Science in culture

Nets and neuroses

The obsessional art of Yayoi Kusama uses repetition to express her fears of obliteration in infinity.

Martin Kemp

It is increasingly common for artists to make a conscious effort to embed science into their creative procedures. We accordingly feel justified in analysing their works in relation to the relevant sciences. But what about works that evoke strong scientific resonance without any evidence that their creators were thinking about science at all? A striking case in point are the huge paintings and installations by the Japanese artist Yayoi Kusama.

This dilemma is encapsulated by the reaction of Philip Campbell, editor of *Nature*, when he visited the retrospective of Kusama's works at the Bass Museum of Art in Miami Beach, Florida, housed in a new gallery designed by Arata Isozaki. Campbell says that "her flat patterns, such as the infinity nets, are fascinating and seem to have an elusive natural character, as opposed to an artificial character". He adds: "It's hard to judge the power of these sometimes gigantic canvases." But Campbell suggests some themes that spring to mind, such as pattern analysis, and says they are reminiscent of crystallographic and biological patterns. Yet there is no sign in any of Kusama's many pronouncements of her conscious engagement with such things.

The 'infinity nets' are composed of cellular structures of potentially unlimited extension. Each cell is similar, leading to endless repetition, yet is unique. At one level the nets are "mechanical" and "empty", as Kusama says, yet they are no more empty and undifferentiated than cosmic space, plastic foam or cross-sections of cork.

One of the more recent variations on the theme is *Infinity Stars* from 1995, which stretches to 17 feet in length. This work exemplifies how the repeated shapes — in this case a myriad of round 'lights' punctuating a cellular membrane — have organized themselves around certain intuitive principles of distribution, packing and symmetry. The very act of repeatedly stringing out the reticulate structure sets parameters on its possible morphology, much like the physico-chemical constraints imposed on cells in tissues or the space-time dimensions of cosmic branes.

But it would be wrong to write about the infinity nets as if they are only formal exercises that exhibit an unconscious *rapprochement* with certain classes of scientific image. They arise instead from deep psychic motivations, and are saturated with Kusama's fears, obsessions and hallucinations. She has, since childhood, suffered from obsessive neurosis, and for the past 20 years has voluntarily resided in a mental hospital in Japan. She has been obsessed by the hypnotic effects of endless repetition and accumulation, and both proclaims and fears the obliteration of the individual in scaleless infinity and limitless time. She exploits repetition in a manner akin to chanting in religious rituals or to the mesmerizing quality of an endlessly repeated phrase that loses all focused content.

YAYOI KUSAMA/ROBERT MILLER GALLERY

Spot the difference: this detail from *Infinity Stars* shows how Yayoi Kusama uses repetition.

Kusama has been one of the most remarkable and fertile artists of the second half of the twentieth century. She arrived in New York as a 29-year-old in 1958 and contributed energetically to the heady art world of the 1960s and 1970s. Andy Warhol's notorious Factory set the tone of social ferment and creative anarchy. Kusama herself participated uninhibitedly, staging outrageous happenings with nude performers. She also made large accumulative sculptures densely covered in phalluses, set up extravagant installations with mirrors, designed extreme fashion and wrote unsettling poetry.

There is no simple answer to our dilemma of whether Kusama's nets have any connection with science. At the level of conscious address, the answer is probably no. And in as much as their expressionistic role is to evoke subjective feelings of obliteration, depersonalization and hallucination, the answer is again no (or apparently so). However, if we look at how they make their effect on a viewer, by tapping into ubiquitous modes of repetitive pattern formation — the effect to which Campbell reacted — we can see that they can be powerfully resonant for scientific observers who delve into the order of things of a kind, albeit for their own, very different purposes.

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Yayoi Kusama's work will be on show at the Bass Museum of Art in Miami Beach, Florida, until 11 May.

ROBERT MILLER GALLERY

Yayoi Kusama: influential for almost 50 years.

readers step-by-step through the transition to a mechanical perspective, rather than just diving in. Most biologists, even those with training in mathematics and physics, don't think like engineers.

Finally, I lament the book's lack of phylogenetic foundation. Despite the first chapter's evolutionary tone, Alexander never returns to ancestry or history; instead, each organism is treated as a separate case study of adaptation. In a disappointingly short epilogue (just five-and-a-half pages), he attempts "some generalizations about locomotion", but comes to few conclusions. His search for generalizations fails because he treats each organism as an independent point on a graph, rather than as a member of a hierarchical tree of life. From an evolutionary perspective, physical mechanisms that are shared among taxa are either homologous or convergent, not just common.

If most walking animals, whether vertebrate or arthropod, use an inverted pendulum mechanism to save energy, how many times has this evolved? How did organisms that were optimized for swimming evolve into organisms optimized for running? And then how did runners evolve into organisms that are optimized for flying? Such transitions are completely ignored in this book.

Principles of Animal Locomotion is a valuable reference book written by a leader in the field. But it also serves as proof that enough studies have accumulated to warrant an evolutionary analysis of locomotor mechanics — a synthesis that I await eagerly. ■

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