



Vision and Experience: The Contribution of Art to Transdisciplinary Knowledge

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The author presents the practice of art as a form of knowledge and asks: What can one know through art? What does art contribute to transdisciplinarity? From an epistemological point of view, what is the nature of knowledge available through art? Here, art is described as a material, aesthetic, experiential and visionary form of knowledge, sharing similarities with alchemy. While science studies facts, art creates meaning using metaphors and correspondences. The article also discusses modes of knowing: physics and biology, for example, belong to the scientific mode. Psychoanalysis and mythology use a hermeneutic mode. Philosophy is speculative and rational. Within the social sciences, there are quantitative and qualitative modes. To approach transdisciplinary complexity, a dialogue between and across modes of knowing is more difficult, yet as important as dialogue across disciplines. Art is a significant source of knowledge, and a transdisciplinary conversation needs artists as much as scientists and philosophers.

Keywords: Art, Transdisciplinarity, Epistemology, Modes of knowing, Alchemy, Art as experience.

1 Introduction

Goethe insistera sur les différences entre la connaissance de l'artiste et celle du savant. Celui-ci procède par analyse: il divise la totalité en ses éléments constitutifs; celui-là par synthèse: il saisit la totalité dans une intuition globale. . . . Mais il s'agit bien dans l'un et l'autre cas de connaissance. **Todorov [1].**

Einstein's space is no closer to reality than Van Gogh's sky. **Koestler [2].**

The Franco-Bulgarian philosopher Tzvetan Todorov, introducing a collection of Goethe's writings on art [1], highlights a qualifying difference between two forms of knowledge, that of the artist and that of the scientist. Where a scientist proceeds through analysis, taking a totality apart into its most basic elements and looking at them separately, an artist knows through synthesis, apprehending a totality in a global intuition. While the scientist uses deduction and induction to study the facts of nature, the artist uses metaphors and correspondences to reveal the meaning in nature. Science and art are complementary, not contradictory, and Todorov insists that both forms are knowledge in their own right.

There is something obvious in this idea. As quantum physicist Werner Heisenberg puts it, "who could

question that the spiritual content of a work of art too illumines reality for us and makes it translucent?" [3] Yet it is rare that knowledge from an artistic source is taken seriously in academic or scientific contexts. We are not used to thinking of art as a form of research; not used to deciphering and knowing what to do with the knowledge content of art works and art processes; and not used to seeing the artist as thinker and knower – other than as a specialist of art itself. The difficulty is not only a matter of cultural stereotypes about art, for the epistemological challenge is real. I have in mind a situation where an artist had been invited to contribute an artistic perspective in a science-religion conference. He installed a series of his abstract paintings, with no other form of explanation, implying that the artwork speaks for itself. I also remember an article advocating the idea that an artwork is equivalent to a text: "Drawing on the works of phenomenological philosophers such as Croce, Dewey and Ricoeur, I argue that the artwork is a text or work that is equivalent to the written text, and, as such, it should be seen as the appropriate form for a fine art doctoral thesis" [4]. Personally, I would rather maintain that an argumentative essay (such as a doctoral thesis) and an artwork are completely different semiological and epistemological objects, and that the artwork cannot be a "thesis" in that sense. If one writes an essay based on one's analysis of an artwork, then certainly the essay is a thesis; the artwork itself, however, as aesthetic artifact, is a very different thing. We cannot just amalgamate essays and artworks; the problem is more complicated than that. I think the difficulty is worth diving into, however, for art – as investigative process – is indeed a significant source of important knowledge, and a transdisciplinary conversation needs input from artists as much as it does that of scientists and philosophers. As an artist myself, I look here at my own part of the challenge: how do I understand what art "says," what kind of epistemic modality it is, and how can I make my own knowledge accessible to other researchers in the transdisciplinary movement?

2 The Transdisciplinary Forum

In the 1990s, researching the interdisciplinary phenomenon in the arts¹ led me to posit a unity of art

¹By this I mean various situations in which the creative process involves using more than one medium, shifting from

beyond the different disciplines, and to look for what is common to all artistic mediums or disciplines, both traditional and new. I began to see a certain general structure in the arts; a common process, a common function, how the arts make meaning, a common experiential nature. This suggested some kind of abstract category of "art," of which the various mediums in different cultures are specific applications. For example, if oil painting on canvas is by no means universal, there is nevertheless a concept of visual creation existing beyond visual mediums; it can even apply to other mediums such as dance (one can "draw" with one's body in space) or poetry (one can "draw" a scene in poetry). An "arabesque" is a linear pattern found in Islamic art and in music. Architecture can be understood as music, and vice versa. Numerous examples can be found: if art forms and mediums are culturally specific, some notions of composition and staging, some musical, theatrical and choreographic principles, are universal. This general category of "art", albeit conceptual, enables us to distinguish what is art and what is not art, and understand new types of work in a new medium. In this essay, the word "art" refers to this general category.

A parallel can be drawn with knowledge, where one can also envision a general, transdisciplinary category beyond the specific actualizations that disciplines are. We can also envision fields of knowledge that are not yet institutionalized "disciplines," but could be. Asserting that disciplines are complementary and mutually enrich one another, the transdisciplinary view aspires to apprehend the cosmos, history and human life in their complexity as well as their unity. The International Centre for Transdisciplinary Studies and Research, the CIRET², brings together artists, writers, physicists, biologists, physicians, psychologists, philosophers, theologians, monks, engineers, sociologists, economists, anthropologists, etc. The diversity of its membership in itself illustrates the transdisciplinary perspective: we believe that a global vision of the world is only possible, if at all, through the dynamic articulation of the methodologies and epistemologies of all scientific disciplines, the humanities, philosophy, and the more hermeneutic, introspective and creative modes that

one's habitual medium to another, transferring methods or forms from one medium to another or using non-traditional mediums.

²Centre international de recherches et d'études transdisciplinaires, <http://ciret-transdisciplinarity.org/>

are literature, psychoanalysis, art, mysticism, etc. In their Moral Project, the founders of the CIRET write: “Founded on a spirit of scientific rigor, the activity of the International Centre for Transdisciplinary Studies and Research will encourage the establishment of a dynamic exchange between the exact sciences, the social sciences and art and tradition” [5]. My participation in the CIRET made me wonder about art’s specific contribution to the transdisciplinary vision. I already had sensed from my own creative practice that artistic creation is a mode of knowing [6]. Although I had never studied the natural sciences, philosophy or social sciences seriously, I was aware of knowing something about the world, aware that as an artist I am holding a piece of the whole: a non-explicit yet intense intuition of the world’s invisible unity. Discussing the notion of research in an art practice, Laurier and Gosselin remark,

When the artist is fully engaged in creative practice, there is a sense of having access to a special kind of knowledge; one feels “knowledgeable” and, in this sense, understands oneself to be contributing to the elaboration of knowledge of a special kind [7]³.

But what is the nature of that intuition? How to define that “knowledge of a special kind” elaborated through creative practice?

3 Modes of Knowing

Despite the word’s etymology, trans/disciplinarity is not occurring only through and beyond disciplines; more importantly, it occurs through and beyond modes of knowing. For example, while biology, physics and chemistry are distinct disciplines, all three belong to the same mode of knowing, the scientific mode. Psychoanalysis, art history and mythology, three relatively distant disciplines, all use now and then a hermeneutic mode. Philosophy, itself subdivided into several specialized fields, is essentially a speculative and rational way of knowing. Within the social sciences, quantitative and qualitative methodologies are two deeply different

³The original French reads: *Quand il est pleinement engagé dans une pratique de création, l’artiste éprouve souvent le sentiment d’accéder à un type particulier de connaissance ; il se sent “connaissant” et, en ce sens, il comprend qu’il participe à l’élaboration de savoirs d’un ordre particulier.*

modes. To approach transdisciplinary complexity, a dialogue between and across the different modes of knowing is just as important, if not more important, than dialogue across disciplines. But it is also a lot more demanding. It is one thing for medicine to understand and incorporate the findings of biology; it is a whole other challenge to embrace how religion or psychoanalysis view human life.

We are not used to seeing art among these modes of knowing and disciplines of knowledge. We more often see it as a mode of expression, and in the university we study art as subject matter and know-how; we are only just beginning to study something else through art, as a methodology [8, 9, 10, 11, 12, 13, 14]⁴. To the modern mind, art is the antithesis of science. We are moved by the world vision expressed through works of art, but we consider that vision to be subjective and thus devoid of scientific value – the value of artistic works is more a matter of the emotions, feelings and visions they make us experience⁵. But to think that an artistic vision is not a form of knowing, one has to have equated “knowledge” with “objective truth,” an equation that is neither obvious nor natural. As if we can only know objective facts. As if in order to qualify as “truth,” something we grasp in the mind should be grasped unambiguously the same by everyone, beyond individual subjectivities.

4 The Separation of Objective and Subjective

According to the Oxford Dictionary [16], “to know” means “to have information in your mind,” with this important precision: “as a result of experience or because you have learned or been told it.” Yet in the last century or so, knowledge has progressively become equated with only the second option: “learned” information. In contemporary culture, knowledge is scientific knowledge, the result of scientific research, some set of data that can be printed, exchanged, quantified. It comes from reading and studying rather than from experience. To get a sense of that gradual shift from an experience of the mind to transmissible information, it is useful to remember a few key points in European intellectual and cultural history:

⁴See arts-based research and new ideas about art as material knowledge [8 to 14].

⁵This was John Dewey’s leading idea [15].

1. The scientific revolution, which through the new “scientific method” produced knowledge as we understand it today: objective and detachable from its context and the mind which knows it.
2. The industrial revolution, coinciding with the beginning of capitalism, which (among other things) separated work from the product of work: the worker no longer being the maker of his work, no longer the author, but rather a mere link in a production chain controlled by a firm that owns and exchanges these products for profit.
3. Cartesian dualism, which establishes an irreconcilable (irreconcilable because it is ontological) distinction between the external, spatio-temporal world of matter and stuff and the subjective experiences of consciousness.
4. The invention of art in its modern form, based on the relatively new concepts of author, autonomous work and the general public.

To these four points, we could add a fifth yet invisible one, for it is not the emergence of something, but rather a disappearance:

5. The rejection of alchemy, until then a major mode of knowing [17] whose main characteristic was to be, as Françoise Bonardel remarks, “at once meditative and operative, rather than speculative” [18]. The alchemist knew through the Work, through working, a kind of embodied or materialized knowledge, difficult if not impossible to translate into writing.

Together, the above five points map an image: that of a separation between work and its products, and between the mind experiencing the illumination of knowing and what bits of information it will be able to share. This separation is a reduction and an objectification: human work is reduced to the production of freestanding objects to be exchanged, sold, collected; knowledge is no longer an experience, no longer the state of an enlightened mind, it is reduced only to the part that can be written down and exchanged. In that context, knowledge of the scientific and technological kind presents an obvious advantage over the other forms (embodied, experienced): that of producing those objective pieces of information that can be detached and transmitted.

The problem is not that such objectified knowledge exists. On the contrary, we are most impressed by the generative power of that epistemology: the technological and scientific advancement of industrial societies is entirely built upon it. The problem is rather that this epistemology has become the paradigm, the very definition of knowledge itself. In the arts, we have the same kind of separation between the art object and the context of its making, between the artwork and the experience of its maker. This makes possible a flourishing art market, and the overwhelming majority of art history books are in fact the history of artworks. In the end, the paradigmatic view is that art amounts to the collection of artworks available throughout the world, and knowledge is the total sum of what information is available through libraries and websites – not the illumination in people’s minds, not the quality, breadth and complexity of their understanding. This reduction of knowledge and art to their tangible products may be what discredited alchemy if, as an “art of knowledge,” it made the alchemist more intensely conscious and more knowledgeable but failed to produce objective information or material objects (or substances) usable by an external person.

5 The Experiential Nature of Art and Knowledge

But if, by knowledge, we were to mean the noetic and intuitive processes by which we know something as much as the sharable contents of what we know; if instead of seeing science, art and the various crafts as productive (in the sense of manufacturing) activities, we were to see them as domains where individuals pursue their own questions and projects in hope of enriching their personal life experience; if we were to see knowledge as a state of consciousness, as an experience of the mind; then the non-scientific modes of knowing would appear more clearly as full-fledged epistemologies. We would see, too, that knowing has an effect on the knower’s consciousness and intelligence, on the refinement of his or her senses and sense of being alive and an integral part of the world.

The Greeks had two distinct words for “knowledge”: *γνώσις* and *ἐπιστήμη*. The former, “gnosis,” is related to an Indo-European root (*g'en-*, *g'nō-*) [19, 20] which also led to the English *knowledge*, the Latin *noscere* and the French *connaissance* (*conoscere*).

The other Greek word has given us *epistemology*, a more recent term meaning the science of knowledge. *Gnosis* refers to the type of knowledge we have of a person, a place, a phenomenon: to be familiar with, to know from experience, from the senses [21]. *Episteme*, on the other hand, means the knowledge we acquire through studying and exercising [21]. The verb (*epistamai*) means *to know* in the sense of having the knowledge of something, to know how to do something, to hold information in our mind. The first type (*gnosis*) is intimate and difficult to put into ordinary discourse, while the other on the contrary is all very transmissible. It is knowledge of the *episteme* kind which is objectifiable and verifiable, while knowledge of the gnostic kind is experienced and integral.

Naturally, we find the two types, in varying proportions, associated with any subject. But the scientific ideal hopes to purge the *episteme* type of knowledge of any contamination by the subjectivity of *gnosis*. And it is precisely because of its pursuit of objectivity that science appears to be the opposite of art, for art is as “gnostic” as science is “epistemic,” so to speak. We know through art as we know a person or a place; that is, through relationship, participation, intimacy. If one wants an objective view of some place, then scientific studies and climate and geological data would be more informative. But if one wants to know something about its beauty and its atmosphere, then one needs the work of a painter, a photographer, a filmmaker, even a dancer or composer. Yet these artists would express those subjective dimensions not through structured discourse, but through immersion: they would not tell us something *about* the place; they would propose an aesthetic experience. Actually, the verb “express” in the previous sentence may be misleading; in the end, each person has their own experience, commensurate with the intensity and the level of their engagement with the work. In other words, art leads to experiential knowledge, while science leads to objective knowledge and the speculative method of philosophy leads to rational understanding. As Susan Sontag remarked,

A work of art encountered as a work of art is an experience, not a statement or an answer to a question. Art is not only about something; it is something. A work of art is a thing in the world, not just a text or commentary on the world.

The paradigm of dualistic opposition that structures Western thinking and the Western worldview

makes a distinction between the nature of a mode of expression (such as art, dance, poetry and so on) and that of a mode of knowing (such as science, philosophy and other forms of investigation). But while it is necessary at times to distinguish between expression and experience, there is no reason to see that distinction as mutually exclusive. Art is neither only one nor only the other: it would be more appropriate to view art as a mode of *manifestation* – an idea already implicit in the concept of *creation*. Art does not express something external or remote; it is not “about something.” It is itself that something, as Sontag said. Unlike the ideas, feelings and impressions that we verbalize or describe, the meaning of a poem or piece of music does not pre-exist: it comes into existence with the work. This is why art can be at once a mode of expression and a mode of knowing. Artists, through the images and the forms that they generate, the structures and relations they put in place, set the parameters of *an experience to be lived* in a spatio-temporal dimension that the artwork carves out of ordinary space-time, giving it form (in/forming it).

6 Alchemical Mediation: Integral, Holistic Knowledge

This experience is possible because art is material; it happens in real life, in space, time and matter. Although its logic is poetic, metaphorical, aesthetic and subjective, the creative work confronts the artist with all the ordinary laws of physics, especially for the manipulation and organization of the materials, but also – more importantly perhaps – for achieving the aesthetic effect, the interplay between harmony and dissonance, balance and imbalance, etc. The laws of classical mechanics, acoustics, geometry, chemistry, etc., continue to apply in the creation of art projects. More broadly, there are all the contingencies of reality: time, space, budgetary and relational constraints, etc. Art cannot exist only in the mind, in Idea form (a major difference, here, with philosophy); it has to materialize whatever idea it is “about,” or otherwise give it shape, as in the case of non-material forms such as music and poetry.

These material and spatio-temporal contingencies and constraints are not unfortunate limitations to the clarity or quality of a so-called “message” the artist may have wanted to convey, had she had access to the infinite possibilities and subtleties of language.

Art is not some imperfect or imprecise language, and certainly not a primitive form of language compared to philosophy or mathematics.⁶ On the contrary, technical limitations, a certain lack of skillfulness, chance occurrences, accidents and material resistance add power and complexity to the meaning of the work. This mandatory passage through matter and external reality adds important layers of meaning. The laws of mechanics, acoustics and chemistry, and all the constraints of reality, actually help the work reach beyond the artist's imagination: the artwork is the result of a confrontation between the artist's idea and reality. It is here that art and alchemy, as Michel Caron and Serge Hutin remark, seem to share a similar epistemology:

To the traditional alchemist, the oratory and the laboratory are always intimately joined: the originality of alchemical gnosis is that it rests on an absolute correspondence between the stages of illumination and the successive material operations. [25]⁷

Like the alchemical Work, the artwork realizes this "absolute correspondence between the stages of illumination and the successive material operations." In a remarkable book on alchemy and art [18], Bonardel described the dynamic relation between the respective potentials and limits of Matter and Spirit, imagination and the real, as a form of "balancing." More than balancing, in fact, I think it is a question of activating one through the other. The various arts, in that regard, effectuate a different balance: music, dance, visual arts, sculpture, theatre and literature each involve a different ratio between material and spiritual components, between space, time and ideas, between human and form, between imagined and real, and so forth. Different works set in motion different proportions of matter and spirit, technique and inspiration, tradition and innovation, technology and mythology, concept and chance, preparation and improvisation. But it is in the various articulations of the ratio between human genius and the forms that structure reality, that

art *makes happen* (in lived reality) an illuminating moment, a heightened meaning, a unique or new feeling.

In this way, we might consider art and alchemy as two domains of a single mode of knowing, for they share the characteristic of being at once "operative and meditative," as Bonardel puts it [18]. That is, they share a rigorous *conjunctio* of the material and the spiritual. Because artistic creation requires a continuing conciliation (or balancing) between aesthetic and symbolic intuitions and material resistance, it is a mediation between the physical world and the psychic or spiritual world. Bonardel [27] explains that alchemy "corporealizes the mind" (the coagulating function) and "spiritualizes the body" (the dissolving function). For Hegel, art is the visage of *the immaterial in the physical world, the manifestation of the spiritual* [28].⁸ And Sontag [22] insists that art does not represent something invisible or immaterial, it IS that invisible or material thing.

7 An Experience of Integration and Meaningfulness

In order at once to materialize and spiritualize, operate and meditate, art presupposes an integrated universe, a monad, where the psychic and the material are not separated. According to Umberto Eco, the medieval mind defined aesthetic pleasure as being that "state of mind when the spirit recognizes in something material the same harmony that is inherent to its own structure" [29]. In other words, we experience grace and beauty (aesthetic integration) when we perceive in something – a work of art or some natural or architectural arrangement – an inner coherence resonating, harmonically so to speak, with our own psychic structure. The homology between matter and spirit and between world and self, the correspondence between the structure of man and the structure of the universe, is a great archetype of traditional, pre-scientific philosophies, from ancient hermeticism to Renaissance philosophers (such as

⁶This, I believe, is what Hegel thought when he professed the absolute superiority of philosophy over art.

⁷The original French reads: *Pour l'alchimiste traditionnel, l'oratoire et le laboratoire sont toujours indissolublement liés: l'originalité de la gnose alchimique, c'est qu'elle s'appuie sur une correspondance absolue entre les étapes de l'illumination et les opérations matérielles successives.* Nicolas Bourriaud [26] also mentions this *conjunctio* between the oratory and the laboratory in art.

⁸As philosopher S. Pierre states, "*Au cœur du spirituel, l'art est un compromis entre l'esprit et la matière; il opère la spiritualisation du sensible.... Hegel amène un troisième terme dépassant le dualisme de l'idée et du sensible. L'art, par la manifestation, occasionne ce dépassement. En tant que rencontre, l'art ne saurait se réduire à une simple reproduction. Il est la manifestation de la fusion du spirituel et du sensible.*"

Paracelsus [30]). “That which is below is like that which is above, that which is above is like that which is below,” says the opening sentence of the *Emerald Tablet*.

As Bonardel points out, if this is indeed an archetypal way of envisioning the universe and our place in it, then it cannot have disappeared from culture. It must still be living somewhere, in new forms: “in such places,” she says, “where the impulse to Work, and the act itself, still endures” [18]⁹. And I agree with her that one place where its persistence can be traced is modern and postmodern art and literature. This way of thinking, which is about correspondence, reverberation and resonance, allows us to feel and experience underlying connections, an underlying unity in the world. As John Dewey remarked,

A work of art elicits and accentuates this quality of being a whole and of belonging to the larger, all-inclusive, whole which is the universe in which we live. This fact, I think, is the explanation of that feeling of exquisite intelligibility and clarity we have in the presence of an object that is experienced with esthetic intensity.... [The] work of art operates to deepen and to raise to great clarity that sense of an enveloping undefined whole that accompanies every normal experience. This whole is then felt as an expansion of ourselves [15].

To “know” something does not imply only having information, it implies understanding it – which means seeing how it connects with the rest, where it is located in the big patterns of the world. While an analytic process gives us information, a synthetic, integrative one leads us to understanding, to meaning. Meaning is a gestalt; it is something we feel, that we grasp as a whole. Our current culture prefers the concept of meaning to the old concepts of beauty, grace and integration, but ultimately they all point to the same thing: to sensing an underlying coherence in the world, of which we are also a part. In addition to all our scientific information, we also need to feel a coherence, to feel that we live in a meaningful world, that we are meaningful in that world. Contemporary art has put aside art’s traditional association with beauty and harmonic proportion, but it has kept meaning, or more precisely, *meaningfulness* as its main project.

The systems theorist, anthropologist and naturalist Gregory Bateson worried about the fragmented

and parcelled results of scientific research and began looking for another approach, one that would allow us to grasp the unity of man and the universe [31, 32]. In a brief posthumous article entitled “Our Own Metaphor” [33], he states a perennial question as a general problem – an even more important question than Leibniz’s “why is there something rather than nothing?”: “What can we know?” Bateson sees two possibilities. The first says:

If epistemology must always come between me and my organic perception of the world, and similarly must always come between me and any understanding of myself; if my epistemology is the organizing principle of all my understanding; then I can never know anything. My machinery and processes of knowing simply constitute one enormous blind spot. A spot through which I cannot even see that it is blind [33].

This is a familiar position, and one that makes scientists, philosophers and ordinary people shrug powerlessly: our sense apparatus (eyes, ears, touch, brain, etc.) is so limited that we can only know a ridiculously narrow slice of the nature of the universe. We realize that all experience is ultimately subjective, that our epistemological machinery is “systematically fallible [33].” Having stated that, however, Bateson emphasizes the word “systematically”: if there is anything *systematic* about our subjective perceptions of reality, then another pathway is possible:

There is the interesting possibility that we might attach meaning to the word “systematically.” If the “self” as a perceiver were *randomly* fallible, then there would be no hope of any knowledge or understanding. But I am (personally) sure that neither perception nor even dream or hallucination contains more than a very small random element – and that random component always only indeterminate within a limited subset of alternative possibilities [33].

Thinking that our sense apparatus might be, not a random collection of limited perceptive abilities, but a systematic arrangement of specific capabilities, leads Bateson to that other, fascinating, possibility: What if our inner world is “our microcosm; and our microcosm is an appropriate metaphor for the macrocosm?” [33] There are thus two possibilities: one is that our sensory apparatus limits and prescribes too much of what we are able to see of the world, so we cannot know the world or ourselves in any real sense. The other possibility is that our sensory apparatus, being the creation of nature, is a reflection

⁹In original French: *Ne faut-il pas s'enquérir aujourd'hui du Grand Œuvre sur les lieux où perdurent encore le désir et l'acte mêmes d'Œuvrer ...?*

of it. Our senses and our mind have evolved from natural processes; we are wired according to those processes. So we *can* know the world because our perceptions are not hopelessly random. They are in systematic correspondence with the world; the form of our thinking is metaphorically related to the form of the world.

Bateson then adds: “And now, it begins to look... as if there is a macrocosmic natural history with which all the little natural histories are so conformable that understanding a little one gives a hint for understanding the big one [33]”. His thinking here meets the Emerald Tablet and resonates with Renaissance philosophers who hypothesized a homology among the natural world, the heavenly plane of stars and planets and the spiritual plane of soul and God – all three planes, or “cosms,” being reflected within the human person, as the microcosm containing all three [34]. Dismissed by Cartesian thinking and scientific positivism, this hermetic principle is at the root of divination systems such as astrology, the I Ching and the Tarot. It also inspired nineteenth-century Romantics – Schelling, for instance, explicitly established the correspondence: “Spirit is invisible nature, nature is spirit made visible.”

It is interesting that Bateson did not want to choose between his two options. Rather, he wanted us to entertain both, for each one corresponds to a different way of knowing: we recognize science and a lot of twentieth-century philosophy in the first option, and poetry and art in the second option.

8 Art among the Creative Modes

Man has a visible and an invisible workshop. The visible one is his body, the invisible one is imagination (mind) [35].

Following a proposal by Heisenberg [3], I will call art, myth, poetry and religion the “creative modes” of knowing. They are creative not because they involve imagination and imaginary content (although they do), but creative in the sense that they “make happen” their vision, and that vision is a shaping force in the human world. Heisenberg, who borrowed the term “creative forces” from Goethe, sees religion as the leading example of this epistemic category. Religion’s strength, here, is that its view of reality is shared by large groups of people. But while the experience of art (making or contemplating art) tends to

be more personal and intimate, it is not of a wholly different kind from religious experience. If we accept the definition of these creative modes, or forces, as being when the mind changes or affects reality, then what we have is a huge category, one that should include religion, psychoanalysis, philosophy, literature, art and myth, as well as qualitative research in the social sciences. And we have subcategories, in which we find at least five different modes of knowing: speculative (philosophy), hermeneutic (psychoanalysis, religious studies, exegesis, art history), phenomenological (qualitative research), revelatory (religion and mysticism) and imaginative/material, such as art and possibly alchemy. Art is special in the sense that it does not interpret or analyses personal experience that has happened or content that is present in the mind; it *creates* or sets conditions for such content to emerge from an experience.¹⁰ As I remarked above, art doesn’t tell, it makes happen.

Within its own subcategory, art also differs from alchemy in that it does not search directly for a hypothetical truth about the self and the world; it seeks rather to generate new possibilities, to explore new emotions, affective states and ways of being, to make visible, audible or perceptible something that is a priori invisible and perhaps not yet in existence; to extend the realm of what a human being can feel. Dewey speaks of “an expansion of ourselves.” As the twentieth-century composer Karlheinz Stockhausen puts it: “The role of the arts is to explore the inner space of man; to find out how much and how intensely he can vibrate, through sound, through what he hears, whichever it is. They are a means by which to expand his inner universe” [36]. Art and poetry are concerned with what is not yet visible, what is not yet realized, what does not exist yet – “fabricating solid worlds that answer to immaterial truths,” in Annie Dillard’s words [37].

Naturally, one could argue that all truths are inventions, that religions and scientific theories are great myths.... Indeed, in Mircea Eliade’s *L’épreuve du labyrinthe* [38], we read that he viewed religions as great artistic works¹¹.

But unlike these creations of a collective genius, art is conscious and deliberate with regards to inven-

¹⁰We could certainly debate to what extent this is not what psychoanalysis and self-discourse also do.

¹¹Roquet remarks that “*Les religions [pour Eliade] sont des œuvres admirables, pleines de sens et de valeur: tout autant que L’Odyssée, ou La Divine Comédie, ou l’œuvre de Shakespeare.*”

tion, and this intentionality, the systematic aspect of art-making in consciously creating situations to be experienced, makes a world of difference with the other modes. There is also an aspect of individuality and singularity, even intimacy, related to art, especially in the making: the artwork is the creation of one or a few individuals. But the argument is interesting; if we were to admit more widely the fictional and even artistic nature of religion and science and start exploring the consequences of that realization, it would be a complete revolution in human culture and certainly a major step for the transdisciplinary movement.

9 Transdisciplinary Dialogues beyond Modes of Knowing

I will end this too-succinct presentation with a few remarks on the possible dialogue between and beyond modes of knowing. Science, philosophy, the social sciences and art each have their own language and worldview, specialized jargon and symbolic systems such as chemical formulas, mathematical equations or music scores. When Heisenberg wanted to speak with non-physicists about how our minds order the profusion of reality, he wrote a philosophical essay. I could never begin to understand one line of Heisenberg's equations, but I understand his 1942 manuscript. In a way, the present essay is a response to his: a physicist and an artist speaking the same language – non specialized discursive language. In the arts, the “content” is in the object itself and the process of its making. But for a transdisciplinary dialogue to take place, the different modes must explicate how they work and how they know what they know; their system must be made visible and understandable beyond the specialized vocabularies and conceptual specificities of their respective fields. Everyone, artists included, needs to understand the premises, assumptions and workings of their own epistemology. What can we know through art, which cannot be known otherwise? What does science allow us to know and what is irremediably out of its reach? What is visible to me that is invisible to you? Simply put, I do not think that it is enough for artists to offer their works to other thinkers, saying “here, look for yourself”: it would only put them in a position of receptors and hermeneuts; it would not inform them about the epistemic potential of art or its limitations or, by comparison, about their own

epistemology. And so, they will not know when to turn to artists for specific questions that are not answerable in their own field. The point is not to determine what one can know *about* art, but rather what one can know *through* art.

10 Remarks

A transdisciplinary conversation is always grounded somewhere in the field of epistemology. Artists must find ways to describe or give access to the inner workings and the noetic processes of the artistic *poiesis*. And to achieve this with any degree of specificity and precision, one needs to write and share in a conversation on transdisciplinary epistemological issues which is happening in discursive language – the already available, albeit imperfect, *lingua franca* of transdisciplinarity.

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