Editorial

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Editor-in-Chief

My first concern, and conducive obligation, in this issue of *Mind and Matter* is a cordial welcome to two new members of our editorial board: Michel Bitbol from Paris and William Seager from Toronto.

Michel Bitbol was trained as a physician and a physicist, and then turned into a philosopher of physics who, other than many colleagues of his profession, is interested in the impact that science has on philosophy. At present he directs the *Centre de Recherches en Epistémologie Appliquée* at the *Ecole Polytechnique* at Paris. Michel’s interest in consciousness-related issues brought him into close collaboration with the late Francisco Varela and stimulated him to study the Buddhist philosophy of Mādhyamaka, whose best known representative was Nāgārjuna.

William Seager is professor of philosophy at the University of Toronto (at Scarborough). His research combines aspects of the philosophy of mind and of science. Asked what he is working on right now, Bill replies: “Mostly the question of how, or if it is possible that, consciousness emerges from purely physical processes. This problem is hard.” It is hard indeed, and has led him into explorations of many avenues, including the topic of the present issue of *Mind and Matter*: the Pauli-Jung dialog.

The interaction between Carl Gustav Jung (1875–1961), one of the pioneers of depth psychology, and Wolfgang Pauli (1900–1958), one of the leading theoretical physicists of the 20th century, offer illuminating and instructive material for studies of how the mental and the physical are related to one another. In contrast to numerous attempts to highlight either mind or matter as more fundamental, as the substance to which everything can be reduced, Pauli and Jung proposed a model today called “dual-aspect monism”. It leaves the mental and the material as dual (epistemic) aspects, under which a monistically construed (ontic) reality as such can be viewed.

In the parlance of Pauli and Jung, this monist, psychophysically neutral reality has been called *unus mundus* and represents an idea similar to David Bohm’s “implicate order” or Bernard d’Espagnat’s “veiled reality”, to name only two more recent related concepts. (There is more to be found in the history of science and philosophy.) Insofar as the psychophysically neutral reality in these approaches is of ontic nature, it has a clearly metaphysical flavor. But it must not be misunderstood as a thought construct lacking actual existence. Metaphysics taken seriously in the sense of Pauli and Jung refers to a kind of reality more substantial,
more “material” as it were, than everything that physics and psychology would characterize as “real”.

In this context, a German term that Pauli often used to paraphrase this kind of reality is “unanschaulich”, a term difficult to translate into English. Literally, it would mean something like “unvisualizable” but this does not fit very well with what Pauli had in mind. In the development of quantum theory he had experienced a number of unsatisfactory interpretive attempts due to concretistic classical thinking. In this sense, the German “unanschaulich” is deeper than simply outside visual imagination. It refers to a cognitive mode in which understanding is achieved by abstract symbols. These may be mathematically expressed, but they may also appear as symbols in the sense of Jung. In a letter to Fierz of August 12, 1948, Pauli wrote:

When the layman says “reality”, he usually thinks that he is talking about something self-evident and well-known; whereas to me it appears to be the most important and exceedingly difficult task of our time to establish a new idea of reality. ... What I have in mind concerning such a new idea of reality, is – in provisional terms – the idea of the reality of the symbol. On the one hand, a symbol is a product of human effort, on the other hand it indicates an objective order in the cosmos which humans are only part of.

For Jung symbols represent “archetypal ideas”, or briefly “archetypes”, which do not refer to explicitly accessible elements of everyday reality. Therefore, Jung’s concept of the symbol is not metaphorical or allegorical and, in particular, a symbol for him is clearly not a sign. In the Collected Works 6, par. 816, he declares that a symbol “is an expression for something that cannot be characterized in any other or better way”. So a symbol for Jung is not a place holder for something else, but positively something of its own reality.

Pauli and Jung were in contact from 1932 to 1958, the year Pauli died. However, the results of their rich interaction became publicly available only very scarcely during their lifetimes. There are two publications by Pauli in which he expands on Jung’s concepts: “Ideas of the Unconscious from the Standpoint of Natural Science and Epistemology”, published 1954 in the journal Dialectica, and “The Influence of Archetypal Ideas on the Scientific Theories of Kepler”, published 1952 in a book that he jointly edited with Jung.

The other contribution in this book was Jung’s article on “Synchronicity: An Acausal Connecting Principle”, whose final form was strongly influenced by conversations with Pauli and his suggestions. But Pauli also features in other works of Jung: primarily (and for a long time anonymously) in Jung’s “Psychology and Alchemy” (Collected Works 12) and precursors of it, where Pauli was the originator of the dream series with
which Jung illustrated the symbolism of the process of individuation. And Pauli’s influence (here with disclosed identity) was instrumental for a supplement that Jung added to an earlier treatise of 1946, leading to a revised version under the title “On the Nature of the Psyche” (Collected Works 8) in 1954.

Today an exceeding amount of material concerning the Pauli-Jung dialog is accessible in the correspondence of Pauli with Jung and his circle, and with his colleague Markus Fierz. This correspondence has been published in chronological order in eight volumes, around a thousand pages each, between 1979 and 2005. A supplement volume containing additional sources discovered later is in preparation. All letters are reproduced in their original language, mostly German. This means that much of this correspondence waits to be translated into English, except for the direct correspondence Pauli-Jung, available in English as “Atom and Archetype” since 2001.

Karl von Meyenn, the editor of Pauli’s correspondence, has now completed the manuscript of another edition, this time focusing on the documentation of those of Pauli’s dreams that are preserved until today. This material comprises almost 1000 dream records, including reproductions of Pauli’s handwritten illustrations, together with lots of commentaries on and discussion about them in letters. It will be published soon, likely in two volumes.

In his contribution to the present issue of Mind and Matter, von Meyenn provides an introduction to this material. He starts with Pauli’s early work on quantum theory because specific aspects of this work make it clear how he became convinced of the importance of abstract symbols rather than concrete imagination for our description of reality. Paramount examples are the non-viable images of planetary orbits for atomic electrons or of a rotating motion for the “classically non-describable” electron spin. Pauli’s later ideas about the unus mundus were strongly influenced by his experience of the breakdown of classically guided images.

The article by von Meyenn also describes in detail, partly on the basis of letters and texts not easily accessible so far, how the contact of Pauli and Jung began and how it developed. Particularly interesting in this respect is a long letter of Pauli to his friend Wentzel from a trip to New York in September 1931, almost a year after the divorce from his first wife and almost half a year before he started his psychoanalysis with Jung. Also very informative is Jung’s account of Pauli as his client (originally kept anonymous) in his Tavistock Lectures at London 1935 (Collected Works 18).

The subsequent contribution by William Seager appreciates some key ideas of the Pauli-Jung conjectures from the viewpoint of present-day philosophy of science and of mind. His main concerns to begin with are, again, the feature of an abstract (“unanschaulich”) reality and, second,
the way in which Pauli’s arguments were based on symmetry considerations (such as the mirror image). Scanning versions of dual-aspect monism à la Pauli and Jung within the history of ideas, Seager identifies some common ground with Spinoza’s thinking – which neither Pauli nor Jung seem to have been aware of.

A widely used contemporary characterization of philosophical positions toward science distinguishes between realist and anti-realist stances. Roughly speaking, scientific realists adopt the view that science provides the truth about the ultimate nature of the world as it is in itself. When Pauli developed the so-called Copenhagen interpretation of quantum theory together with Bohr and Heisenberg, he certainly was a scientific anti-realist. Seager specifies Pauli’s anti-realism as weak insofar as it accepts that domains of reality may be incompletely accessible by the empirical methods of science. At variance with Einstein’s realist position, however, Pauli did not see “an incompleteness of quantum theory within physics, but an incompleteness of physics within the totality of life” (letter to Fierz of August 10, 1954).

This is of direct relevance to Pauli’s and Jung’s dual-aspect monism and to the unus mundus: Connecting the physical to the mental opens up a vast arena for consequences which physics alone must be ignorant about, which – however – are not independent of physical phenomena. In Seager’s opinion, conceiving dual aspects as complementary dual aspects as in quantum theory may make their approach particularly fruitful (cf. p. 42):

The genesis of Pauli’s dual-aspect theory fundamentally stems from his appreciation of certain insights provided by quantum theory rather than any study of the history of philosophy. In fact, I think that Pauli’s quantum approach adds a new and very interesting argument for the dual-aspect account of the mind-matter relation which makes it of real philosophical interest.

Charles Card’s article addresses an option for a language to talk about the psychophysically neutral reality Pauli and Jung were striving for. As a corresponding candidate he presents Spencer Brown’s symbolic calculus, proposed in his Laws of Form of 1969 and further developed by Varela and Kauffman, and explores some of its implications with respect to archetypes and the unus mundus.

An evidently most important issue in Spencer Brown’s work is the fundamental principle of “making a distinction”, decomposing a whole into parts. Boldly speaking, this principle, the epistemic split, is the basis of all epistemology. In symbolic terms, it can be expressed as the breach from unity to duality, from “one” to “two” as it were. This way, Card suggests, Spencer Brown’s calculus can be related to Jung’s conjecture, late in his life, that the most basic archetypes are the number archetypes.
To some extent, this idea has been worked out by von Franz, a collaborator of Jung, and for a while of Pauli as well, in her book *Number and Time*, originally published in German 1970.

Card does freely admit that the project of a psychophysically neutral language has not led to success so far. At the same time he is very clear about the fact that, as Jung and Pauli emphasized themselves, a system of symbols is required for it – archetypal reality is symbolic. Card speculates that the number “four”, the *quaternio*, might be particularly significant for this symbolism and identifies indications for this idea in the *Laws of Form*. Recent results in cognitive neuroscience and cognitive linguistics are pointed out that can be interpreted in a “quaternarian” fashion.

Finally, Doris Lier analyses the different ways of thinking in Jungian psychology that have emerged from Jung’s opus. First of all, there is the clinical-developmental route, which is mainly represented in the practice of psychoanalysis and its empirical phenomenology. For a second route, the term archetypal psychology has been coined, focusing on structural theoretical aspects of Jung’s depth psychology. Although Pauli was in analysis with Jung (and his collaborator Rosenbaum, respectively), his later exchange with Jung was evidently concentrated on conceptual questions about the conceptual structure of Jung’s psychology, e.g. the relation between the *unus mundus* and its dual aspects.

Lier demonstrates these two traditions among Jungians with the long-standing discussion of the concepts of anima and animus and their understanding from Jung to more recent viewpoints. While therapeutic practice works with anima and animus as archetypal figures helping to analyze problems of individuals and to treat their impairments, this is less of a focus in theoretical approaches along the archetypal line of thinking. However, the main emphasis of Lier is a third line, which she identifies in recent work of Wolfgang Giergerich, and which transcends its two predecessors.

Giergerich shifts the perspective on anima and animus away from a subject-centered viewpoint. He introduces, in a Hegel-like way, thinking as a logical *modus operandi* for which animus stands as a principle. By contrast, anima represents everything imaginal, figurative which animus must oppose to become developed. This way, anima and animus are not a pair of opposites to be united in a *coniunctio* – rather they are principles of unity and oppositio, of oneness and diversity, whose reconciliation would be more sophisticated than a cheap “both and”. Giergerich eventually develops anima and animus as elements of a cultural history of consciousness – a significant move forward for Jungian psychology in particular and the study of consciousness (and the unconscious) in general.