

First of all I want to thank The Sitting Room for dreaming up the idea of *Shining Lights, Women Writing Science* and inviting me to participate with the other wonderfully accomplished women shining the light of their knowledge in this series. Thank you!

On October 14th, despite the difficult circumstances of Sonoma County being in the midst of the worst fires in California history, the dedicated aficionados of the Sitting Room gathered to hear Maya Khosla and me. With my car still packed for possible evacuation orders and thick smoke obscuring the mountains just east of The Sitting Room, I arrived to a warm reception (forgive the irony). The following is intended as notes of my presentation. The ideas are probably not in the order; there may be things I've forgotten entirely, and I may include things here that were lost in the moment.

SOMETHING FISHY

The 1991 Dunsmuir Spill wiped out a world famous wild trout population in the Sacramento River. The spill released a soil fumigant from unmarked train cars that derailed above Dunsmuir and fell into the river and leaked. I walked the river to witness the spill and saw a dead zone. That began my effort to educate myself in watershed and fisheries science. I plowed through articles about hatchery fish, about the agonistic behavior of rainbow trout verses cutthroat trout, about the endangered status of various wild salmon, etcetera. After that I started introducing myself at readings in the traditional indigenous manner of ancestors and place. I got interested in how the Indian people of Sonoma County participated in sustaining life around them – their chants and songs and seasonal ceremonies. I realized that these were practices of sustainability. That's how I got interested in the idea of reciprocity. Indigenous practices (and art) are *all about* reciprocity, which is a way of participating in by giving back. I started making poems in the style of indigenous chants and songs. The Deer Chant and the Salmon Chant, various other sung poems and chants and parts of The Poet's House came into being from that desire to participate in the life of the place I love, the land of Sonoma County.

Recited the DEER CHANT

I argue for the reciprocity between locale and habitation, from which culture arises. My poems come from following certain images and experiences that often result in a record of moments ordinarily lost because they have no place in our daily discourse. I do this to make myself whole, to reknit the tatters of a busy life, and in hopes sharing with others.

For about a decade or so following the 1991 Dunsmuir Spill, I concentrated almost entirely on writing that sprang from my concern about environmental issues, and for a while I was identified as an ecological poet. But poets are mostly gripped by compulsions to write about things that choose us, rather than the other way around, and I don't write strictly what people think of as eco-poetry.

Oikos (or *eco*) is Greek for home; thus, ecology is *the study of home*. When I taught Ecological Identity at SSU, I would remind students that our bodies are our first and forever homes, the *place* we are born into and will die in. I would start with Candace Pert's work on 'molecules of emotion,' offering the evidence that our emotions are instantly translated into the body. I devised various guided exercises to demonstrate this. Since we have all been so profoundly stressed about the fires, let's do an illustrative exercise right now.

NOTICING MOLECULES OF EMOTION guided imagery

ABOUT WONDER

Reinhabiting our bodies is partly about remembering our personal histories – lost moments of connection when we felt at home in ourselves, we can begin to feel at home again in a deeper sense, addressing the alienation that our current civilization seems to engender, by revaluing the moments for which our present society offers virtually no acknowledgement. Ironically the current power of fire returns to us a moment of community that makes possible a space for shared stories that include awe and wonder, however frightening and tragic.

But the most ordinary moments of wonder remain lost

recite IMAGINE IT

One winter morning you leave for work and on the way you see the sun come up through a storm-mottled sky. Something stirs in you, a sense of awe at the impassive grandeur of the world around you, through which your small life is passing. You sense your place in the enormity of the universe and are overwhelmed with wonder, filled with the strange solitary joy of being

and the undercurrent of your mortality. These are feelings that could lead to more meaning in your life, to greater connection with each other and the resonate depth of the world around you. What would happen if when you arrived at work you could begin your day there by telling of this moment. But by the time you arrive you have all but forgotten it, because there will be no one to share it with. Such moments have lost their place in our conversation.

To share such memories is revitalizing. It's a way of participating energetically in the unfolding mystery around us. In sharing there is an exchange of energy, a reciprocity necessary for the continuation of aliveness. Implicit in our respectful engagement with nature is a two-way enlivening. Even when it is receptive (as this process of recollection is), it is not a passive process. Our alert responsiveness, fulfills a kind of obligation. For are we not obligated to that which sustains our us? That's indigenous wisdom. In remembering, you re-member, you make whole again.

Recite DEAD SNAKE

VALUES, SCIENCE & ART

Going back to the relationship between science and the arts – Indigenous Science has come into it's own in the last decade among ecologists, in medicine, and in the life sciences (witness Robin Kimmerer's book on our reading list). Indigenous science is permeated by values, which is why it was rejected by so-called objective Western science. I actually just watched a film from *Tending the Wild*, that illuminates the California Indians' use of fire as ecological *and* spiritual – a practice of sustainability.

How do we know what is right and good? Bob Hass says we make it up -- over and over again. In that sense, values are *created*. They have to be restated in the fresh language of succeeding generations, convincing us of over and over through imagination. In particular, Hass said that it's poetry's job. Given that task, poetry is uniquely useful in directing science, which is by definition is a neutral process, without prejudice. Poetry *convince*s us of what matters, of what we value, by engaging our emotions artfully through imagination, and what matters then guides the practice of science.

When the Foundation for Deep Ecology funded my 'research and public programs' tour, I met the world-renowned fisheries geneticist, Fred Allendorf, who was on the faculty at University of Montana. For a number of years, Fred would invite me to come up to Montana to

talk to his graduate students, because he believes that science students need the influence of poetry to remind them of the values that ought to guide them in their work.

Another academic, Elaine Scarry, a professor at Harvard, published a brilliant little book titled, *One Beauty and Being Just*, in which she argues that values are made by beauty. Beauty engenders love and justice, inspires protection and emulation -- in short, beauty guides us in living with compassion. Even when those images of beauty can be surprising and strange to the audience, the poet works with an effort toward beauty. In the poem 'Dead Snake' I'm trying to communicate a positive association between snakes and a divine feminine. The poem reclaims the beauty of birth and menstruation in the cycle of life's continuance. While the poem runs counter to Judeo-Christianity, it's in harmony with the sustaining mystical experiences of my childhood.

I hope you can see the embrucation of these ideas , so you can see I find a vital relationship between science and the arts.

I also write articles, frequently including a certain amount of scientific research. The first of those articles was for IONS, the journal from the Institute for Noetic Science, and the subject was non-western science, or what I called then, 'sacred science.' I argued for a science informed by the sacredness of life. More recently I wrote about CRISPR gene editing, probably the most influential scientific breakthrough in our lifetime already being employed in medicine to alter the germ-line for certain incurable genetic diseases. (I notice Jennifer Doudna's book on our suggested reading; she's co-author and original scientist in the discovery of CRISPR-cas9.) In that article, which was actually about de-extinction, I wrote "Our hearts awaken to the value of life in the context of mortality. We value life because it is perishing—as the day ends, as the blossom falls. With its focus on bringing back the dead, de-extinction de-values life and misses the wisdom that comes with pausing to inhabit the heart.

My most recent article addresses the socio-biological foundations of empathy and the related hazards of technology. I have also written on the co-evolution of salmon and humans: "In the accumulated wisdom of culture, heart-thought soothes the loneliness of the intellect by including empathy. . . . As a leaf settles to float on a stream or dusk gathers in the arms of trees, it takes earth-time to develop our heart-thought. In the made world of increasing speed and complexity, how will we find what is right and good without reflection?"

Thanks again to The Sitting Room for the opportunity to share these thoughts. All blessings to all beings. May we find our way together.