Exhibition Opening Remarks

Microcosms: A Homage to Sacred Plants of the Americas, Richard F. Brush Art Gallery,

St. Lawrence University, March 2, 2020

Jill Pflugheber, Dept. of Biology, St. Lawrence University

and

Steven F. White, Dept. of Hispanic Studies, St. Lawrence University

Jill Pflugheber

Welcome, all. We are so excited to have this opportunity to display this collection of our images. This exhibit displays a very unusual chance collaboration between the arts and the sciences.

I have the extreme good fortune to teach confocal microscopy to the undergraduates here at SLU. At the end of each semester, each of my students selects their favorite image from their own portfolio of collected images. I post these images in the form of a contest, which is open to SLU faculty, staff, and students. The contest is also posted on my own social media accounts, and is open for sharing. This contest has considerable popularity, usually garnering several hundred votes over a matter of days. This is how many people here on campus know me, and was the propellant for this collaboration.

Our laser scanning confocal microscope, valued at over $280,000, was acquired through a collaborative grant from the National Science Foundation, and is a rather unique fixture for a small liberal arts university. Most confocal microscopes are found at large graduate level institutions where high-level biomedical research is being performed. In teaching confocal microscopy, I discovered that plants make great subject matter for my students because they are easy to prepare. Plants contain a variety of molecules which fluoresce when exposed to laser excitation. This microscope then picks up the fluorescence emissions from the plants and reconstructs a three dimensional precise digital display.

In this exhibit, three colors are collected and displayed: blue, green, and red. There may be multiple types of molecules that display a particular fluorescent color, which means we can't specifically state what each color represents. You will find various structures among the images here: stomata, which are respiratory openings; pollen grains; xylem, which look like old style stretchy telephone cords; and my favorite subject matter: trichomes. Trichomes are the "hairs" on plants, and come in a variety of structural forms. Trichomes serve as plant defense by stinging, or secreting volatile oils, resins, or gums. These images represent not only plant structure, but also FUNCTION, when looking at molecules being transported through trichomes and vasculature, or pollen grains breaking free of their protective coating.

Plant structure and function is in and of itself vastly interesting and beautiful. Beyond this, however, for those of you familiar with indigenous artwork, and artwork inspired by the consumption of these plant medicines, consider the similarities between the artwork (often

centuries old) and the images captured here. Consider the possibility that these plants, the molecules contained within, might impact our neural networks, and show themselves to us in this fashion. Here you will see the plants in ways they have not been seen before.

Enjoy.

Steven F. White

Let me begin by saying what a pleasure it has been to work with Jill Pflugheber from St. Lawrence University's Department of Biology at an open-minded institution that supports interdisciplinary research. I deeply appreciate the efforts of Cathy Tedford, her staff at the Brush Art Gallery and Jo Skiff that made this exhibition possible. It has been a privilege for me to live and work with these plants over the last three years. Esthela Calderón and Becky Harblin deserve special recognition for helping to cultivate, care for, and photograph the plants whose images surround us this afternoon. Peter Wroblewski, visiting today from afar, also participated in this project in an amazingly generous way. Thanks to all. There is a list of references for further reading that is available for you to take today. It also includes some sources for obtaining seeds and plants.

Microcosms: A Homage to Sacred Plants of the Americas is a natural extension of the two previous SLU exhibitions *Visions that the Plants Gave Us* (1999) and *Inner Visions: Sacred Plants, Art and Spirituality* (2016), both curated by Luis Eduardo Luna, who directs Wasiwaska, a research center for the study of psychointegrator plants, visionary art, and consciousness in Florianópolis, Brazil and who was named Doctor of Humane Letters by St. Lawrence University in 2002. These exhibitions gathered visual art by numerous international artists, including work by indigenous creators who identify themselves as Cashinahua, Huichol (Wixárica), Huni Kuin, Shipibo, Siona, and Witoto. *Inner Visions* opened with an extensive showing of Donna Torres's precise and elegant botanical drawings of many of the same plants that appear here in *Microcosms*.

It was shortly after this second show, which had coincided with an official, open-to-the-public university launching of the second revised and expanded edition of *Ayahuasca Reader: Encounters with the Amazon's Sacred Vine* (which I coedited with Luis Eduardo Luna), that Jill and I first talked about the possibility of collaborating on doing some confocal images of sacred plants. What happened was this: Jill wanted to purchase a copy of the new edition of *Ayahuasca Reader*, and I was happy to deliver a copy to her office in SLU´s Johnson Hall of Science. While I was there, I stopped to take a look at the entries posted by Jill's students for the "Confocal Microscopy Image Contest" and read the instructor's encouraging announcement: "It's that time of year again! Voting is now open for the images presented by my students in Biology 392 Research Methods in Fluorescence and Confocal Microscopy. Voting will close on the 14th at noon. Please share the link far and wide!" Jill had told me about her ongoing contest and how it really was a transdisciplinary event in terms of votes cast. As I contemplated which confocal image would be receiving my own vote, I turned to Jill and said, "Have you ever wondered what the ayahuasca plants would look like with a confocal microscope? We should find out!" Initially,

we hoped to work with just a few different species. Now, here we are, several years later, with dozens of different species and nearly fifty confocal images in the *Microcosms* exhibition with plans to do an expanded website in the future. How did we divide the labor? Jill was the expert with the confocal microscope, of course. I did all the research on which plants were to be incorporated in our ever-expanding project and obtained either the live plants or seed to be germinated and grown under my care. Over time, I learned the basics about preparing slides and creating proper scientific documentation. I also watched Jill set up the confocal microscope and establish the coordinates for the work to be done with the mounted specimens. I never did get that white lab coat that I longed for, but, then again, Jill didn't use one either! For Jill, when we would get together to view each series of new plant-images, we were evaluating (literally) terabytes of data. In the vital vegetal portraits on the large screen, I was hoping to discover a very small number of works of plant-art that would extend their roots in my mind, and yours, forever. Together, we made the hard decisions choosing the limited number of confocal images that we believe are worthy of your attention at this exhibition.

At this point, I should say that we understand "sacred" in an ample way, in the sense that Amerindian groups define this term as a spiritual pact, and have included a wide (albeit still limited) range of plants from corn to peyote, from amaranth to the plants used to prepare ayahuasca. There is even a bonus mushroom among these microscapes, all from the American continent. According to the legendary Harvard ethnobotanist Richard Evans Schultes and his co-author Albert Hofmann, the Swiss scientist who was the first to synthesize LSD: "Plants that alter the normal functions of the mind and body have always been considered by peoples of nonindustrial societies as sacred, and the hallucinogens have been *plants of the gods* par excellence […] It is in the New World that the number and cultural significance of hallucinogenic plants are overwhelming, dominating every phase of life among the aboriginal peoples."

These images of plants held sacred by indigenous groups of the Americas are representative of what I call **Microcosmic Phytoformalism**. You heard it here first! This critical framework is a means of understanding and appreciating biomorphic forms that reveal colors, shapes and textures combining in a compelling, growth-related vision derived from living biological materials preserved as ecodigital art. Here in this exhibition, selected from, as I said, terabytes of data, are the organic visualizations of a natural order that has existed all along, even if it has remained less than perceptible until quite recently.

According to Hungarian Bauhaus artist and MIT professor György Kepes, whose pioneering work that explores the connections between art and science is an important precedent to *Microcosms*, "a pattern in nature is a temporary boundary that both separates and connects the past and the future of the precise and beautiful processes that trace it." Every pattern, he says, is a "space-time boundary of energies in organization." The microscope, of course, is a tool of perception that extends humanity's narrow biological filters in ways that may parallel the effects of these plants of power themselves as they have been used in ritual contexts, in some cases, for millennia.

Could one imagine these digital images with their stomata as art that breathes? Does this microcosmic art reflect biological processes that allow human beings to participate with plants in *co-becoming*? Can these images lead us to a shared human and non-human culture? Is this an example of how the infinitely small begins to approximate the infinitely vast, the way recent images of the sun show a surface that resembles myriad kernels of corn, each of which is the size of the state of Texas?

In these inspiring microscapes, born of an art-science symbiosis, there is sometimes an intentional preference not for perfect, unscathed whole forms, but rather for the beauty in a broken trichome, a collapsed grain of pollen, ripped vascular tissue, and structures ruptured perhaps by a plant's long clandestine journey across borders and within absurdly restrictive legal systems. This is transgressive art, an art of resistance. The art, finally, of plant-teachers who can help us survive in a world we seem so intent on destroying.

Preparing for today's opening, I took into consideration Michael Marder's ideas in *Plant-Thinking: A Philosophy of Vegetal Life* (2013). Reading this book made me ask myself some questions, which I would like to pose to you now. How can we give a new prominence to vegetal life? How is it possible for us to encounter plants and *not* take them for granted? Plants are so absolutely familiar, yet, at the same time, so utterly strange. We regard plants with what Marder calls an "instrumental attitude," always wondering how we can put them to good material use. But if we could move beyond the barriers we have erected between ourselves as humans and plants, could we somehow turn our utilitarian approach to vegetal life into a way of perceiving it differently, "recreating the plant in imagination" as Marder puts it? Perhaps *Microcosms* can jolt us into this space where our current century's technology can be a tool to facilitate paying homage to the incredibly diverse ordering principles of Amerindian spirituality. Right before our very eyes.

Take your time this afternoon at the exhibition. There is a lot to see. And come back another day to look some more!