one cannot help but consider its mythological antecedents. Could these be the impossible children of Daphne and Apollo?

These buds will blossom not on the delicate white branches, but in the viewer's imagination. Our emotional path from empathetic horror to physical identification with the botanically immobilized heads takes place almost entirely in the imagination. Metamorphosis and nightmarish imagination are at the heart of how *Dwarfed White Jack* operates on the viewer. It is no surprise that Pondick cites Franz Kafka as a key inspiration:

> Do you know Kafka thought the short story "Metamorphosis" was hysterically funny? He would laugh out loud whenever he read it. The first time I read it that wasn't my reaction. But on subsequent readings, I discovered the absurdity and humor in his darkness. It's like a laugh in the dark, and it's everything I want in my work.[1]

If *Judy Crook* inspires Steinkamp's viewers to sympathetic bodily abandon (and it does), *Dwarfed White Jack's* black humor operates by planting seeds of terror—those zombie buds—in her viewers' minds. Indeed, Pondick's trees grew out of a dream: "I dreamed that my head was the size of a tiny bud on a tree, and I had to make it. *Pussy Willow Tree* (2001) is a tree with hundreds of my heads grafted onto the branches as if they are growing on it." [2] As curator Joe Houston has observed, Pondick "has managed to provoke physical and psychological unease, redefining the polite relationship between object and viewer, and in the process, disturbing that tenuous boundary between the personal and the social." [3]

Both artists play with ideas of transformation, hybridization, and even mutation. Steinkamp uses the term "fake nature" to describe these works. And they, too, are rooted in mythology. As curator JoAnne Northrup notes, when she began working on her animated trees, "Steinkamp had been reading feminist interpretations of Medusa as a metaphor for female power and sexuality." [4] The sensually swaying trees are inspired by the serpentine hair of the mythological Medusa. The spell *Judy Crook* casts on viewers is rooted in this mythological power, just as *Dwarfed White Jack's* capacity to instill physical and psychological unease is rooted in a twisted metamorphic story by Kafka and the artist's own dream.

Steinkamp's animated tree and Pondick's metamorphically paralyzed bonsai each suggest, in different ways, the pervasiveness of artificial nature in contemporary culture. Steinkamp's animated trees have been granted supernatural powers through the magic of computer coding, and Pondick's bronze beauties entered the world at a moment when the growth of genetically modified foods has raised global concerns about their potential impact on human development. The differences between the virtual and the real have become increasingly blurred. *Judy Crook* and *Dwarfed White Jack* dazzle in so many different ways, but among them is their power to bring these blurred lines of the contemporary moment into sharp focus.

[1] Rona Pondick, quoted in: "Rona Pondick interviewed by Barbara Wally" in *Rona Pondick: Works 1986-2008* (New York: Sonnabend Gallery, 2008), 32.

[2] Ibid., 36.

[3] Joe Houston "The Alchemical Forest" in *Rona Pondick: Works 1986-2008* (New York: Sonnabend Gallery, 2008), 90.

[4] JoAnne Northrup, "Juniper," in *Jennifer Steinkamp* (San Jose: San Jose Museum of Art, 2006), 92.

(above) Jennifer Steinkamp
Judy Crook 3 (installation detail and screen captures), 2013.
Installation photo by Marcus Leith. © 2013 Jennifer Steinkamp, Courtesy the artist and Lehmann Maupin Gallery, New York; Acme, Los Angeles; and greengrassi, London. *Judy Crook* is part of an on-going series where teachers are honored with tree dedications. The first in the series was in honor of Miss Znerold, Steinkamp's first grade teacher who singled her out as making the best sponge trees in the class. Judy Crook taught color theory at Art Center College of Design, Pasadena, CA; she was an amazing color theorist and inspirational teacher.

(left) Rona Pondick
Dwarfed White Jack (detail), 2010-12
Painted bronze
18 ½ x 35 x 23 ½ inches
Edition of three
Courtesy of the artist and Sonnabend Gallery, New York and Galerie Thaddaeus Ropac, Paris/Salzburg.

Art and Technology at Virginia Tech

Among the world's most accomplished artists in the field of animation installation, Jennifer Steinkamp's work is synonymous with contemporary digital art. And well it should be; her work is rooted in the great traditions of West Coast art: Light and Space, Finish Fetish among them. Steinkamp manages to parlay her technical expertise and state-of-the-art commercial experience into art installations that engage us both conceptually and bodily, even as they literally dazzle us. Her work with the contemporary technologies of animation is exemplary, and is, for many people, the very definition of creative technology.

As this small exhibition hopefully demonstrates, however, the use of computer technologies in the fine arts is considerably more widespread than the 3D animation that has come to represent it in the popular imagination. Rona Pondick's investment in leading edge 3D scanning and fabrication technologies is one of many other examples of how computer technologies are transforming contemporary art practice.

At Virginia Tech, the School of Visual Arts is fortunate to have a critical partner in the Institute for Creativity, Arts, and Technology (ICAT) as we transform our program to leverage the outstanding scientific, engineering, and technological resources unique to Virginia Tech, a school known internationally for its technological leadership. School of Visual Arts faculty members are involved, largely with the help of ICAT, in projects with our colleagues in other Virginia Tech programs that combine the arts and technologies to great mutual advantage. Data visualization, serious gaming, and a host of interactive applications and design strategies are brought to bear on projects with Computer Sciences, Veterinary Medicine, Building Construction, and more. Our faculty members are engaged with archaeologists and art historians in virtual reconstructions of historic sites around the world; research on the relevance of bats to bio-engineering; and state-of-the-art supercomputing sculptures, among other things!

We are delighted to be hosting two great pioneers in the field!

Two Trees: Rona Pondick and Jennifer SteinKamp (25 October - 22 November 2013) is presented in conjunction with the opening exhibitions at Virginia Tech's new Center for the Arts, which include Jennifer Steinkamp's *Madame Curie*; Joan Grossman's *The Edge I Have to Jump*; and Leo Villareal's *Digital Sublime*.

Artist Talks

Jennifer Steinkamp
"From Computer Code to Virtual Realities..."
Sponsored by the Center for the Arts
October 18, 4pm, Armory 101, Draper Rd.
Steinkamp speaks about the evolution, process, and breadth of her work.

Rona Pondick
"In The Making: Modeling in the Age of 3D Printing"
Sponsored by the School of Visual Arts
October 28, 12:20pm, Armory 101, 203 Draper Rd.
Pondick discusses the roles of old and new technologies in her work.

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