

## **Emergence: Resurrection in the Microcosm**

Walter Alexander

Those familiar with the broad outlines of Rudolf Steiner's biography know that as a nine-year old he experienced the discarnate spirit of his aunt who had, unbeknownst to his immediate family, taken her own life. She appeared to him in the small railroad stop where his father was the station-master and telegrapher. Her spirit stepped out of a stove and then asked the young Rudolf for help. His parents, not surprisingly, did not take his report seriously until they soon learned that she had, indeed, committed suicide.

Steiner was born in early 1861, just as the first skirmishes of the American Civil War, that first conflict to demonstrate the potential of increasingly mechanized warfare to produce horrific death tolls, were taking form. By the time of Steiner's mature years, the industrialization of life was shifting into ever higher gears and the Great War's slaughter of Europe's millions (1914-1917) would hasten the long and painful collapse of the Old World Order.

Among those who seriously take up the study and practices of anthroposophy, the spiritual-scientific movement initiated by Steiner, there is often an assessment that he is among the master spirits of our age, if not its greatest representative. As evidence, they point to the expanding worldwide penetration of Waldorf education and biodynamic farming, the Camphill Movement (for individuals with special needs), Eurythmy, anthroposophically-extended medicine, impulses in the visual arts, economics, architecture, and an over-arching view of humanity as an evolving component of an also evolving cosmos.

Education, science, the arts, agriculture, economics, philosophy and of course, spirituality—what one might expect as fields of influence for an age's "master spirit." Steiner's just-deceased aunt, somehow, knew who to go to for help. And it is natural to wonder if, seeing her despair as the inheritance of the entire race, he

determined that to help her he would have to sow the seeds of a new cultural era. *Where Steiner started that vastly ambitious work is noteworthy and remarkable.*

The roots can be found in his own autobiography, where Steiner describes his response as a thirteen year-old school boy bored by a history teacher who stood in front of the room and merely read the lessons from a book. Young Rudolf, with jaw-dropping precocity (and cheek), was inserting sections of Immanuel Kant's *Critique of Pure Reason* into his history book and pretending to be attending to the assigned reading during class. Ultimately, he took on Kant's "can't"—the highly-regarded philosopher's assertion that human knowledge is limited and can't reach beyond subjective, individual judging. His take-home was that human beings can never really know the true nature of things. At first glance, this may seem to be a fine point to grasp onto—as a launch pad for rescuing a despondent aunt's spirit and transforming the accumulated momentum of a dying age! But that is where Steiner started.

From the outset, Steiner realized that to go forward in knowledge you have first to examine *how we know*. That's bedrock *epistemology*. And Kant, with his "can't", had declared that what we come up with through thinking has no essential connection to what's *actually out there*. Our thoughts may be orderly and even powerfully useful, but they sit only on this side of the self/world divide. Kant's *Ding an sich* (the unknowable thing in itself) remains dark forever. You could go extreme and say we are stuck inside talking to ourselves. You could also note that this lack of a perceived or philosophically recognized unity between ourselves and the world had already been set in motion by Francis Bacon, who died in 1626, a century before Kant was born. Considered the father of modern scientific method, Bacon mistrusted the influence of human affections and foibles on the forming of judgments and, soon followed by John Locke, he championed the acceptance of only those elements of experience that can be measured and counted as valid for knowledge.

Wait—but what about the taste of a strawberry or the profound mood of a sunset? While people certainly didn't stop tasting fruit or being awed by beauty, Bacon's powerful impulse toward mastery of the physical world through disciplined thinking and experimentation was feeding an ongoing, insidious erosion of human confidence in its own inner life. This re-emergence of *nominalism*, the doctrinal notion that the names we give things are arbitrary human labels, was gaining strength and severing cords binding human speech and language to the divine Word.

Other attacks were in progress. In the developing life sciences, *vitalism*, the belief that living organisms are fundamentally different from non-living entities because they are infused with a "vital force" unlike those inherent to chemistry and physics, lost ground, receiving perhaps a mortal blow when the German physiologist Alfred Wilhelm Volkmann (1810-1877) described the human heart as a "pumping engine". So finally, in Steiner's formative years, the human frame once said to be the image of God had become an assemblage of mechanical parts.

But what organizes those parts and orchestrates their unfolding? That question's triumphant resolution by reductionist science would take another century and would arrive with Watson and Crick's discovery of DNA's double-helix in the cell nucleus--as the master molecular-level controller of biological destiny. Confidence in the potential benefit of this insight led to the Human Genome Project (1984-2003), the most expensive scientific project ever conceived (\$100 billion). It sequenced the three billion chemical base pairs that make up human genomic DNA. This high-tech sequencing was considered a worthy goal because it was then understood that "faulty genes inherited from our parents were probably the cause of most disease."<sup>1</sup> Identifying genetic causes of disease, it was promised, would light the way to genetic engineering-based or gene-informed therapies. In 2000, President Bill Clinton stated that the Human Genome Project would "revolutionize the diagnosis, prevention and treatment of most, if not all, human diseases."

What is reductionist science? It is that project seeking the smallest parts out of which larger entities are constituted: the atom, the gene, the cell. Notions of creation and organization from above? That was rudely hauled to the dumpster by evolution envisioned from below up, driven by chance and the new god—statistics.

What about consciousness? Feelings? Aspirations? Francis Crick, in a notorious second act, turned his post-DNA research attentions to the study of consciousness and its contents. What did he conclude about joys, sorrows, memories, the sense of personal identity, free will and ambitions? It's all inessential wrapping paper for the "behavior of a vast assembly of nerve and their associated molecules...You're nothing but a pack of neurons."<sup>2</sup>

Quite a journey! It started off with Bacon and Locke relegating sensory aspects of experienced reality such as color, taste, temperature, smell and sound to a lower rank than the highly honored (and more easily measured, it should be noted) traits of solidity, extension, motion, number and shape. The former Locke called subjective "secondary qualities" and the latter he called objective "primary qualities." So that's how it started. Who knew then that it was headed to an outright banishing, 400 years later, of a large chunk of human experience from science's pantheon of worthy elements?

And, here comes the really bad news. Revisiting that critical historical moment when Bacon's powerful intellect was shaping a future materialistic age, we find that he created something else new. As a statesman of high rank subject to the uncertainties and intrigue in the corridors of courtly power, he maintained his own intelligence network and assiduously devised coded communications. His cyphering experiments led to what he determined to be the most efficient, simple yet foolproof strategy: a binary code using simply "a" and "b" in a five-place sequence to represent the letters of the alphabet. He saw, too, that letters could be replaced by lanterns (on or off) or bells (rung or silent) or other two-way signals.

It was a really good system, and it ended up as the basis for all of our 0/1-coded electronic digital technologies (computers, telephones, radio, television etc.) — but through an interestingly and slightly circuitous route. That route is finely described by Paul Emberson in *From Gondhishapur to Silicon Valley, Volume 1*.<sup>3</sup> Emberson notes also that Bacon’s vision of an earthly paradise, articulated in *New Atlantis*, was governed by what amounts to “a living data-processing system of strictly utilitarian nature.”

The next step on the path from Bacon’s binary code to the modern computer was taken well before the development of electrical power. It occurred in the development of what amounts to “programmable” looms. The master weaver and inventor Basile Bouchon, in Lyon, France, some time before 1720, approached the problem of weaving detailed, multicolored designs in silk fabrics. With then extant draw looms, on individual cards for each pass of the shuttle, master weavers placed x’s in those boxes representing draw-cords that needed to be raised. Other boxes were left blank. The process required a master weaver who could keep the entire complex pattern in his mind, card readers and drawboys who carried out the “repetitive, straining and exhausting work” of raising weighted cords tied to warp threads, often leading to mistakes--and to injuries and deformity. It begged for mechanization (the first practical steam engine had been developed in England in 1712).

Bouchon invented and refined a mechanical card reader and control system, ingeniously replacing the cards (now with or without holes in the boxes) with a continuous band of heavy paper. See Emberson for a detailed description. Mistakes were eliminated and drawboys were put out of work. The ultimate loom refinement, created and perfected by Joseph-Marie Jacquard in and after 1805, produced woven images more finely complex than the high-definition graphics of computers developed up until the last decade of the 20<sup>th</sup> century. What’s wrong with that?

It was Sorat, the anti-sun-demon, the arch opponent of human and cosmic evolution, *the two-horned beast*, who inspired Bacon's reducing of thought to a binary code. Our ordinary thoughts, Steiner tells us, are faint corpses descended from a spiritual realm of living meanings. Sorat's intent was to strangle out any last link in thinking to that world. That self-same adversary, during the Eighth Ecumenical Council in Constantinople (869/870 C.E.), was behind the banning of the spirit from Church teachings, reducing the triad of body-soul-spirit to the duality of body-soul. Reductionism was and is a *vast* project!

Sorat's next ambition, Emberson relates, with thinking already captured, was to subvert humanity's feeling for beauty. Soon, 100,000 Jacquard looms' gorgeously patterned silks went far and wide, and the card reading technology was taken up first for sorting US census data, then stock market ticker tapes, and then IBM punch cards, with early versions used (by a German IBM subsidiary) to coordinate the shipping of Jews to concentration camps.

The invention of methods for manual and then electronic recording of music was another ratcheting up of the reductive wheel. Steiner was born in a cutting edge technology environment (the telegraph) and he rode in trains and autos and brought electric lights into the design of the Goetheanum. He acknowledged that electricity is far from morally neutral, however, and would not allow his voice to be recorded, and considered motion pictures as especially harmful. Had he lived to a riper age, would he have reconsidered? Emberson, a confirmed Luddite, has moved to a castle on an island in the Scottish Hebrides, and states that he has never connected to the internet, the world-wide web being deeply imbued with Sorat's anti-human intentions. The discussion of morally benign technologies is beyond the scope of this article. But it is noteworthy that in Emberson's brilliant volume, while condemning digital printing outright, he offers an apology/rationale for its use in his own book that borders on--embarrassing.

But aside from the little known and beginning-stage exploration of moral machines, what contemporary currents offer an alternative to the crushing of

spirit deeply bound into the substance of modern abstract thinking and technology?

## Emergence

*Emergence* actually embodies the miraculous—miraculous in the sense that emergence demonstrates that fundamental aspects of our world--and experiences of it—can't be explained in simple cause and effect terms. In a machine, the parts are visible or they can be made visible, and their relationship to the whole machine and its functions are accessible to logical analysis. Emergent qualities are those that simply appear but cannot be anticipated by dint of examining the elements and conditions necessary for their appearing. For example, the elements of oxygen and hydrogen, two colorless gases, in no way suggest that when combined with sufficient heat they will produce water. And unlike machine parts, in water, oxygen and hydrogen are nowhere to be found. They have been *sublated* into the new substance. Water has none of the properties of the two elements necessary for its coming into existence. That's the principle. The "parts" have to be present for water to be constituted, but once water emerges, the "parts" are gone. The same is true for chlorine (a noxious, poisonous gas) and sodium (a volatile metal), which together give us ordinary salt. You would never say, "Hmm, this salt is a little light on chlorine."

Perhaps the simplest example of emergence on the sensory side of things is that of depth perception. The necessary conditions for it are working vision in two eyes with a slight separation between them. The brain, science tells us, creates the sense of depth through parallax, the slight angle difference between the "data" provided by the left and right eyes. Really, now? How does it do that? To a one-eyed person, the math inscribed in optics text books on parallax will explain many things, but it can never provide the *experience of depth*. That experience is an emergent event. The explanations actually tell us nothing, because the experience of depth *is a new occurrence*. Just as water is a new occurrence relative to oxygen and hydrogen. So is the "filled space" experience of depth perception an independent occurrence. Water does not have parts, nor does the

experience of depth; yet both need the conditions of the two gases for one and the two separated seeing eyes for the other.

Let's broaden the view to encompass emergence, as Peter Heusser, MD, describes it in *Anthroposophy and Science*, as an irreducible aspect of the world. That view is gaining currency in *open systems biology* which posits that the hierarchical layering we see in living organisms does not stop at atoms, molecules and macromolecules, but continues upward to include "higher organic structures such as organelles, cells, organs, organ systems and finally the organism as a whole (p.161)."<sup>4</sup> This is a fully non-reductionist picture. The organism is an emergent system, realized from above but only when the necessary substances and conditions are present *from below*. Realized from above! So the lower order elements and layers are then not the cause but only the conditions or material for the actualization of the higher order. Each level has its own laws, and each level is of equal value. But while there can be no liver without liver cells, it is the liver that organizes the liver cells.

Reductionist science, about 150 years ago, obliterated the distinction between living and non-living matter. Now, the open systems biologist view is rather that non-living substance is the necessary substrate for the emergent phenomenon of *life*. Life, then, becomes the active organizing principle of substance; when life departs, the lower level laws of non-living matter take over the form, releasing it to decay and disintegration.

That's one strong blow for our side. In the limited space for this piece, we can give just a passing mention of a few others. Placebo studies in medicine have been showing beyond any doubt the power of human interactions to influence and alter the course of disease and to affect the objective effectiveness of drugs. Also, the therapeutic value of knowledge derived from the completed Human Genome Project has been generally disappointing (with some exceptions), while at the same time the understanding of DNA as a master controller has been overturned

by the discovery of complex *epigenetic* interrelationships between genes and their environment.

In physics, we've long been witnessing what we could call the de-materialization of matter. Its landmarks might be enumerated as follows: the discovery of non-material force fields (Faraday/electromagnetism), matter-energy equivalence and relativity (Einstein), the uncertainty principle (Heisenberg), and quantum physics non-local phenomena that defy ordinary notions of time and space, and the shocking notion that what we experience as specific physical reality is "locked" into place by conscious cognition (measurement). *Entanglement* is the demonstrated capacity for two related particles moving away from each other at stupendous speeds and at great distance to remain interdependent without any known means for their connection or communication. It implies a non-physical link. Large scale scientific experiments continue to verify the reality of these counterintuitive phenomena.

An extensive roster of Nobel Laureates subscribes to an understanding of the new physics that points to the primacy of Mind: Thompson, Planck, Bohr, Schrodinger, Heisenberg, Wigner, Eccles. And it was Sir Arthur Eddington, the father of astrophysics, who stated: "In comparing the certainty of things spiritual and things temporal, let us not forget this—Mind is the first and most direct thing in our experience; all else is remote inference."<sup>5</sup> The physicist who coined the term "black hole," John Archibald Wheeler, described physical reality as a conscious dialogue between observer-participants and the universe.

With that, we can begin to round out this brief pondering on evolving scientific outlooks on our own place in the cosmos. We do begin to see a parting of the ways, between the descending reductionist one that has been gradually pulverizing any sense of our being anything more than a clever, survival-seeking animal governed by random forces, and another nascent one that still honors scientific rigor, but takes seriously the failure of efforts to model a fully mechanical universe. It begins to explore then what is implied by a cosmos

inclusive of and even completed *through* human conscious and intentional participation.

### **First Emergence of Childhood**

At this unique moment of arriving spring and new life during the world changing COVID19 pandemic, let's look at the child's first experience of truly human cognitive emergence. It is—*reading*. If children are fortunate enough to be in a Waldorf School, they experience the letters as forms and pictures that they see, draw and move to. In eurythmy, they move in imitation of the activity of the physical speech organs as they form the letter sounds. If non-Waldorf, we hope they phonetically learn the sounds associated with the letter image. Then what? The child assembles the sounds and the “word sense” kicks in.

Take the word “shine,” please. Children recognize the individual letters and are taught the consonant and vowel letter-sound combination rules. What does it take for children to experience the sound “sh” instead of just the form of the letters? They have to “let go” of the visual letters and let the sound “sh” live inwardly. The letters *die* and the sound emerges. It is born within. And for the combined sounds to form a word, for the word sense to kick in, the individual letters and sounds have to “die” to allow the whole word to live. Try it. You can see the letters or you can read the word, but you can't do both at once. For the word to live, the letters have to become sublated, sacrificed for the sake of a resurrected higher-level entity—the word. And if the sentence is “The sun shines,” it too must disappear for the child to imagine a bright disk in a blue sky. None of this is mechanical. It is an ongoing, inexplicable series of emergences. To simply say, “The brain did it,” though, is to give way to a kind of Harry Potter magic, just like the daft superstitions that Bacon rightly discarded. Is it just magic? A Kantian “can't?” that we can never approach?

When hand weavers push their shuttles with a single-dimensional thread across the warp to create a stable, essentially two-dimensional fabric, they have to draw the shuttle over and under the individual warp threads, entering a third

dimension of space above and below the fabric's plane. With a comb-like device (a reed), the weaver then pulls the new weft thread line tightly against the appearing cloth. What occurs when we read a sentence to ourselves? Sensitive instruments show subtle movements in our larynx and speech organs. We are duplicating that forming activity inwardly. What does spiritual science say about this forming? The forming of vowels arises out of the circling of the planets and that of the consonants from the zodiacal stars—echoing the activity of the Spirits of Form who created us and our world in the image of God. We and our world were spoken by the Elohim. So it is not a Harry Potter-style waving of a magic wand—not an exercise of naked, meaningless and amoral power. No. For the letters, the parts, to die, to disappear and for a whole meaningful word to arise, a momentary ascent to a higher creative world has to take place and reverberate below in the body. It is rarely noticed.

How have we missed it so long, this astounding drama on the microcosmic stage of our own minds? An ever-awakening science will discover how the emerging levels of our world arise! But now we are in an expanded global moment. It is one of maximal fragmentation. The entire world population, it seems, has been sent home to think things over.

We are expected, after a pause, to come back—not the same, but with something new. Happy Easter!<sup>1</sup>

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<sup>1</sup> Many of these themes are explored and expanded in my book *Hearts and Minds (Reclaiming the soul of science and medicine)*, Lindisfarne Books, 2019, [heartsmindsoul.com](http://heartsmindsoul.com).

## 12-Emergence in the Microcosm

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