

boundaries between domains are no more and they now together occupy a blended space (Leavy, p. 24). Transdisciplinarity is a conceptual blend that has reached a point of serious discussion and efforts, and art-science is part of that dialogue.

10. 4.1. An Art-Science Case-Study: Raewynn Turner and Colleagues: Making Olfactory Sense

How do we classify someone as an artist/scientist? The art world is currently in the boomlets of the moment; and this includes art-science. Is it art-science if a painter makes a painting of a petri dish; is that enough to be legitimately classified as art-science, or does something more have to be going on? How about a painter making quite accurate renditions of images taken from a molecular microscope? Is that art-science, or is it more comparable to a still life, or even a landscape painter?

Here is an example that is close to home for me personally: I made paintings for thirty years that were *visualizations* of the data contained in musical scores. I did this through an analytic process that was based on music theory, incorporating harmonic movement and qualities into color systems in paintings based on tonal music, and another color system I created based on timbre for non-harmonic music. If my process produces a

visualization of the music can we also say that making a painting while listening to a particular piece of music is a visualization of that composition? There is a sliding scale here that runs between different levels of visualization, but I think at the less vigorous end, it is better to call the painting *inspired* by the music rather than an actual mapping from the music. The continuum helps to determine if and how much of a conceptual blend is active; at one end there is little, while falling somewhere in the middle, between the two endpoints, there is a transdisciplinary blend. We can establish the two ends of the continuum by using the double-scope network chart; which acts as a structure frame for the blended information. Therefore, I am proposing that the double-scope integration network chart, as seen in Fauconnier's conceptual blending procedure, is a way to be able to analyze the quantity and quality of a particular set of conceptual blends. I would like to devise a classification method that can place art-science works and creators at specific points along the continuum of art-science; this will measure proportional quantities of art and science, not the quality of the work.

New Zealand artist Raewyn Turner engages deeply with scientists in their natural domains, their laboratories. She seeks them out and asks to work with them and spend time doing residencies in their institutions. In Auckland, Turner primarily collaborated with Richard Newcomb, a biologist interested in evolutionary bioinformatics, protein biochemistry and structural biology at the National Plant and Food Laboratory. His research focuses on understanding the mechanisms and evolutions of biological chemical sensing systems. It was with Newcomb that Turner worked on her concept of a *human plume*, the cloud of particles containing the essences of how we smell that waft out behind our bodies. One of the issues that Turner came to think about was a response to the 'nose' training she received at National Plant and Food Laboratory (*Nose* is a word sometimes applied to a professional perfumer, a person who has trained in distinguishing and describing aromas): Could she train her olfactory perceptive system to widen its ability to recognize and analyze different chemical molecules in real-time environments (Turner, 2013)?

Her direct collaborator in her work is a talented engineer named Brian Harris,

known for his mechanically revised

camera mounts that are used

in the New Zealand film industry.



He has a science and

electronics background, creating

finely tuned adaptive

mechatronics.

Harris constructed anthropomorphic dancing standing lampshades that send out puffs of

fragrance, and molecular sensing devises that sound in different chords for different

molecular stimuli. Turner and Harris also created sound sensing devices that are similar

in nature to the sensing devises



Figure 0.9

designed by

the laboratories— but with a

different purpose. In the end, Turner and Harris want the sonifications of chemicals to

make musical sounds. This is a conceptual blend (Turner, 2013).

In 2011 Turner was awarded a Fulbright grant to go to the Monell Chemical Senses Center from October through November. The director of Monell, Gary Beauchamp, posed the question: "How does a molecule manage to affect consciousness?" As Turner points out in her blog, this question puts the science of olfaction into new domains for study, with new attention and focus for researchers. This question might be answered differently by an artist than by a scientist (Turner, 2013).

Monell is a collaborative, interdisciplinary research organization in Philadelphia, PA. Even the structure of the institute reflects that; there are no formal departments beyond six overlapping program areas. However, researchers working at Monell fall under several areas and there is a sharing policy between them. Their research includes studies on smell, taste, and sensory perception. They are also doing research on human health, development, and behavior. It is easy to see the interactions between the parts here; and it goes directly to Beauchamp's question of the relationship between olfactory particles and human consciousness. Monell scientist's research olfaction at all levels; this means from how molecular structures of compounds exert influence on their perceived

odors and the relationships between odor perception, emotion and memory. ("Monell Center," 2001-2013, p. research)

One can easily see how the scientists working in this open and collaborative environment would welcome a person who brings the thinking of an artist. Turner wrote in her blog:

At Monell Chemical Senses Center I'm researching unconscious sensing of human smell signatures for art works with a focus on developing the human as a sensing instrument (Turner, 2011-present).

This is a statement of Turner's research area, and recognition that she plans to use this as material for her art works. What she does not directly say here is that the artist herself is the subject of these experiments. Her public product for this research plan was to create an art installation called *Downwind*; this was shown during the ISEA (International Symposium on Electronic Arts) 2013 in Sydney.



Figure 10.10 Downwind Installation. Twenty pods and 2 sugar dispensers in an indoor space.
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Chemistry gives Turner the vocabulary and syntax for her art works. She creates manifestations of the vocabulary and syntax that come directly from a research laboratory source, but reflect artistic concerns more than scientific concerns. She uses the molecules that have been isolated or synthesized in the labs and repurposes them to serve another way of thinking, inviting the gallery guest to experience an unusual array of smells, and in other works, tastes. For instance, the Downwind installation was set up to invite ISEASydney in to experience a variety of smells lofted from life and bodies, even some compounds that are not detectable by most humans. Sugar was provided so the gallery goers could clear their olfactory pallets. However, there was no mechanism to notate the

reactions of the participants, which is strange for people who are familiar with the scientific method— that no data is collected. What Turner is doing is to allow her audience to experience various olfactory data, built into a new narrative, which is the installation framework or domain. This work purposes itself as a possibility to reflect on this strange collection of smells and how they might be used to modify and mold individual behavior.

What I have just described is a natural sequence in the art world. I offer some evidence via a short review that was written about this very artwork:

Downwind is a gently interactive work— you are invited to approach a sugar bowl which politely opens for you. Then you place a small amount of sugar on your tongue to heighten your sense of smell. Forming a kind of poppy field, the other objects look like mutant lamps with spherical 'shades' that concertina in and out, responding to your presence. This movement puffs air in your face, carrying a scent somehow stored within. These scents are quite subtle yet complex and hard to categorize—maybe there's tobacco, grass, tea but I can't be sure. Many seem to have synthetic top notes that mingle with the organic and create the olfactory equivalent to glimpsing something out of the corner of your eye—smelling the edge of your nose perhaps?

It is this ambiguity that the artists are interested in—the myriad combination of smells that comprise the scent of a human (hopefully without employing some of Patrick Susskind's suggested techniques in his 1985 novel *Perfume*). Enclosing the space are large draped white plastic sheets, marbled with suspiciously yellow stains, a pattering that also adorns the pods. Creating a unified visual field, these sheets are also

impregnated with scent—a fermenting hopsy smell of unwashed human, but I could be wrong. That's the point. Turner and Harris are interested in the way in which smells are variously interpreted by individuals, thus rendering each reality unique. That smell so sweet to one person may be repugnant to another—smell as a signature of subjectivity. Downwind is sensorial and conceptually satisfying (Priest, 2013).

The gallery visitor is not informed about what they are smelling from each

anthropomorphic, dancing, poofing pod; but it does not seem to matter in this context.

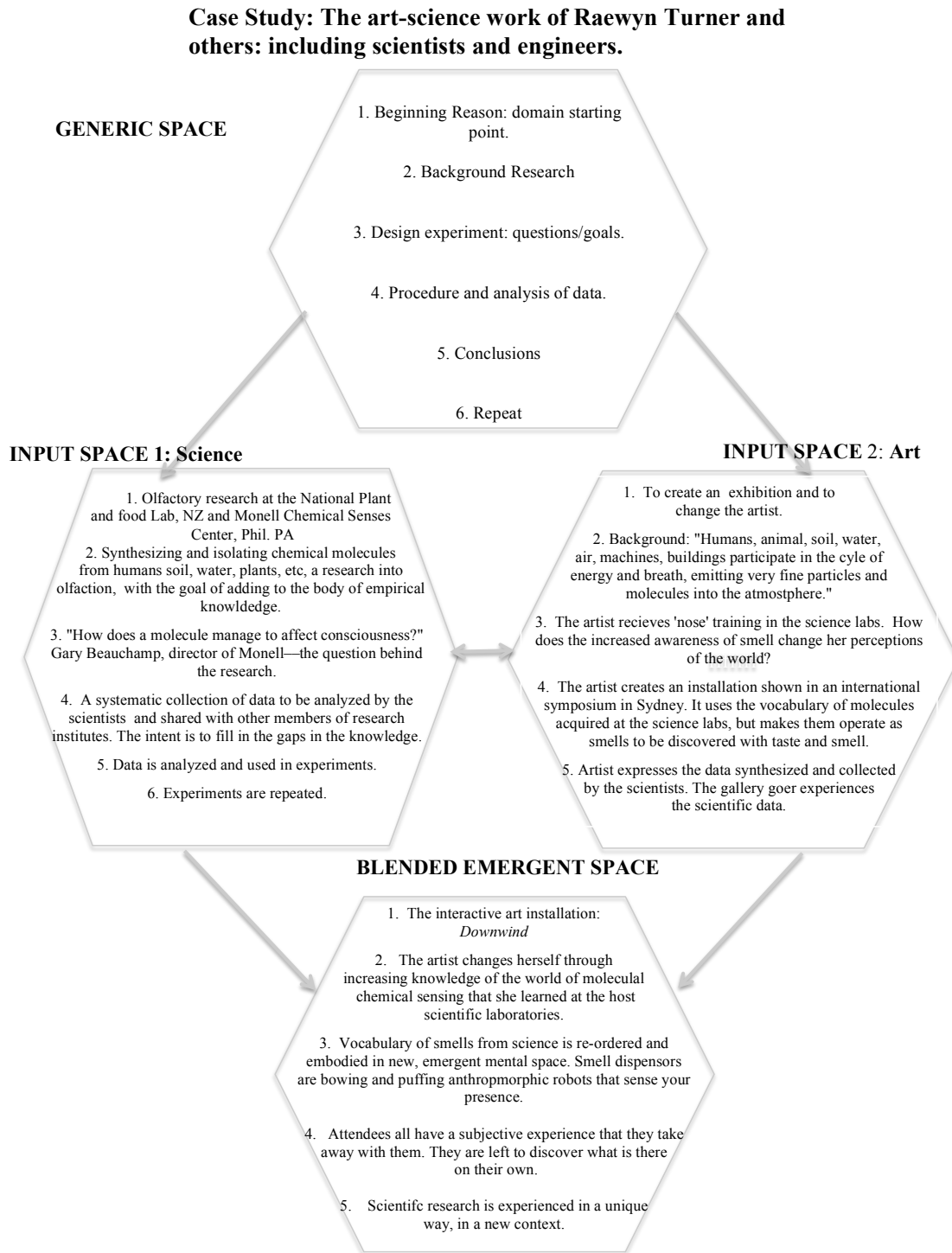
The reviewer, Gail Priest, accepts it as part of the experience to guess what and where the smells are. Because there are no lists posted on the wall as a map of smells, the gallery goer must sniff out points of interest by themselves.

Priest writes that Turner and Harris "are interested in the way in which smells are variously interpreted by individuals, thus rendering each reality unique." Maybe that is the reason there is no effort to collect the experiences of people, because each one is solitary, subjective, and therefore not quantifiable. The artist's job is to jog people into thinking in ways that are new for them; it is not necessary to collect data. For a scientist this is completely reversed. And finally, at the end of this review, the critic says it is successful because it fulfills its mandate— to be "sensorial and conceptually satisfying."

I have made a double-scope integration network for *Downwind* so that we can see the blending structure. It helps to put the information gleaned from the project into an orderly structure so that it is possible to see which elements have been compressed, and which elements are emphasized in the new structure. After the four-space chart is completed, one can then analyze the contents of the blended emergent space on the bottom of the page; the various elements can be sorted into a two-column table, from which a determination can be made as to the proportional quantities of the input spaces.

Turner, as an artist, takes the research she does with scientists, and she then makes something that is mysterious, something that must be considered and tossed around in the mind of the viewer (or smeller). I have attempted to analyze how what she does is different from what her scientific partners are doing. I also want to know what affect Turner and her focuses have had on her partner scientists.

Figure 0.11



Turner writes down her questions in her blog:

Can we train ourselves to detect the faint chemical signal such as methyl salicylate, methyl jasmonates, hexanol and terpenoids, that are the language of plant communication: Would this ability to eavesdrop on plant's physical condition give us an awareness of their deeper state of being, e.g. fear of attack? If we breed plants for differences in their chemical composition will we impact on their ability to communicate or how they interact with other organisms?

I will now attempt to determine the proportions of the contents from the two input

spaces by sorting the elements into two columns of a table:

Input space 1: Science Laboratories	Input space 2: Art and Artist
Information: a structured vocabulary that is the result of scientific research.	Downwind Interactive Installation
Artist is educated by information from the resident scientists.	Artist changes herself through knowledge received from scientists.
The vocabulary of smells is science.	The vocabulary of smells is repurposed so as to be expressed and received by the audience as expressions.
Scientific research has been presented in a new context, with a new audience.	The audience takes away a subjective experience because of the way the information was presented.

Table 0.1

The results are much more even than I thought I would find. Turner is definitely right in the middle of the sweet spot on the continuum between art elements and science elements in the domain of art-science.