

The Alchemy of Love
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In this talk I would like to employ the metaphor of the alchemical vessel in which transformation takes place so that gold is born out of base metal. An essential feature of all alchemical processes is the necessity for heat. It is heat that converts a solid into a vapor by means of the process of sublimation. Heat releases the spirit from the gross. Heat brings about change and is the animating principle that produces birth. To further this metaphor I would like to suggest that the name we give to this creative heat is love.

During the middle ages the alchemist, artisan and artist considered themselves as midwives who assisted nature in her striving for perfection. Artistic creation was not thought in terms of bringing about novelty, or an expression of the ego, but rather the artist was someone who assisted at a birth, or one who acted as a catalyst within a natural process of transformation and purification. Even at a time when alchemy was being replaced by chemistry this thread continued in the arts. Durer, for example, portrayed himself as if he were Christ the Redeemer. But this was not an act of megalomania but rather of modesty for, following in the image of Christ, the artist and artisan sought to efface themselves in assisting nature in her climb to perfection. His etching entitled *Melancholia I* contains many references to the *nigrido* state, or first stage in the alchemical working in which matter lies under the dark sun. It can be thought of as the manifestation of Primal Matter, or alternatively as the stage of death that follows the mystical marriage or union of opposites. Where the *nigrido* may be linked in some ways to a psychological depression it is also the first essential stage out of which all creation is born.

Carl Jung was deeply aware that the language of the alchemist contains profound insights on the nature of the process he termed *individuation*, for just as matter strives for perfection so each one of us strives for the realization of the true Self. For Jung, the alchemical working, the heating, crystallization, sublimation, distillation and refining were outward manifestations of deep inner transformations.

Reference to the alchemical stages can also be found in Michelangelo's sculptures for the Medici tomb in Florence. While all the figures are finely worked and polished, the face of *Girno* is roughed out and partly obscured by his arm – again a reference to the “dark sun” of the *nigrido*. *Aurora*, a male torso with female breasts appears to relate to the androgyny state in which male and female principles have married. This thread of alchemical continues through Marcel Duchamp and on to Jackson Pollock, one of whose paintings is specifically titled “*Alchemy*”. The poet Arthur Rimbaud in his “*A noir*” equates the vowels with the various colors associated with each stage of an alchemical working :

“*A noir*”, with the *nigrido*, “*E blanc*” with the white *albido* and “*I rouge*” the red, gold, Chemical wedding of King and Queen.

The contemporary British sculptor, Anish Kapoor, considers that in the greatest of artistic works some alchemical transformation has taken place so that in a certain sense the material existence of the work has been changed. Likewise, the American artist, Janine Antoni often deals with bridging that gap between inner and outer, between our own interior existence and the world of matter which we all inhabit. Again we could suggest that the power to bridge that gap, that embracing of the world, is the power of love. Love transcends, love creates a new space in which the artist, the viewer and the world of art all co-exist and move beyond boundaries. The greatest acts of creation therefore exist in a space where there is “no-self”. In love one moves beyond the distinction of self and other, inner and outer, matter and spirit and enters a new unity.

To view creativity, both scientific and in the arts, the metaphor of alchemy allows us to perceive the creative act through a new lens. Certainly Ezra Pound gave us the maxim “Make it New”, but the idea that creativity must necessarily imply novelty is somewhat of a modern concept. The icon maker worked to breathe life into a preexisting archetypal form. Likewise, painters of the middle ages were given commissions in which figures, gestures and symbolic colors were clearly defined in their contract. Novelty would have been out of the question. Indeed Vasari in his “*Lives*” lavishes the greatest praise not for innovation but for those who could produce works like “the ancients”.

In this light we can characterize creativity as involving one or more of the following characteristics:

1. Making something new and original
2. Renewing and making fresh an existing form
3. Healing, unifying and bringing together.

To focus on this third characteristic for a moment. Earlier we had referred to love as the ability to transcend boundaries, to move beyond the distinction between self and other. Something similar happens during psychotherapy. For much of the time it is the patient who is speaking while the therapist generally exercises what Freud called “non-judgmental listening”. As the sessions continue, the therapist may give prompts, reflect back to the patient what has been said, or at times throw out a little suggestion or even advice. In more intense cases, the processes of transference begin in which intense feelings are invoked within the patient. In those cases where projective identification occurs the therapist may even become directly aware of contents from the patient’s mind. But in all these cases the therapist still attempts to bracket his or her own feelings, thoughts and reactions in order not to contaminate the therapeutic process. Nevertheless several skilled therapists have told me of those magical moments in which all boundaries disappear, moments in which it is not possible to say “where is the healing”, or who is the patient and who is the therapist. On those occasions patient and therapist enter the alchemical vessel together and are warmed by unconditional love. It is in those moments that the miracle of healing takes place. (The Jungian therapist Beverly Zabriskie has referred to this as the healing of “frozen accidents”, that is, the melting away of those “accidents” from childhood that have remained frozen within us. Therapy and insight may go some way towards the process of thawing, but in the last analysis it requires the heat of love.

If I am relying so much on the terminology of alchemy in this talk it is because I have in mind that period in the history that we are all sensitive to, that period the contemporary composer John Tavener calls the “one simple memory”. This was the time when life, spirit, art and the seeds of science were one and unified. It was a period when the individual, social and spiritual dimensions of human beings were one.

Today we have tended to fragment knowledge, learning and teaching, yet this sense of unity has always been present in the greatest representatives of art, science and the spiritual quest. Science could perhaps be called a loving, seeing, passionate search for “what is”. It is an act of perception that is so penetrating that it moves beyond surface appearances. It is the desire for truth, no matter where that search leads. It is truth to observation. And when we speak of truth of observation, or respect for experimental results, we must bear in mind Einstein’s advice to the young Heisenberg, that positivism has its limits for it is the theory which suggests where we should look and what is of importance in the phenomenological world.

In this sense to suggest that science deals with objective facts and constructs theories out of these facts is something of an over-simplification. History, culture and even language suggest ways in which we look at the world, experience it, and communicate these insights to others. It is out of this fertile soil that scientific theories are born. In turn these theories suggest to us what is of significance in the world. A very obvious example is the way the first half of the twentieth century was dominated by scientific theories and experiments that dealt with systems very close to equilibrium and perturbed by only small impulses, vibrations or flows of energy. What was known as perturbation theory worked well for such systems, allowing accurate calculations to be made and compared with careful experiments. And so the scientific world concerned itself with only one area of experience. But then Prigogine’s “far from equilibrium” thermodynamics came along, as did the approach known as chaos theory and the theory of non-linear systems. Suddenly everyone was looking at bifurcation points, chaos, strange attractors, shock waves, fractal structures and large or sudden changes. Armed with new mathematical and theoretical tools, science now busied itself with an area of experience that had hitherto been dismissed as irrelevant, monstrous or unimportant.

Nevertheless, even if we admit that the way we look at the world, and what we consider to be of significance is to some extent determined by cultural frameworks and scientific fashions, we still assume that the facts are “out there” and that they reside in an objective world. But closer examination of the lives of individual scientists demonstrates that this may again be an oversimplification. Barbara McLintock spent her life working with maize and discovered the so-called “jumping genes”. Like a Mayan medicine person, she seemed to have made a deep identification with the interior life of maize and is reported to have said that “truth has a mystical origin both inside and outside myself.” The biologist, Brian Goodwin, has drawn attention to Goethe’s views on science, in that rather than confining nature to the artificial situation of the laboratory one should seek ways in which nature is allowed to speak to us and so provide us with “the example

worth a thousand". In this light Goodwin has referred to the possibility of developing an "objective intuition" within biology.

In the case of the physics, David Bohm argued that his body was created out of the same matter as the rest of universe. In one way, the laws of physics could be discovered outside, though laboratory experiments. Yet in another, they were also accessible inside, within the body itself. In this respect Bohm referred to an interior sense of movement, to subtle tensions of the body, which would reveal to him insights directly translatable into mathematical formulae. I recall that Bohm once told me he had spoken to Einstein about this and the latter related how he would squeeze a rubber ball while thinking about the equations of space-time and that these muscular movements and tensions became translated into mathematical insights.

I find in this a remarkable parallel to the artist Cezanne who was also deeply concerned about the truth of perception and of discovering facts in the world. Cezanne described the act of painting as of sitting and observing his "little sensations". In this he would sometimes move his head to the left and sometimes to the right, his sensations would change and the painter, with a truly passionate eye, would constantly cast doubt on what he was seeing. "Cézanne's doubt", as Merleau-Ponty described it, can be seen on the canvas as tentative brush strokes, one in parallel to another, as he questions the position of a tree branch, or asks how far in the middle distance should be placed a piece of vegetation. In this the passionate quest of the artist, inspired by a dispassionate love, becomes unified with the scientist in their mutual search for truth.

Again, this pursuit of truth is motivated by a form of love. Every scientist begins life as one who experiences awe, wonder and respect for the natural world. Love is the motivating force for the scientific quest and when it is absent science becomes sterile. It is even possible to say that when love and passion are absent that science can become dangerous, for those who live without love, are in danger of living without a deep ethical and moral sense. Above all scientists must always be aware of their responsibility towards science, nature and society.

Yet another dimension of this quest for truth comes in the form of beauty, or "elegance" as the mathematician would have it. Beauty may have gone out of fashion in contemporary art criticism but it has always been present in science. It is not sufficient to have a theory that explains the facts, or enables elaborate calculations to be made. A good theory must have a sense of inevitability about it. It must evoke that same sense of wonder we have in looking at nature herself. In the presence of a great theory we stand in awe at the universe it represents. If Galileo was the first to declare that God had written the book of nature in the language of mathematics, then those who have followed him declare that this mathematics must also be beautiful.

The physicist, Paul Dirac, has spoken of the physical sensation he receives when engaged in a beautiful theory. The mathematician Roger Penrose points out that most mathematicians practice their art because it brings them in the presence of beauty. Indeed when a mathematician becomes stuck and is not clear about what to do next the best

advice is to do the most beautiful thing possible. Thus, in mathematics, beauty is both an end in itself and a means to that end.

So again we return to those three dimensions, the individual, social and spiritual or mystical. These must always be in balance within the life of the individual scientist, artist or religious person. Reason and logic are powerful forces but we should never forget Pascal's, "The heart has its reasons which reason does not know". In this I am reminded of one of the greatest scientists of the twentieth century, Wolfgang Pauli, who, following his encounter with Carl Jung, was convinced that just as Jung had discovered the objective side to consciousness - the collective unconscious - so too physics must discover its subjective side. Pauli also spoke of "the irrational in matter". That is, the whole of nature can never be reduced to a rigid logic, but must always allow for the irrational and unpredictable.

As Pauli's insights developed he began to speak of the unity of matter and psyche, as being one of the goals of physics. Indeed, he was to go even further and return to the alchemical dream of an interior working of matter and spirit within the alchemical vessel. Specifically he spoke of "the resurrection of spirit in matter", feeling that spirit had left our experience of the material world with the rise of Cartesian and Newtonian science. Now, he felt, the era had dawned in which spirit would return to its proper place and the world would be unified - possibly Tavener's "one simple memory" would return. While to the scientific world Pauli was working on a unified field theory - one aspect of this was a unification of symmetry and antisymmetry, which Pauli spoke of in terms of Christ and the Devil - like an alchemist of old the greater work was being carried out in silence. Only Carl Jung and Pauli's closest assistants were aware of this great task.

Yet in the end the story become dark for Pauli became deeply dispirited with both his the inner journey and his desire for a unified physics. A short time before his death from cancer Pauli abruptly ended his scientific collaboration with Heisenberg, abandoned his work and was haunted by dreams. A close associated commented that the element of "eros" had been missing from Pauli's life. The alchemical vessel had been sealed, matter and spirit were present, yet the transforming heat of love could not be generated.

To some extent Pauli's quest was echoed by that of David Bohm. Throughout his scientific career Bohm was inspired by a search for wholeness. He found the scientific world to have become badly fragmented, a fragmentation that extended into society itself, education and the general way we experience the world. His desire for a holistic world view led him to develop the notion of the Implicate order, which he felt was the ground out of which the Explicate Order emerges - the classical order of large scale objects, well defined in space and time and interacting via forces. The Implicate order, he believed was closer to the insights of "undivided wholeness" revealed through quantum theory. But this Implicate order did not embrace the world of matter and energy alone but also mind and consciousness. Indeed, in the parallel development of his Ontological Interpretation of Quantum Theory Bohm proposed the notion of "active information" as a new component in physics to form the triangle of matter-energy-information. Moreover since the electron can, in a certain sense, "read" the content of this active information then it

could be said to exhibit a proto-mind. Thus, for Bohm, mind had been present in the cosmos from the beginning. Indeed mind and matter could be thought of as the north and south poles of a magnet. These poles can never be separated for when you cut the magnet in half you simply generate new north and south poles.

Bohm's entire world-view was an embracing of wholeness and, if one includes his many interactions with Jiddu Krishnamurti, then there is also what could perhaps be called a spiritual dimension, in the sense that he believed it would be possible for the physical brain and human consciousness to be transformed by what was sometimes termed "the intelligence" that transcended time and space.

Nevertheless, by the end of his life Bohm had become discouraged that he was unable to achieve a final synthesis. While I do not want to make too much of this, could it be that there is something perhaps missing in the scientific quest that compromises the final move towards wholeness? Or rather, is it that only a few exceptional figures, such as Pauli and Bohm, caught a glimpse of the direction in which the science of the future could move?

And should this be termed failure or possibly something else? To borrow yet again from the alchemical image, what maybe appeared as deep disappointment and even melancholia was in fact but the first stage of the alchemical working – the dark sun or *nigrido* stage in which it is first necessary to rest. When opposites enter in a mystical marriage they must first die if they are to be later reborn and baptized into the *albido* stage. Interestingly this stage is identified with the resurrection that follows the re-entry of spirit into matter.

So rather than thinking in terms of failure and limitation, it could be that science has already entered the first stage of a new cycle in which it will pass into a period of the white moon, white in which all colors are united. Then, as the alchemical heat of love increases, through the yellow daybreak and on to the final stage when the white moon is raised to the condition of the golden sun and the King and Queen, spirit and matter, unite in the final mystical marriage. Within this condition we do indeed return to that "one simple memory" where spiritual, scientific and artistic values become one and the same.