

Parts and Wholes, Order and Disorder in Chemistry and Human Experience

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The other morning my eye fell on an immaculate food display package discarded on the pavement, it stood out, its vacuum formed plastic bubble expertly designed to show off a delicious snack. It was highly locally ordered to fulfil its purpose but globally disordered in the waste problem it presents. In the same way an individual's behaviour may be beneficial within the narrow context of a particular task but may have destructive or negative repercussions outside the remit of that task.

For a system to develop it needs disorder. This is true for chemical systems, biological systems, planetary systems and especially so for human systems. In all this what we call disorder is not only negative and what we call order is not only positive. Complex systems thrive at the edge of order and disorder and in humans too much order can hold us back can keep us in a disordered relationship to what we are trying to achieve and who we are trying to achieve it with.

Order and disorder have a dialectical relationship, disorder can flip to order and vice versa depending on what level or region of whole or part we focus on. In the constant movement of life, it is often not possible to preserve parts of the self that give us a sense of order in the face of circumstance or changing situation. Existential psychology understands that all freedom is situated, constrained by other parts of the whole within which we participate.

In this paper we explore how we do things in our respective practices and analogies and isomorphisms in the complex systems that bond molecular chemistry to human experience. We bring the molecular and human together because both domains show us something important about order and disorder in the context of the parts and wholes that constitute things. This essay sees things as whole-part relationships rather than breaking things down into parts without recourse to the wholes they are embedded in. Fixing something in an inviolable and static identity, prioritising individual over collective does not capture the flow and innate relatedness of things changing over time, reconfiguring themselves in relation to other things doing the same within the greater ground we are all part of - the family, culture or society from and into which we are born. Mereology, the formal study of part-whole relationships shows us that wholes are parts and parts are wholes depending on which level of a system you focus on.

Our evidence comes out of Monia's work as a phenomenological existential psychotherapist and Simeon's work as an artist at the intersection of art and science, specifically a research fellowship with the inorganic chemistry Laboratory at Oxford University investigating order and disorder at the molecular scale in chemical systems.

Monia and I are practitioners working within the flows of material and experience we encounter. We both see ourselves as participants in a wider network of relationships. Practice is much larger than the practitioner and is to intervene in the flow of things through the world, to co-create change in the trajectories of the small amounts of material in Simeon's case and human experience in Monia's case.

Monia's apprehends her clients as whole persons, nodes in complex webs of relationships undergoing ceaseless change through life. For her the intra and interpersonal aspects of self are not separate. She does not fix a client in an identity or to affix a diagnosis to a particular morbidity or disorder. She and the client take time to understand the problems the client presents. What a client may see as disorder or dysfunction, what causes them stress and disturbance, may be communicating something important that needs to be

heard. Beneficial shifts emerge by staying with the problems so they can be understood and healing (making whole) can take place. Monia works with symptoms as parts of the whole self to be incorporated and reconfigured rather than eliminating them. Repressing or removing a part of someone will have significant unintended consequences for the other parts of the intra and interpersonal system within which they are entangled.

Monia works phenomenologically, which is the scientific study of one's own subjective experience. Phenomenology is radically empirical, it discards generalities and categories handed down to us by the society we happen to live in. It is a reflective investigation of the enigmatic actuality or 'isness' of what is before us, of what we behold, and how we are interpreting it. Its primary technique of bracketing puts to one side what we've been told something is, so that we can behold it, let it speak to us in its irreducible uniqueness. Monia listens, strives to stay with what the client is presenting, without collapsing the unique issues they bring into a diagnostic pigeonhole.

Existential phenomenological psychology discards the notion of the sovereign subject, what Charles Taylor called the buffered self. It calls us to take responsibility for our lives as parts of the greater field of experience we encounter. It prioritises staying with the present moment and eschews diagnostic labels and off-the-shelf interventions. It aims to reconnect us to meaning and purpose amidst difficulty and demand. It strips away the unspoken parameters of fly-by-wire conformity and frees us to think and act with greater empathy and autonomy. It is geared toward flourishing (eudaimonia) by exposing and assimilating the darkneses and disturbances that keep us constrained within frameworks of and not of our own making. Crucially it does not try to remove these disturbances, but rather to change our relationship to them. This feeds a process of radical transformation by making us paradoxically much more attuned to and at the same time more distinguished from the constraints of our social and professional contexts. And as it does this it makes us less individualistic, more porous to the others in our lives and who we live with in society.

Relationships between parts and wholes are central to Simeon's work, often made in collaboration with musicians, engineers, programmers, scientists, psychologists and others. His approach is underpinned by developments in quantum, chaos and complex systems theory that have revolutionised the human and physical sciences. In sharp contrast to a mechanistic worldview these developments envision an organic, inter-relational and ceaselessly creative cosmos, imbued with value and agency, calling for our ethical engagement. Binary categories such as mind and matter, subject and object are reframed as vantage points within a unified field of experience. Key formalisms he works with: autopoiesis (Varela), holarchy, (Koestler) second-order cybernetics (Bateson), radical empiricism (James), élan vital (Bergson) and philosophy of organism (Whitehead) share an apprehension of humanity and nature as separable-but-not-separate parts of the same whole.

Basic questions his sculptures ask are: How do my parts interrelate? Am I an alliance of individual elements or am I a singular entity? How is the constitution of my whole formed by its parts and how does my constitution relate to the world or to the context I'm displayed in?

The parts and wholes of Simeon's artworks signify in relation to other parts and wholes they participate in. Wholes are always seen as aggregations of parts, as unities within themselves and as parts contributing to the unities of greater wholes. This nested hierarchy of parts and wholes extends from the smallest discernible detail of the work and continues outside the work to its display context and logically could be, extended all the way to the horizon of the what we can know at the largest scale, and all the way down to the minute quantum fluctuations giving rise to the material world at the smallest scale. How parts and whole interrelate is the fundamental organising principle of his practice.

Arranged around periodic and aperiodic tilings of elements his wall works most explicitly ask how the constituent parts of the work relate to the other parts and the whole. What degree of separation or autonomy do elements have? How much of their meaning is found in their relationships to the other parts or in themselves? For his work as for Monia's intra and inter-relationships are not separate. If one is focusing on the top level of the part-whole hierarchy all relations between elements are intra-actions within the whole. If one focuses on a lower level of the hierarchy, what is above, it will be interaction between elements and below intra-action within elements.

Simeon brings these concerns to his work with the director, research fellows and the doctoral students of the Inorganic Chemistry Laboratory Oxford to investigate the ability of the human-scale experience of geometry, dynamics, and structural complexity to inform atomic-scale design. The focus is on the dynamism and responsive fluidity of matter in its various states always in a process of becoming something else, of combining and recombining with other elements transforming and being transformed by the system it's part of.

He is developing two- and three-dimensional architectures in the studio that explore isomorphisms between the macro and micro worlds and present spatial/visual problems that may only be resolvable working between spatial dimensions—so a two-dimensional figure can reveal itself as three-dimensional to the viewer moving around it or vice versa. One, two and three dimensions operate as non-linear loci on a sliding scale, interwoven, giving rise to each other, rather than separate domains.

Separateness and Separability

We both realise that considering something in isolation whether a chemical compound, a sculpture or a human person does not mean that what's being considered is separate from the whole, it is separable from the whole as a means of focusing in on its unique attributes for a particular purpose, but it can no more be separated from the whole it participates in than a triangle can have four sides. Separation is an nonsensical abstraction, what Whitehead called a fallacy of misplaced concreteness. One thing that we both understand is that while we need to separate things out to work with their specificities we do so reflectively and do not mistake this for absolute separation.

Ultimately this points to the fundamental question of what constitutes a self, self as transverse slice through the smoke column of formation; self as inter and intrapersonal coalition, what Joyce Carol Oates called a temporary agreement among atoms.