Empirical Study of the Associations between Archetypal Images and Their Meanings:

Evidence of Archetypal (Collective Unconscious) Memory

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"Concepts such as the Collective Unconscious are hypotheses, such hypotheses are helpful means to knowledge, they are the best we know of up to the present. The formation of the world is not changed because we form a new hypothesis about a relatively unknown part of it."

C.G. Jung, 1959,vol.2, p. 183

DEDICATION

To my daughter Alina Melinda

“Never give up!”

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ABSTRACT

The theory of the archetypes and the collective unconscious are two of the most typical topics of analytical Jungian psychology, on the one hand, and two of the most controversial ones, on the other. In Jung's view the archetypes are predispositions to patterns of perception and behavior typical of all human being and the animal world. They have evolved, according to Jung, evolutionary over the repeated history of re-experiencing similar situations. Although Jung stressed that these were given to us *a priori* and seem to be innate, he also pointed out that it is the form which is innate. Archetypes are autonomous from consciousness, have a feeling value, and are unknowable to consciousness. We experience the archetypes through their ability to organize experience and ideas. They manifest themselves under the influence of the environment as representations in myths, fairy tales, dreams, art, as well as in scientific ideas.

Contemporary Jungian scholars have proposed different ways of reinterpreting the Jungian understanding of the archetypes in terms of contemporary science. Among the most prominent reformulations is the understanding of the archetype as image schema in the context of embodied cognition and enacted cognition. Furthermore, many scholars look at the similarities between the dynamics of the archetype and the attractors in dynamic open systems, thus suggesting that archetypes are attractors in the psyche as a system. Others direct their attention to findings of complexity theory and the parallels to the non-linear dynamics of archetypal processes. There still are also followers of the idea that archetypes are innate and they are predispositions that we come with and result from the long process of evolution.

The review of some contemporary scientific findings in psychology and neuroscience demonstrated that many of the observations of C. G. Jung concerning the theory of the archetype and the collective unconscious find support in contemporary psychology as phenomena.

However, empirical research is still extremely sparse. The work of Rosen and Smith (1991) and the research of Maloney (1999) were the first attempts to test empirically the hypothesis of the archetypes of the collective unconscious. Maloney studied the preferences of adults and demonstrated experimentally that adults showed preferences for pictures with archetypal motifs. Rosen and Smith (1991) studied the association between archetypal symbols and their related meanings and reached the conclusion that archetypal symbols and their meanings were strongly associated and these associations were unconscious, which they explained as a form of archetypal (collective unconscious) memory triggered into consciousness as a result of priming.

The studies reported here build on the method of Rosen and Smith (1991) and investigate the association between archetypal symbols and their related meanings in a cross-cultural context.

The first study was a cross-cultural replication in German of the original work of Rosen and Smith (1991). The results replicated the findings that archetypal symbols were strongly associated to their meanings and that the nature of these associations was unconscious. In this sense, the results support the assertions of Jung that archetypes are universal in nature and demonstrate that the effect observed in the English studies of Rosen and Smith is unlikely to be a cultural or linguistic artifact.

The second study investigated the nature of cognitive functioning of Chinese characters (kanji). The study demonstrated that kanji behave on a cognitive level as archetypal symbols and that there is a strong association between the graphic image of kanji and their true meanings. The nature of this association is unconscious. Furthermore, these results lent support to the theoretical speculations about the archetype as image schema in the context of the embodied cognition approach to cognition.

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ARCHETYPES OF THE COLLECTIVE UNCONSCIOUS

Classical View

Unlike Freud, Jung believed that the unconscious was not just the seat of sexual and aggressive instincts and repressed wishes. Through his work with the association experiment, the study of myths and fairy tales, and the study of fantasy products of psychotic patients, Jung reached the conclusion that there was a layer of the unconscious which contained universal patterns of behavior and modes of perception that were accessible to the whole of the human race and to the animal world, as well. These specific patterns of perception and behavior which crystallize in consciousness in the form of symbols he named archetypes. In Jung's own words "Archetype is an explanatory paraphrase of the Platonic εἶδος" (Jung, 1954, CW vol. 9-I, para. 5, p. 4). Jung quoted multiple earlier sources in which the term "archetype" appeared (Jung, 1954, CW 9-I, para 5, p.4) to stress the fact that what he described by means of this term could be qualified as "archaic…primordial types, that is, with universal images that have existed since the remotest times" (Ibid, para. 5, p. 5). The repetition over thousands of years of similar situations which "arouse affect-laden fantasies" (Jung, 1931, CW 8, para 334, p. 155) gave "rise to archetypes" (Ibid.) in Jung's view. Archetypes are "a living system of reactions and aptitudes" (Ibid., para 339, p. 157). As such Jung linked them to the instincts – "archetypes are simply the form which instincts assume" (Ibid); they are the form of the pattern of instinctual situations needed for the existence of the instinct. They can provide in this sense the necessary link between the embodied experience of life and meaning (Jung, 1959). However, Jung cautioned that although archetype and instinct showed affinity, they "were the most polar opposites imaginable" (Jung, 1954, CW 8, para 406, p. 206). Jung believed that archetypes were "elements of spirit" which should not be identified with the intellect (Ibid.).

Archetypes in Jung's understanding are predispositions and are as part of the collective unconscious "in the brain structure of every individual" (Jung, 1931, CW 8, para 342, p. 158). However, Jung pointed out that archetypes were "empty, purely formal…a possibility of representation given *a priori*" (Jung, 1954, CW 9-I, para 155, p.79). Further on, he stressed that "the representations themselves are not inherited only the forms…" (Ibid.) In this sense, Jung believed that the archetype-as-such was unknowable and "irrepresentable" (Jung, 1954, CW 8, para 417, p. 213). We come to know the effect of archetypes through the impact they have on consciousness due to their "ability to organize images and ideas" (Jung, 1954, CW 8, para 440, p. 231). The archetype in Jung's view "can be named and has an invariable nucleus of meaning – but always only in principle" (Jung, 1954, CW 9-I, para 155, p. 80). Anything we say about the archetype remains a visualization which is made possible by the current state of consciousness in a respective moment. Archetypes are numinous and are associated with strong affective responses. "It would be an unpardonable sin of omission, were one to overlook the *feeling-value* of the archetype" (Jung, 1954, CW 8, para 411, p.209). They are autonomous from consciousness (Jung, 1954, CW 9-I, para 85, p. 40). "The archetype is pure, unvitiated nature." (Jung, 1954, CW 8, para 412, p.210) Jung explained the use of the word nature as follows: ""Nature" here means simply that which is, and always was, given" (Ibid., foot note)

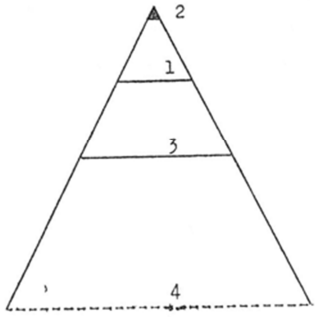
Furthermore, Jung posited that the archetype had a "psychoid nature" (Jung, 1954, CW 8, para 419, p.215). He clarified this as follows "the archetype describes a field which exhibits none of the peculiarities of the physiological and yet, in the last analysis, can no longer be regarded as psychic, although it manifests itself psychically" (Jung, 1954, CW 8, para 420, p. 215).

So, archetypes-as-such, while being universal, are also unknowable or unconscious; although archetypes have a profound impact on consciousness and the life of the individual. They do not belong just to the psychic sphere and seem to be given *a priori* as a possibility or

a form without content. They can be seen as predispositions to certain forms of organization of perception and experience, and patterns of behavior, and encode the results of a long process of repeated experience of similar situations over thousands of years.

There are many archetypes. The central archetype is the archetype of the Self. The Self is the totality of the psyche and its circumvention. Stevens (2003) defined it as the archetype of order.

The archetypes in Jung's view have a substantial place in the structure of the psyche and its dynamics. The psyche consisted of several layers according to Jung – consciousness being the top-most, followed by the personal unconscious, and the bottom most one being the collective unconscious.

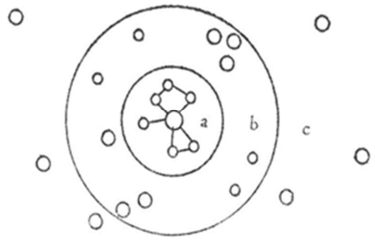


(Diagram of the different psychic layers by C. G. Jung, Modern Psychology, 1959, vol. 2, p.194

1 - consciousness, 2 - the ego-complex, the center of consciousness, 3 - personal unconscious consists mainly of personal memories, 4 – collective unconscious)

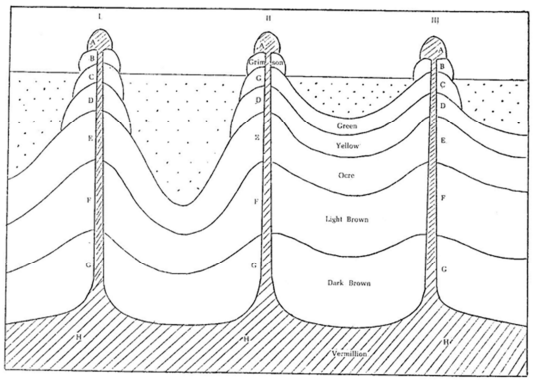
At the top of the pyramidal presentation of the psyche Jung placed the ego which in his view was the center of consciousness around which the contents of consciousness were organized. The personal unconscious consists of complexes which are clusters of ideas, memories and experiences with a particular feeling tone. These are organized around an archetypal core. Jung described the archetypes in this sense as "magnetic points" (Jung, 1959, vol. 2, p.190) which attract experience. "The field of the archetype tends to get larger, as more

and more impressions collect round it, it rises higher and higher, and when it touches the surface (*of consciousness – note MSK)* it appears as a complex." (Jung, 1959, vol. 2, p.191)



(Diagram psychic structure viewed from above by C. G. Jung, 1959 - Alchemy vol. 2, p. 138,
a – the field of consciousness with the ego-complex in the center and the associated to it complexes, b – the field of the personal unconscious above which as an island rests consciousness, contains complexes which are not integrated in consciousness, c – collective unconscious,)

The more conscious the ego of a complex the better this complex is integrated in consciousness (as the cluster of related circles in circle *'a'* from the above diagram), the more the ego looks away from a complex the more dissociated it is from consciousness. Each complex has in Jung's view an archetypal core since archetypes are those predispositions which make the organization of experience possible and complexes can be looked at as forms of episodic memory which encode personal experiences associated with a particular affect (Huston, 1992). Furthermore, archetypes which are unknowable as such can be to a certain extent accessed via the complex which in Jung's view is the royal road to the unconscious (Jung, 1948, CW 8, para 210, p.101).



(Diagram which represents the collective unconscious (bottom most layer) and its differentiation by C. G. Jung, 1959, vol. 2, p.115)

Although the above diagram was drawn by Jung to represent the collective unconscious and its differentiation at the level of humanity, it also demonstrates the differentiation of the unconscious on an individual conscious level. Thus complexes are depicted as 'islands' of consciousness which at the core are connected to the archetypes from the collective unconscious.

It is important to note that archetypes are related to the specific dynamics of psychic life described by Jung and play an important role in healing. At times of crises it is suggested that the archetypal landscape changes. The activation of an archetypal field is related also to the experience of meaningful coincidences based on an a-causal principle called by Jung synchronicity. The dynamics underlying archetypal processes are related to the psychic urge to self-actualization inherent in the psyche as a self-regulating system called by Jung individuation. "The process of individuation is founded on the instinctive urge of every living creature to reach its own totality and fulfillment." (Jung, 1959, Vol. 5, p.11) This is a life-long process of unfolding the psychic potential of the individual and integrating it in conscious life.

Contemporary Views

The last decades mark a new development in analytical psychology whereby contemporary Jungian scholars try to reformulate the theory of the archetype in terms of modern science.

Among one of the most well formulated modern approaches to the archetype is the proposed reformulation of the archetype theory in terms of image schemas (Knox, 2003, 2004, 2009, Merchant, 2006, 2009, Sotirova-Kohli et al, 2011). Jean Knox first proposed the connection between the image schema and the archetype-as-such. In the tradition of Talmy (1983), Johnson (1987) and Lakoff (1987) the image schema can be defined as a "dynamic, recurring pattern of organism-environment interactions" (Johnson, 2007, p.136). They are "structures of sensorimotor experience that can be recruited for abstract conceptualization and reasoning" (Ibid., p.141). They are "preverbal and mostly nonconscious" (Ibid., p.144). In this sense, image schemas are suggested to be a neural activation pattern which resulted from repeated interactions between the individual and the environment (see Sotirova-Kohli et al, 2011). In this sense the archetype is looked at as an early achievement of development resulting from the qualities of the brain as a dynamic system to self-organize and the interactions between the individual and the environment (social, cultural and physical). This understanding of the archetype uses a dynamic systems approach to the development of cognition and action. This approach to cognition and action relates to the process of formation of preverbal image schematic representations in the infants' brain which are largely determined by the history of the brain as a system, i.e. are based on the experience the system has in the physical world and the ability of the brain as a dynamic system to self-organize (Thelen and Smith, 1994). Later on, these pre-verbal neuronal activation patterns serve as a foundation for the development of conceptual thought – categories and concepts. In themselves these neuronal activation patterns constitute attractor states for the dynamic system of the brain (see also Appendix B). Furthermore, the ideas of Talmy, Johnson and

Lakoff concerning image schema find support in the contemporary research on embodiment where embodiment is defined as the meaning of symbols to an agent and the reasoning about meaning and sentence understanding which "depends on activity in systems also used for perception, action and emotion" (de Vega, Glenberg & Graesser, 2008, p.4). Neuroimaging studies support the idea that sensory and motor systems are involved in concept understanding and retrieval (Binder & Desai, 2011). Thus, image schemas can be understood as the neuronal activation patterns which encode embodied experience in the world, they function automatically, i.e. unconsciously, and underlie concepts, narrative and ritual (Hampe, 2005), all qualities which can be attributed also to the archetypes. It is important to note that in Johnson's (2007) theory of image schema and embodiment, feeling and emotion are attributed an important role in the assessment and evaluation of the environment and in meaning-making.

Relevant to the idea of the archetype as an image schema is also the contemporary understanding of the inner world as a simulated interaction with the environment at the core of which is the understanding that the phenomenal experience of an inner world is a result of the ability to activate motor and sensory structures suppressing the urge to act (e.g. Heslow, 2011). The inner world of the human being is given central place in Jung's work. Fantasy as a form of simulation is also central in Jungian analytic work and related to the archetypal dynamics at work which promote healing and integration of the personality. This specific form of fantasy work, of imagination Jung called active imagination and defined it as "his method of psychotherapy" (Chodorow, 1997, p. 17).

Another contemporary understanding of the archetype was formulated by George Hogenson (2009) who proposed understanding the archetype as an "elementary action pattern" (Hogenson, 2009, p.325). His ideas were provoked by the discovery of the mirror neurons and are related to the ideas of Knox cited above. Although he did not make the connection explicitly his ideas are also close to the enacted cognition approach to cognition and action

proposed by Varela, Thomson and Rosch (1991). The above authors suggested that cognition was "enaction: a history of structural coupling that brings forth a world" (Varela et al, 1991, p. 172) and that "the cognitive system projects its own world, and the apparent reality of this world is merely a reflection of internal laws of the system" (Varela et al., 1991, p. 172).

Other Jungian scholars orient their re-interpretation of the theory of the archetype on the basis of complexity theory. In this approach the non-linear dynamics which underlie some aspects of the archetype as a field, related to, for example, synchronicity, enantiodromia (the emergence of an unconscious position which compensates conscious one-sidedness) or the therapeutic relationship as a dynamic open system, are stressed. George Hogenson proposed that the archetype could be understood as an "iterative moment in the self-organization of the symbolic world" (Hogenson, 2005, p. 279). Saunders and Skar suggested that the archetype was an emergent structure which derived from the self-organizing properties of the brain (basically not contradicting the theory of the image schema) (Saunders and Skar, 2001). McDowell stressed that the archetype was a pre-existing principle of organization of the personality (McDowell, 2001), while van Eewynk looked at archetypes as strange attractors of the dynamic system of the psyche (van Eewynk, 1991, 1997) whose non-linear dynamics underlie individuation – the process of conscious unfolding the potential of the personality (similar to Maslow's idea of self-actualization) and the therapeutic relationship (see also Appendix A). Furthermore, the notion of synchronicity - meaningful coincidences based on an a-causal connection principle, which Jung developed in exchange with Wolfgang Pauli and Albert Einstein, and which can be seen as an expression of a constellated archetypal field at work (Jung, 1952, Cambray, 2002), finds support more recently through the discoveries in complexity theory and the dynamics of complex adaptive systems (Cambray, 2009) and supports the hypothesis that archetypes are attractor states in the psyche as a complex adaptive system (Sotirova-Kohli et. al, 2011).

Roesler (see appendix C) proposed that archetypes were not innate, but rather based on a very small set of innate mechanisms which made certain experience and interactions with the environment possible. This basic experience, however, did not need to be a result of the personal experience of the individual, but could also be transmitted in the interactions as a result of the work of mirror neurons. Furthermore, Roesler proposed that the link between the archetype as a basic experiential structure and the archetype as symbolic representations was provided by the narrative (see Appendix C).

Most of the above contemporary approaches to the archetype, however, look at it as a psychic achievement in the process of development relying on the nature of the brain as a dynamic system to self-organize and a small set of innate mechanisms such as the ability of the newly born infant to concentrate on the face of the primary care-giver. How can innateness be understood today?

Many believe in the obsoleteness of the discussion nature vs. nurture and stress the interactionist nature of human development (Knox, 2004, Hogenson, 2009, Merchant, 2009, Rosen et al., 2010, Roesler, 2010, 2012) or point out the psychological factors in evolution in the argumentation against a purely genetically transmitted innateness (Hogenson, 2001) (see also Appendix A). The innate aspect of the archetype is looked at as a predisposition to a genetic condition which needs certain environmental cues to find expression in the sense of epigenetics as described by Roesler (2010, 2012) (Rosen, personal communication). Jungian scholar Pietikanen (1998) suggested a radical departure from the discussion about innateness and proposed that with the help of Cassirerian approach archetypes could be understood as "culturally determined functionary forms organizing and structuring certain aspects of man's cultural activity" (Pietikanen, 1998, p. 325).

There are Jungian scholars who find arguments in defense of the innateness of the archetype from contemporary research. Among these are such phenomena as the doctor-patient relationship (Rosen, 1992), the deep structure of language (Haule, 2011), attachment

patterns (Stevens, 2003), basic emotions, language acquisition mechanisms and the face recognition program (Roesler, 2010, 2012); we can also add the basic affective systems as proposed by Panksepp (e.g. 2011). Roesler (2012) pointed out Seligman's concept of "preparedness" – the readiness to learn – as a further example of innateness that could be applied to archetypal theory. Erik Goodwyn (2010, 2012) used in defense of innateness findings from evolutionary psychology and neuroanatomy. However, even scholars like Anthony Stevens, known for their work in defense of genetically transmitted innateness, look at the archetype-as-such as "innate neuropsychic centers" (Stevens, 2003, p. 86) thus getting very close to the position of the earlier described understanding of the archetypes-as-such in terms of embodiment and enacted cognition.

John Haule (2011) used multiple research evidence in defense of the position that archetypes were "typical emotional bodily states" (Haule, 2011, p. 259) and basically in his reformulation also did not differ from the positions of embodied and enacted cognition described above. Maybe the major difference between these groups of Jungian scholars is the degree to which the archetype is seen as an early developmental achievement or an innate predisposition. The question is the extent to which these neuropsychic structures (to use the words of Stevens) that also reflect certain "emotional bodily states" (in the words of Haule) are biologically determined or result from the interactions with the environment – physical and social.

It seems fair to say that the controversies concerning innateness and the archetype reflect the controversies surrounding the topic of innateness in psychology at large. While the dynamic systems approach to the development of cognition and action, cognitive semantics, embodiment, and enacted cognition as approaches in the study of cognitive processes enjoy widespread popularity, there are also many scholars who conduct experimental work in connection with innate mechanisms (see also Appendix A). The experimental work of developmental psychologists such as Spelke, for example, provides data which supports the

hypothesis of multiple innate mechanisms with which infants are equipped at birth (Spelke, 2010, 2009). It, thus, seems that cognitive science at large has not answered the question concerning innateness as a basic ideological factor.

Are archetypes innate or acquired? Archetypal psychology, a further group of Jungian scholars, proposes that the very question of innateness is irrelevant and places the archetypes in imagination, stressing their transcendental nature (see Roesler, 2010, 2012). Although this approach to the archetype might not resonate with many main stream psychologists, there are tendencies in contemporary studies of consciousness which sound in unison with the ideas of archetypal psychology. The Hameroff and Penrose quantum theory of consciousness (Hameroff and Penrose, 2003), the idea that consciousness "emerges as natural processes" that involve quantum phenomena "unfold" (Satinover, 2001, p.219), and the hypothesis that the brain does not produce consciousness but serves the purpose of receiving and transmitting information which exists beyond it (Beauregard, 2011) can be seen to resonate with some of the basic ideas of archetypal psychology concerning the archetype (see also Appendix A).

Scientific Status of the Concept of the Archetype (Appendix C)

As mentioned earlier the notion of the archetype was controversial from the very beginning. Jung himself struggled with the idea going through different stages of its formulation. Some of his formulations sound confusing and contradictory at first sight (see Appendix C). However, what is the status of this idea at present time? What is the compatibility of the theory of the archetype with scientific findings today?

The theory of the archetype concerns perception, experience and behavior. The basic assertion in this respect is, as pointed out above, that these are influenced/organized/made possible by mechanisms/modes that seem to be innate and universal and function automatically, i.e., are basically non-conscious. The first evidence for the existence of a small number of thematic cores around which experiences of individuals are organized was

provided by the work of Jung and his followers with the Word Association Test, as mentioned above. Recent neuroimaging study of participants involved in taking the Word Association Test have demonstrated the neuronal activation pattern that underlies an activated complex (Bechtel, 2013), thereby providing evidence for the neural correlates of the processes at work that cause a disturbance of consciousness when a complex is triggered and supporting Jung's assertions.

Jung invested much effort in comparing motifs from religion, art and mythology to demonstrate the recurrence of certain motifs which for him was further evidence for the existence of universal archetypal modes of perception and behavior.

Do these assertions of Jung hold the test of time? Today, longitudinal studies of fantasies produced under the influence of LSD demonstrate that there are a fixed number of recurrent motifs in the fantasies of different individuals which in their nature agree with some of the archetypal motifs described by Jung (see Appendix C). The comparative study of myths and fairy tales from all over the world demonstrated as well that these earliest narratives deal with topics which are strikingly similar, often also for cultures that are remote and isolated from one another (see Appendix C). The structural similarities between the earliest narratives and kinship of different cultures, was also studied and stressed by structural anthropologists such as Claude Levi-Strauss. Thus we can say that Jung's view of recurrent mythological motifs which supported the hypothesis of universal archetypes also finds support in the work of contemporary scholars (see Appendix C).

Over the years the understanding of innateness in connection with the theory of archetypes has undergone changes together with the changing understanding of the role played by genes and their functioning in the transmission of hereditary information. Today most Jungian scholars search for support of the notion of innateness in basic psychic mechanisms for which there is empirical evidence that infants come to this world equipped with (as stated earlier). Among these can be mentioned the innate mechanisms of language

acquisition, rudimentary perceptual and behavioral programs with which infants are equipped at birth and attachment patterns, as well as universal basic emotions which can be found in infants all over the world, as pointed also earlier (see Appendix C), or the basic affective systems as defined by Jack Panksepp (Vandekerckhove & Panksepp, 2011). In this respect the work of the affective neuroscientist Jack Panksepp is particularly interesting for Jungian scholars since many of the assertions he makes sound in agreement with Jung's assertions about the archetypes, even though Panksepp nowhere explicitly makes association with the theory of the archetype. Panksepp investigated the by him so-called primary affective systems which humans shared, in his view, with other animals and constituted a part of the mammalian brain in the subcortical regions. He stressed the necessity to "consider the layered levels of human information processing "(Ibid., p. 2018) when taking into consideration the neural correlates of psychic states and processes. Thus, for example, he pointed out that while the neural correlates of higher cognitive functioning were to be found in the activation mode of the neo-cortex, cognitive neuroscience in its research should not ignore the work of the basic affective systems in relation to the higher cognitive processes. Furthermore, he believed that "affective experience may reflect a most primitive form of consciousness (Panksepp, 2000b, 2004b), which may have provided an evolutionary platform for the emergence of more complex layers of consciousness" (Panksepp, 2005, p.32). This statement is an excellent reformulation in more contemporary language of the idea of Jung about the collective unconscious and its evolutionary origin. Panksepp defined the primary-process affective consciousness as "a gift of nature rather than an acquired skill" (Ibid. p.30), similar to the assertion of Jung that archetypes were pure nature, although Panksepp pointed out himself (Vandekerckhove & Panksepp, 2011) that there was not convincing evidence to demonstrate how these processes were encoded genetically. He pointed out, however, that this possibility could not be excluded completely. Panksepp stated that he "explores the possibility that basic emotional feelings — a primary process type of phenomenology — may be grounded on

instinctual action systems that promote unconditional emotional behaviors. Although such ‘‘ancestral voices of the genes’’ (Buck, 1999, p. 324) undergo a great deal of elaboration epigenetically, the fundamental similarity of core affective processes across mammalian species may permit neuroethological work on animal-models to reveal the bedrock of human consciousness” (Panksepp, 2005, p. 31).

These ideas of Panksepp are particularly interesting for Jungian scholars since they resonate with Jung’s assertions of the evolutionary base of consciousness provided by the collective unconscious and the archetypes, the innateness of the archetype as a predisposition to a pattern of behavior and perception related to instinct, the stress on the feeling-value of the archetype, and the relatedness of the human psyche through the archetypes of the collective unconscious to other animals.

Returning to the discussion about innateness, proponents of archetypal innateness seem to agree in different ways on understanding innateness as some basic psychic mechanisms which predispose us to react, feel and experience in distinctly human ways, as Jung said. Jung himself stressed the innateness of the archetype-as-such but only as an empty form or predisposition and explained the symbolic representation of the archetype-as-such in consciousness as determined by the state of consciousness at the respective moment, as pointed out above. One of the major reasons why archetypes were discussed in connection to genes was that earlier scholars believed they were able to explain in this way the universal character of the archetypes. Recent findings, however, have demonstrated the influence of the environment that can lead to modifications of genetic and biological structures (see Appendix C). Thus genetic transmission as a source of explanation of the universality of the archetype is also put in question.

The new discoveries in neuroscience are an object of great interest to Jungian scholars as has been pointed out. The qualities of the brain as a dynamic system to self-organize, the properties of the neural networks to exhibit deterministic chaotic behavior on different levels

of self-organization, the quantum moment in their functioning in this respect (Satinover, 2001) provide support for Jungian ideas related to the archetype.

A discovery which prompted much discussion among Jungian scholars was the mirror neurons. These were seen as a possible mechanism related to the existence of the archetype by Hogenson (2009), as already mentioned. Recently, Roesler (2012) proposed an understanding of the collective unconscious based on the understanding of the mirror neuron system as a form of memory which made possible the "subliminal, unconscious transmission of complex information from one generation to the other" (Roesler, 2012, p. 241). Furthermore, he quoted the ideas of Bauer (see Roesler, 2012) that mirror neurons contributed to the development of a "shared intersubjective space" in which all typically "human sequences of actions and experiences can be activated and communicated pre-verbally" (Bauer as quoted by Roesler, 2012, p. 241), and proposed that such a shared intersubjective space could be taken as a neuroscientific reformulation of Jung's hypothesis of the collective unconscious (Ibid.).

Experimental research in psychology also provides evidence for the existence of stable patterns of perception organization which seem to function automatically and thus unconsciously as Jung proposed the archetypes did. Empirical research in the field of Gestalt psychology demonstrated the ability of the cognitive system to build "stable configurations of perception" (Roesler, 2012, p.236). The theory of the prototype of Rosch (e.g. 1975, 1999) and the theory of enacted cognition (already mentioned) look at categorization as a basic function of living organisms whereby perception is organized in a particular way (Rosch, 1999, p.61). On the basis of her empirical investigations Rosch reached the conclusion that categories were a graded structure whereby the judged best representative of the category was called prototype (Ibid.). Furthermore, Rosch defined prototypes as "rich, imagistic, sensory, full-bodied mental events" (Ibid., pp. 65-66) which were context dependent and reflected a basic functioning of the mind connected with organizing perception rather than fixed representations. She connected her idea of the prototype with the ideas of Johnson and Lakoff

of the image schema and stated that these were “consonant with the view of cognition as enaction” (Rosch, 1991, p. 178). The above ideas reflect in different ways Jung’s observations of the complexes and their relation to the archetype as a central core. As Saunders and Skar (2001) wrote, the archetype could be looked at as a “class of complexes which are considered to fall in the same ‘category’” (Saunders and Skar, 2001, p.312). Defined in this way the archetype seems to exhibit similarities to Rosch's notion of the prototype.

Thus although there are many aspects of the archetype theory which are open to investigation and many open questions concerning the hypothesis of the collective unconscious and the theory of the archetype, we can say that contemporary psychological science, although using a different language, states ideas which resonate with some of the observations of Jung concerning the theory of the archetype.

Given all these ideas how do we understand the archetype? Are archetypes transmitted biologically or are they transmitted by culture as Roesler (2012) asks? Can we understand the collective unconscious in terms of subliminal transmission and inter-individual neuronal format as Roesler (2012) proposed or is the collective unconscious a form of archetypal (collective unconscious) memory as Rosen et al. (1991) suggested?

While the above developments in psychology provide much space for thought and are highly intriguing from a Jungian perspective, there still is no experimental evidence that would support or reject the assertions such as that the archetype could be reformulated in terms of image schemas, prototypes or enacted cognition.

EMPIRICAL STUDIES

Contemporary empirical investigation of the hypothesis of the archetypes is sparse. There are two experimental paradigms which aim to test the hypothesis of the archetype, namely, the Rosen and Smith (1991) paradigm which will be described below and the Maloney (1999) paradigm. Maloney studied the preference ratings of images presenting archetypal themes such as the theme of the hero and the Mother in a large community sample and found that archetypal themes determined affective responses of adults as hypothesized by Jung's theory of the archetypes.

The Rosen and Smith paradigm was built on the basis of studying the associations between a set of 40 archetypal symbols and their associated meanings – the Archetypal Symbol Inventory (ASI). C. G. Jung conducted psychological evaluations of patients using the Word Association Test as mentioned previously and this was one of his approaches for studying the archetype (Roesler, 2010). Interestingly, as Rosen et al. (1991) pointed out, Jung never used symbols in his association experiments. To provide an instrument with which archetypal memory can be studied by means of symbols, the above authors developed the Archetypal Symbol Inventory (ASI) which consists of 40 archetypal symbols and 40 associated words indicating the archetypal meanings of these symbols (Rosen et al., 1991). Furthermore, Rosen and Smith designed a series of three experiments to test the hypothesis of collective unconscious memory. The two preliminary experiments – a free association task and a forced association task using the 40 symbols from the ASI – tested to what degree the participants had spontaneous conscious knowledge of the archetypal meanings of the symbols and provided empirical evidence that there is practically no conscious knowledge of these meanings (Rosen et al., 1991).

In their main study Rosen et al. (1991) investigated the learning effect and recall rate of the 40 archetypal symbols and their related meanings from the ASI. The experimental design of Rosen et al. (1991) utilized a cognitive psychological approach to testing the hypothesis of the collective unconscious (memory). Rosen and coworkers hypothesized that pre-existing collective unconscious memory would have qualities similar to "semantic memory" (Tulving, 1972). The authors further adopted a list-learning procedure to test for pre-existing knowledge of archetypal symbols. This procedure presupposes that participants are presented with lists of stimuli (often pairs of words) to be learned and later their memory of the learned stimuli was tested by showing only one of the words from the learned pair (the cue). There is empirical evidence which suggests that words are learned better if they are cued by semantically related words (e. g., Thomson and Tulving, 1970, Koriat & Bjork, 2005). The experimental design of Rosen and team utilized the list-learning procedure where the stimuli pairs consisted of a symbol and a word and, later, a cued-recall (archetypal symbols used as cues) task was used to test the memory of the items from the learning procedure. Thus, the 40 archetypal symbols from the Archetypal Symbol Inventory (ASI) were presented to the participants, one half of them were paired with their associated meanings and in the other half with random incorrect meanings. The participants were later shown the symbol and were asked to recall the word they saw previously paired with the symbol. As hypothesized, the study found that the archetypal meanings were recalled better when in the learning phase they were presented matched with the symbols they were associated with, i.e. when correctly matched in the learning phase. This allowed the authors to conclude that the archetypal symbols and their associated meanings were strongly associated. Since in their preliminary studies the authors found that there was no spontaneous conscious knowledge of the meaning of the symbols they concluded that the effect they observed in the main study of the paradigm demonstrated pre-existing knowledge of the symbols which was triggered through an effect of priming when the symbols were presented to the participants paired with their correct

archetypal meanings. This first study of Rosen et al. (1991), as well as subsequent studies of Huston (1992) and Huston et al. (1999) provided empirical support for the existence of what these authors called archetypal, collective unconscious memory. The findings were replicated also by Bradshaw and Storm (2013).

Subsequently, Huston et al. (1999) proposed a possible mechanism for evolutionary collective unconscious (archetypal) memory. They explained the effect of better recall of meanings when they were matched correctly with a symbol as being a result "of interhemispherical connection, mediated by the corpus callosum, which allows for the recall of the accurate meaning of the archetypal symbol triggered by the affective response" (Huston et al., 1999, pp. 145 – 146). According to these authors the right hemisphere was the seat of archetypal patterns, symbols and their affectively charged visual images, while the left hemisphere was the seat of verbal knowledge. It was proposed that when an archetypal symbol was presented, matched with its correct meaning, there was an affective response which constellated an archetypal image in the right hemisphere. This was explained as the effect of priming the evolutionary unconscious archetypal memory. The authors further suggested that it was this affective response which facilitated retrieval of the correct meaning (word) of the symbol when the symbols were presented by themselves later in the cued recall task (Huston et al, 1999).

The Rosen et al. study stimulated discussions among Jungian scholars. Jill Gordon (Gordon, 1991) raised the question as to whether the images used by the team could at all be considered to be archetypal before conducting cross-cultural research. Gordon stressed the importance of conducting multiple cross-cultural studies to determine whether the images used really had the qualities of archetypal images, namely, whether these were "forms that provoke more or less similar or even identical associations from a majority of people" (Grodon, 1991, p. 229). Raya Jones argued in a similar fashion that the results observed by

Rosen et al. could be explained with "cultural convention or as artifacts of the statistical procedure (Jones, 2003, p. 707).

Cross-cultural evidence of collective unconscious memory (see Appendix A)

Intrigued by the question if the results observed by Rosen and team described previously are replicable in a different language and in a different cultural context we decided to conduct the same experiment in the German-speaking part of Switzerland. We presumed that if the significant effect of matching on learning and recall of the associated meanings of archetypal symbols from the Archetypal Symbol Inventory (ASI) observed by Rosen and team (1991) was related to the archetypal nature of the symbols used in the experiments then these results should be replicable in cross-cultural studies conducted in a different language and a different cultural context. Thus we hypothesized that correctly paired archetypal symbols and their German associated meanings would also lead to significantly better learning and recalling the associated words than in the case of mismatched pairs.

As a first step for testing the hypothesis, our team translated the original English ASI into German. For this purpose the team of Sotirova-Kohli, Roesler and Opwis translated individually the 40 items from English to German and through a process of inter-rater agreement where all three agreed on the translation determined the German translations of the 40 symbols. An external expert from the Baumann Foundation (Basel) was asked to proofread the translations as well. The question as to the adequateness of the procedure of attaching a "correct meaning" to the symbols was discussed. However, the main idea of the present study was to test the hypothesis of replicability of the results from the initial Rosen et al (1991) study in a different cultural and linguistic context; it was agreed, therefore, to apply the exactly same procedure for the experiment.

The participants in this experiment were 398 first and second year medical students from the University of Bern and 14 psychology students from the University of Basel.

Students were assigned randomly to the two counterbalancing conditions. Ten protocols were excluded from the analysis due to systematic mistakes or for not filling out the protocols properly.

We utilized the same experimental procedure as Rosen and Smith (1991) in their original main study. The 40 symbols were divided in two sets of 20 symbols and each set was presented to both of the counterbalancing conditions. However, in one condition they were matched correctly with the associated meanings while in the other one they were mismatched. The pairs were presented first for five seconds each and after a rest of one minute the symbols were presented in the same order for eight seconds each in which time the participants were asked to remember and write down the word they saw originally paired with the symbol.

The protocols were coded strictly. A repeated – measures factorial ANOVA was conducted with one within-subjects variable (matching) and one between-subjects variable (counterbalancing). The main effect of matching was significant, F (1, 401) = 125.83, $p < .001$, MSE = 3.047, $\omega^2 = 0.22$; statistically significantly more meanings were recalled for matched pairs than for mismatched pairs. Matching the symbols with their correct meanings benefitted the learning and the subsequent recall. These results replicated the findings of Rosen and team (1991) done in a sample of English speaking students. Being able to replicate the findings that matching symbols correctly with their meanings facilitates learning and subsequent recall in a German speaking sample provides further evidence that archetypal symbols are truly associated with their meanings. Furthermore, this cross-cultural evidence of the associations between archetypal symbols and their meanings demonstrates that it is less likely that the observed effect is related to a cultural context or is a linguistic artifact. In this sense, it can be said that our results provide further evidence that the collective unconscious and archetypes as hypothesized by C. G. Jung have a universal nature.

We conducted analysis as well of the individual items of the ASI following the model of Rosen et al. (1991) (see appendix A). Our intention was to compare the ranking of the

symbols in our study to the ranking which symbols had in the original study. Through calculating an ASI Index for each symbol Rosen and team demonstrated that not all symbols were equally useful in their study. Although there was a partial overlap of the ranking of items in both the Rosen et al. (1991) study and our German-speaking study, such as having the symbols for power (Macht), unity (Einheit), birth (Geburt), masculine (Männlich) and protection (Schutz) rank among the top third of the ASI index as best recalled when in the matched condition, there were also notable differences. Surprisingly, symbols like the ones for soul (Seele) and feminine (Weiblich) dropped into the lowermost third of the ranking in the German study while ranking in the topmost third in the US study. Similarly, the symbol for ascent (Aufstieg) that ranked highest in the rank-order of the US ASI study was in the lower end of the middle group of the rank-order in the German study. The ranking of the symbols in the German study was topped by the symbol of wrath (Zorn). The observed differences can possibly be explained with the different contexts of the samples in the two studies, i.e. socio-cultural factors, as well as immediate context in which the groups were at the time of the experiment might have exerted influence on the results.

In addition, after the experiment was over, participants were asked to fill out a 4-item subjective report. The questions were as follows:

1. Were any of the image-word pairs familiar to you already before the experiment? If yes, which ones?
2. Among the image-word pairs were there ones that you found particularly intriguing? If yes, which ones?
3. Did you use any particular strategy to be able to better learn the image-word pairs? If yes, what was it?
4. Do you have any other comments about the experiment?

184 participants in CB1 and 108 participants in CB2 indicated that they did not know any of the image-word pairs used in the experiment before taking part in it. Among the rest of the participants in both groups there were participants who listed both matched and mismatched pairs as already familiar. To control for previous conscious knowledge of the pairs listed by the participants in their subjective report, we identified and excluded from the analysis all correct answers which corresponded to the pairs listed by the respective participants as familiar from before the experiment. The data were then reanalyzed. There was no change in the results. The effect of matching on learning and recall was still significant, $F(1, 401) = 55.78$, $p < .001$. Thus we can say that even after controlling for previous knowledge the appropriate matching of the symbols with the associated meaning benefited learning and subsequent recall of the words and the associations were not considered to be consciously familiar by the participants.

Almost all pairs – both matched and mismatched, in both groups were listed by some participants as intriguing. Some participants indicated that the intriguing pairs were the ones that they listed as familiar. These answers are particularly interesting since they raise the question about the subjective experience of the participants during the experiment and the personal associations of participants. While this was outside the scope of the present study it would prove worthwhile investigating in subsequent studies.

41 participants in CB1 and 12 participants in CB 2 answered that they used no strategy in learning the pairs in the experiment. However, many participants listed a number of strategies they used to better learn the image-word pairs. Among these the most common ones were: making associations between image and word (mentioned by 71 participants in CB1 and 48 in CB2), constructing stories/sentences with the image and the word (named by 61 participants in CB1 and by 74 participants in CB2), building associations to previous experiences or known facts (given by 23 participants in CB1 and 18 in CB2), finding a personal meaning or associating to a personal memory (memory aid) (by 12 people in CB1

and 14 in CB2), connecting image and word with emotions (named by 2 people in CB1 and 5 in CB2), and constructing scenes or pictures with the image and the word (listed by 13 people in CB1 and 9 in CB2). It is of particular interest that participants noted the use of personal experience or associations related to the image word pairs, as well as emotion.

Among the more common remarks about the experiment were suggestions for improvement of the experimental design such as including numbers on the slides with the images in the second part, showing the image-word pairs on the screen longer, and reducing the number of images. Some included comments concerning the fit of image and word (these did not fit together) or mentioned being able to recall the associations but not the words. These remarks are not surprising and demonstrate the difficulty which the experiment presented for the participants.

The cross-cultural study of the associations between archetypal symbols and their meanings in a German-speaking sample of Swiss students, replicated the findings of Rosen et al. (1991) and demonstrated that there is a highly significant effect of matching on learning and subsequent recall of words correctly matched with the archetypal symbols whose meaning they represent. These results support the hypothesis that archetypal symbols in the collective unconscious and their meanings are truly associated. The fact that even after excluding the pairs which were listed by the participants as familiar from before the experiment the effect of matching on learning and recall was still highly significant supports the hypothesis that the associations between symbols and their meanings are not conscious. Furthermore, our results speak in favor of the universality of the archetype proposed by C. G. Jung and suggest that the observed effect is less likely to be due to cultural influence or linguistic artifacts. The differences in the rank-order of the archetypal symbols in the US study and the Swiss-German study suggest that it is likely that, depending on circumstances, some archetypes come to the fore and affect conscious life more strongly than others.

Kanji as Archetypal Images (see Appendix B)

Chinese characters (*kanji*) originated as a semiotic system independent from the spoken language and, as such, they were used to divine the future as part of the religious practices and rituals of the late *Yin* kingdom (BC 1300 – BC 1000) (Atsuji, 1989). These symbols/signs were adopted as a writing system in the Chinese language and later in the Japanese language where they are presently used as a component of a mixed system of writing together with two syllabaries (*hiragana* and *katakana*), sets of characters which write the smallest segment of language in Japanese – the mora. However, Japanese *kanji* function non-phonetically (Sotirova, 1997; Chen, Yamauchi, Tamaoka & Vaid, 2007) in the system of language and contribute to a slightly different structure of the linguistic sign as a graphic image (Sotirova, 1997). There is right-hemispheric advantage for *kanji* and left-hemispheric advantage for *kana* (*hiragana* and *katakana)* processing (Morikawa, 1981; Yamaguchi, Toyoda, Xu, Kobayashi, & Henik, 2002) in the case of Japanese speakers. This fact suggests that *kanji* are linked to visual schemas or archetypal images. *Kanji* reading is said to more heavily involve visual orthographic retrieval and lexical-semantic system via the ventral route, while *kana* transcriptions of *kanji* words require phonological recoding to gain semantic access through the dorsal route (Thuy et al, 2004).

Considering the circumstances of the origination of Chinese characters, as well as the peculiarity of their mode of cognitive processing as part of the system of Japanese language, Sotirova-Kohli et al. (2011) theorized that Chinese characters might represent symbolic archetypal images and we sought to test this premise empirically.

Our study built on the above described Rosen & Smith (1991) paradigm for studying archetypal (collective unconscious) memory. We conducted a series of three experiments to test the hypothesis that *kanji* are archetypal images. Experiments 1 and 2 were studies based on the original research of Rosen et al. (1991), to test if there is any conscious / cultural knowledge of the correct meaning of the 40 Chinese characters which would facilitate

learning and recall of the characters. Experiment 3 (the main study) was designed to test if showing characters matched with the correct meaning would have an effect on learning and recall. In all three experiments we used the same set of 40 characters written in *Tensho* style.

Experiment 1 was a free association task. Twenty-nine randomly assigned undergraduate students of psychology were shown the 40 characters for 20 seconds and, in this time, were asked to come up with a word that best represented the image. Only three characters were recognized correctly out of 1080 (40x27) possible correct answers. The results revealed little if any conscious knowledge of the characters.

Experiment 2 was a forced association task. Twenty-nine, different, randomly assigned undergraduate students in psychology were given the forty characters and a list of eighty words – forty correct meanings of the characters and forty incorrect meanings, and were asked to choose from the list the word that in their opinion best represented the meaning of the respective image. Twenty-six characters were recognized correctly out of 1160 (40x29) possible correct answers. Analysis demonstrated that participants were poorer than expected by chance at matching characters with their correct meaning (Sotirova-Kohli et al., 2011). The results confirmed that the participants have no conscious knowledge of the meaning of the characters.

Experiment 3 was a paired-associate learning task. We hypothesized that if kanji characters, like archetypal images (Rosen et al., 1991), were matched with their correct meanings, these correctly matched pairs would have a higher rate of learning and recollection than characters paired with incorrect meanings. Two different groups of randomly assigned introductory psychology students at Texas A&M University (a total of 192) took part in the study. The set of forty Chinese characters was divided into two sets, each consisting of twenty characters. Each of the two groups of students was presented with both sets of characters; however, in each group a different set was matched correctly with the meaning – word. The students were shown first the character-word pairs for five seconds and, after a rest of one

minute, they were shown only the characters for eight seconds each and asked to write down the word they saw previously paired with the character.

The results were scored strictly. Only words which were the same as the presented stimuli words were counted in the process of scoring (i.e., synonyms were not accepted as correct answers). A repeated-measures factorial ANOVA with one within-subjects variable (matching- matched vs mismatched) and one between-subjects variable (counterbalancing) was conducted to analyze the data. The main effect of matching was significant, F (1, 168) = 12.986, $p < .001$; i.e., significantly more meanings were recalled for matched pairs than for mismatched pairs. Matching Chinese characters with their correct meanings at the time of study benefitted learning and subsequent recall. This result mirrors the results of Rosen et al. (1991), and supports the idea that kanji characters are associated with their correct meanings; such pre-existing knowledge makes paired associates easier to learn and recall, as compared to paired associates that are not meaningfully paired (as already pointed out e.g., Thomson & Tulving, 1970). Given the results of experiments 1 and 2, it appears that this pre-existing knowledge of *kanjis*' meanings is unconscious.

The results from Experiment 1 and Experiment 2 demonstrated that there was little or no spontaneous conscious knowledge of the meaning of the Chinese characters. The results from the main study (Experiment 3) lend weight to the hypothesis that there is unconscious knowledge of the Chinese characters and their meanings that is triggered as a result of priming when subjects are shown correctly-matched pairs of characters and their meanings. The results from our study are similar to the previous studies of collective unconscious (archetypal) memory of Rosen et al. (1991), Huston (1992) and Huston et al., (1999). We can say that *kanji*, in a certain sense, behave on a cognitive level in a similar fashion to archetypal symbols. These findings are encouraging in that they reaffirm the possibility of empirical study, the existence of collective unconscious (archetypal) memory, and reinforce the proposed connection between the archetype and its cognitive semantic nature as image

schema (Knox, 2003). Although our experiments were not designed to test whether Chinese characters are metaphoric extensions of image schemas, embodied cognition seems to be another possible explanation of the observed results. As we pointed out earlier, *kanji* as visual images were developed following certain systematic rules which were supposed to enable these images to encode the signified of the linguistic sign independent of, but in a fashion similar to the phonetic image/signifier, i.e., they encode the same content but independent from the phonetic signifiers/sound images of the words and do not function phonetically. One of the key assertions of cognitive semantics is that image schemas underlie thought and language. As pointed out above, they are considered to be neuronal activation maps, "experiential gestalts which momentarily emerge from ongoing brain, body and world interactions" (Gibbs, 2005, p.115) and can be "turned on" by either performing an action or having an actual experience, observing this experience or action, or thinking, speaking, reading, or writing about it. Thus, image-schematic thought and linguistic processes involve embodied simulation of experience using one's body (Ibid.). Research demonstrated that activation of certain image schematic spatial or temporal relations affects linguistic comprehension, human actions and memory (Hampe, 2005). In particular, Raymond Gibbs (2005), quoting the work of Richardson et al (2003), argued that participants had better memory of pictures presented after a verbal stimuli when the pictures and the verbal stimuli were oriented along the same spatial axis. Further Gibbs concluded that "verb comprehension appears to activate image schemas that act as scaffolds for visual memory of the pictures" (Ibid., pp. 121 - 122). Although the particular studies quoted by Gibbs to demonstrate the effect that verbal stimuli can have on memory of pictures, depending on the image schematic congruence between the two, concern verbs, there is a multitude of other evidence which demonstrate that whether a verbal stimuli and a picture present congruent image schematic relations of events or not affects learning and speed of subsequent recognition (Hampe, 2005). Therefore, we can hypothesize that one possibility to explain the results from our study is that

both *kanji* or visual stimuli and their archetypal meanings – verbal stimuli recruit similar image schematic internal maps which facilitates learning and recall of the symbols matched with their correct (archetypal) meaning. However, future research is needed to empirically demonstrate the validity of these theoretical speculations, as well as the assertions that archetypes are what cognitive semantics call image schemas.

GENERAL DISCUSSION

Conclusions

On the basis of the above theoretical analysis of findings in psychology and the findings of our experimental investigations, as well as the previous research which tested directly the archetype hypothesis of C. G. Jung, there is ground to say that the theory of the archetypes seems to find support and that there is empirical evidence for the existence of psychic archetypal structures. Different aspects of the archetype theory are supported by findings in neuroscience, developmental psychology, systems theory, and cognitive psychology as argued above. However, much further empirical research is necessary to determine the psychological nature of the archetypes.

Our empirical investigations reaffirm in the first place the possible empirical study of the hypothesis of collective unconscious. They confirmed the findings of the existence of collective unconscious (archetypal) memory. The cross-cultural investigations of the associations between archetypal symbols and their related meanings reported in this work replicated the findings from the original US study (Rosen et al., 1991) and demonstrated that there was a highly significant effect of matching on learning and subsequent recall of words presented in the learning phase correctly matched with the archetypal symbols whose meanings they represented. These results support the hypothesis that archetypal symbols in the collective unconscious and their meanings are truly associated. The fact that most of the participants indicated that they were not familiar with any of the symbol-word pairs before the experiment also supports the hypothesis that there is no conscious awareness of the associations between symbols and their related meanings. Furthermore, our results speak in favor of the universality of the archetype proposed by C. G. Jung and suggest that the observed effects in the studies is not likely to be explained as a result of cultural influence or a linguistic artifact.

The empirical investigations of Chinese characters (kanji) as archetypal images demonstrated that Chinese characters trigger within the system of language unconscious/implicit knowledge of meanings similar to archetypal symbols. The nature of Japanese language allows, in this respect, consciousness of contents of the archetypal level independent from the phonetic signifiers of language by means of the graphic representation of the concepts in language. The results we observed reinforce the proposed connection between the archetype and its cognitive semantic nature as image schema (Knox, 2003). Although our experiments were not designed to test whether Chinese characters are metaphoric extensions of image schemas, embodied cognition seems to be another possible explanation of the observed results. Furthermore, even though proponents of the theory of embodied cognition argue that concepts in alphabetical languages are metaphoric extensions of image schemas as well, we can argue that including a graphic image with archetypal qualities as equal to the phonetic image of the word contributes to a different pattern of encoding and representation of information in the mind as consciousness.

Future Directions

The results from our investigations demonstrated that there is a strong association between archetypal symbols and their related meanings which is implicit in nature and can be triggered in consciousness through an effect of priming. The cross-cultural investigations supported the hypothesis that the results observed in the original English study of the associations between archetypal symbols and their meanings, cannot simply be explained as a cultural or linguistic artifact. These first investigations demonstrated as well the possibility to test hypotheses from analytical psychology experimentally.

These were, however, first steps in establishing an empirically based theory of the archetype and the collective unconscious. There are still many questions open for future research.

Among these we can mention the need of further cross-cultural studies of the associations between archetypal symbols and their meanings in other language families (e.g. Chinese, Japanese, Russian, etc.), as well as in different populations: different age groups (elderly, children) or also in groups of clinical populations such as amnesic patients.

It is highly intriguing to test empirically the proposed multiple new reformulations of the archetype theory and in particular the view that the archetype can be understood in terms of image schemas and embodiment.

Furthermore, it would be a natural development of the Rosen and Smith paradigm (1991) to develop a Symbol Association Test procedure using the ASI and to study the associations of people with its help. Comparing the results of a Symbol Association Test to the work with the Word Association Test can shed light on the mechanisms and memory systems involved in cognitive processing when a complex is activated, as well as on the cognitive nature of complexes and archetypes. In this respect, it would be particularly interesting to conduct fMRI studies of participants involved in a Symbol Association Test and compare the observed activation patterns with the findings of Bechtel (2013) from his study of the neuronal activation patterns underlying the activation of a complex in participants involved in taking the Word Association Test.

Conducting fMRI studies of participants involved in making the paired-associates learning task from the main experiment in Rosen and Smith's paradigm could provide evidence for or against the neuronal mechanism at work in triggering archetypal associations proposed by Huston, Rosen and Smith (1999). Such studies can help to understand what processes are related to the complexes and the archetypal associations through providing evidence of the neuronal activation patterns which correlate with the cognitive functions involved in fulfilling the respective tasks.

The investigations in relation to Chinese characters as archetypal symbols can be enriched through conducting cross-cultural replications with Chinese- and Japanese-speaking

native speakers, as well as in samples of children. To test the effect of the written form on the strength of association between graphic image and meaning, different written styles of the Chinese characters could be used in the experiment instead of the Tensho style forms used in our study. Furthermore, in addition to the pairs of Chinese characters and their English translation word, pairs of the respective Japanese words written in the syllabaries (instead of in kanji) and the English translations can be added to the paired associates used in the main study to test whether the strong associations observed in our study were really due to the archetypal nature of the Chinese characters. It would be particularly interesting to test if there would be a different degree of strength of association between the Chinese character and its meaning depending on the category of graphic image as defined by the system of Rikusho that was used in the experiment.

In conclusion, the empirical investigations reported here tested Jung's hypothesis of the archetypes of the collective unconscious and provided evidence in its support. Theoretical considerations of the nature of the archetype as proposed by Jung and findings in contemporary psychology and neuroscience demonstrated that Jung's ideas find support in many developments of mainstream academic psychology today. However, much further research is necessary to be able to draw empirically based conclusions about the psychological nature of the archetypes and to demonstrate the mechanisms at work related to the archetypes.

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APPENDIX A

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Article

Symbol/Meaning Paired-Associate Recall: An "Archetypal Memory" Advantage?

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Abstract: The theory of the archetypes and the hypothesis of the collective unconscious are two of the central characteristics of analytical psychology. These provoke, however, varying reactions among academic psychologists. Empirical studies which test these hypotheses are rare. Rosen, Smith, Huston and Gonzales proposed a cognitive psychological experimental paradigm to investigate the nature of archetypes and the collective unconscious as archetypal (evolutionary) memory. In this article we report the results of a cross-cultural replication of Rosen *et al.* conducted in the German-speaking part of Switzerland. In short, this experiment corroborated previous findings by Rosen *et al.*, based on English speakers, and demonstrated a recall advantage for archetypal symbol meaning pairs *vs.* other symbol/meaning pairings. The fact that the same pattern of results was observed across two different cultures and languages makes it less likely that they are attributable to a specific cultural or linguistic context.

Keywords: archetypes; collective unconscious; memory; cross-cultural study

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1. Introduction

The notions of archetypes and the collective unconscious, which are central to analytical psychology, have generally remained outside the domain of inquiry of mainstream academic psychology. Nevertheless, there are emerging efforts to integrate ideas from analytical psychology and those drawn from cognitive psychology, neuroscience and even physics, e.g., [1–9], *etc.* To date, these efforts have largely aimed at a theoretical or conceptual integration. Attempts to operationalize or empirically test ideas from analytical psychology are still fairly uncommon.

Two studies that did seek to provide an empirical test of the notion of archetypes are therefore noteworthy, see [2,10]. Rosen *et al.* [2] found that participants could not reliably identify the proposed associated meaning of symbols deemed to be archetypal when they relied only on resources available to consciousness. However, when participants were presented with pairs of symbols and meanings to learn in a paired-associate recall procedure, they showed significantly better recall of those pairs in which the archetypal symbols were matched with their associated archetypal meanings than those in which the associated meaning did not correspond to the archetypal meaning. In interpreting their results, the authors theorized that the presentation of the symbol and the associated meaning mobilized prior, implicit associations encoded in memory which under normal conditions are not available to conscious recall. The results of this initial study were subsequently replicated by Huston [11] and Bradshaw and Storm [12].

Although these results may be viewed as lending empirical support to the notion of the existence of collective unconscious (archetypal) memory, they may also reflect linguistic or cultural characteristics of the population tested (native speakers of English in the United States and Australia). To determine whether the obtained effect is not unique to this population it is important to conduct studies with native speakers of other languages, and in other cultural contexts. This was the aim of the present study. In this study we developed a German language adaptation of the materials used by Rosen *et al.* and tested participants residing in the German-speaking part of Switzerland. It was hypothesized that if certain symbols truly have underlying, perhaps universal, "archetypal" meanings, then they should be significantly better recalled if they are paired in a memory task with those meanings than if they are paired with other meanings unrelated to the archetypal ones.

Before proceeding with a description of our study a brief background discussion of archetypes as developed by Jung is in order.

1.1. Archetypes

Unlike Freud, Jung believed that the dynamic unconscious was not just the seat of sexual and aggressive instincts and repressed wishes. Through his work with the word association test, the study of myths and fairy tales, and of fantasy products of psychotic patients, Jung reached the conclusion that there was a layer of the unconscious which contains images, patterns of behavior and modes of perception accessible to the whole of the human race (and to the animal world, as well). He named these specific patterns of perception and behavior which crystallize in consciousness in the form of symbols *archetypes* (the word *archetypos* was used by Plato for his ideas and Jung knew this as was pointed out by Barnes [13]). Jung and suggested that archetypes were "empty and purely formal" ([14], p. 79, par. 155),

"a possibility of representation given *a priori*" ([14], p. 79, par. 155). Further on, Jung stressed that "the representations themselves are not inherited" ([14], p. 79, par. 155). In this sense, Jung believed that the archetype-as-such is unknowable and "irrepresentable" ([15], p. 213, par. 417); rather, it affects consciousness mainly from its "ability to organize images and ideas" ([15], p. 231, par. 440). In Jung's view, the archetype "can be named and has an invariable nucleus of meaning—but always only in principle" ([14], p. 80, par. 155). Anything we say about the archetype remains a visualization which is made possible by the current state of consciousness at a given moment. Archetypes for Jung are numinous (that is, highly emotionally charged) and are associated with strong affective responses. Furthermore, the archetype was thought by Jung to have a "psychoid nature" ([15], p. 215, par. 419), which he described as follows: "the archetype describes a field which exhibits none of the peculiarities of the physiological and yet, in the last analysis, can no longer be regarded as psychic, although it manifests itself psychically" ([15], p. 215, par. 420). In other words, as conceptualized by Jung, archetypes-as-such while being universal are unknowable or unconscious, but can have a profound impact on consciousness and the life of the individual. They do not belong just to the psychic sphere and seem to be given *a priori* as a possibility or as a form without content.

It has been noted that Jung's account of archetypes is multifaceted. For example, Roesler [9] pointed out that we can speak of at least four different definitions of the archetype in Jung's writing. The first is a biological definition, according to which the archetype was considered as an inborn pattern of perception and behavior. The second definition is an empirical-statistical one based on Jung's work with the word association test, according to which the archetype is the nucleus of the categories of complexes noted by him in different individuals. A third definition views archetypes as transcending any particular time, place or individual and whose real nature can never become conscious. Finally, there is a cultural-psychological understanding of the archetype which differentiates between the archetype-as-such and its concrete manifestations which are culturally determined [9]. Although depending on the theoretical orientation there can be significant overlap between these definitions, the research reported here investigates primarily the first, biological, definition of the archetype but it is also compatible with the third definition.

Contemporary researchers have tried to reformulate the theory of the archetype to make it more compatible with notions in modern science. Among one of the most well formulated approaches is a model which theorizes that what Jung might have meant with the archetype is similar to the contemporary cognitive semanticists' notion of *image schemas* [3–5,16–18], that is, a structure of sensorimotor experience that captures a "dynamic, recurring pattern of organism-environment interactions" ([19], p. 136), that can be—"recruited for abstract conceptualization and reasoning" ([19], p. 141). Image schemas are thought to be "preverbal and mostly nonconscious" ([19], p. 144). Jean Knox [3] first proposed a connection between the notion of an image schema and the archetype-as-such. In this sense the archetype is looked at as an early achievement of development resulting from the qualities of the brain as a dynamic system and the interactions between the individual (biological and psychological) and the environment (social, cultural and physical). This understanding of the archetype uses a dynamic systems approach to the development of cognition and action. This approach to cognition and action relates to the process of formation of preverbal image schematic representations in the infant's brain which are largely determined by the history of the brain as a system, *i.e.*, are based on the experience the system has in the physical world and the ability of the brain as a dynamic system to self-organize [20].

Later on, this pre-verbal neuronal activation pattern serves as a foundation for the development of conceptual thought—categories and concepts. In themselves these neuronal activation patterns constitute attractor states for the dynamic system of the brain.

The idea of the image schema also finds support in contemporary research on embodiment where embodiment is defined as the meaning of symbols to an agent and the reasoning about meaning and sentence understanding which "depends on activity in systems also used for perception, action and emotion" ([21], p. 4). Neuroimaging studies support the idea that sensory and motor systems are involved in concept understanding and retrieval [22]. Thus, image schemas can be understood as neuronal activation patterns which encode embodied experience in the world. They function automatically, *i.e.* unconsciously, and underlie concepts, narrative and ritual [23], all qualities which can be attributed also to archetypes.

Varela, Thomson and Rosch [24] propose a slightly different approach to cognition and action, namely, an *enacted cognition* approach to the study of mental processes and representations. According to this approach, cognition is "enaction: a history of structural coupling that brings forth a world" ([24], p. 172); this view seems consistent with most of the above mentioned ideas. Varela *et al.* go a step further to suggest that "the cognitive system projects its own world, and the apparent reality of this world is merely a reflection of internal laws of the system" ([24], p. 172).

Among Jungian scholars, George Hogenson [25] looked into the connection between archetypes and mirror neurons and proposed understanding the archetype as an "elementary action pattern" ([25], p. 325), which sounds similar to some of the ideas of the enacted cognition approach of Varela, Thomson and Rosch. Other Jungian scholars stress in their re-interpretation of the nature of the archetype non-linear dynamics which underlie both the functioning of the brain as a system and some aspects of the archetype related to, for example, synchronicity, enantiodromia, or the therapeutic relationship looked at as a dynamic open system. Hogenson proposed that the archetype could be understood as an "iterative moment in the self-organization of the symbolic world" ([26], p. 279). Saunders and Skar have suggested that the archetype is an emergent structure which derives from the self-organizing properties of the brain (a notion very similar to the theory of the image schema) [27]. McDowell stressed that the archetype was a pre-existing principle of the organization of personality [28], while van Eewynk [29,30] looked at archetypes as strange attractors of the dynamic system of the psyche whose non-linear dynamics underlie individuation and the therapeutic relationship.

Perhaps one of the most controversial aspects of the notion of archetypes is that of innateness. How do we understand innateness and what was actually meant by Jung when he stated that archetypes are *a priori* given to us? Furthermore, how do we understand the innateness of archetypes in an age in which the meanings of symbols are not likely to be transmitted genetically?

While there are still proponents of the idea that archetypes are transmitted genetically (see for further information the review by Roesler [1]), many consider discussions of nature *versus* nurture to be obsolete and stress the *interactionist* nature of human development [1,4,9,17,25,31] or point out psychological factors in evolution in the argumentation against a purely genetically transmitted innateness [32]. The innate aspect of the archetype can also be looked at as predisposition to a genetic condition which needs certain environmental cues to find expression in the sense of epigenetics as described by Roesler [1,9] and Rosen [31,33]. In the light of new discoveries it might well be the case that this epigenetic process which provides the link between environment and genome and determines

which genes are being active and which are deactivated might even be more important than the genes themselves and may provide the link between biological substrates—genome and cultural heritage—behavior, habits *etc.* [34]. The Jungian scholar Pietikanen [35] suggested a radical departure from the discussion about innateness and proposed that with the help of a Cassirerian approach archetypes could be understood as "culturally determined functionary forms organizing and structuring certain aspects of man's cultural activity" ([35], p. 325).

Regarding inborn behavior and archetypes there appears to be empirical support for innateness in experimental psychology for a range of phenomena including the deep structure of language [36], early attachment patterns [37], the idea of "basic emotions", language acquisition mechanisms, and a face recognition program [1,9]. Roesler [1] points out Seligman's concept of "preparedness to learn" as a further example of innateness that can be applied to archetypal theory. Similarly, Erik Goodwyn [8,38] uses in defense of innateness findings from evolutionary psychology and neuroanatomy.

We can also say that controversies concerning innateness and the archetype reflect broader controversies in psychology at large. While approaches such as the dynamic systems approach, cognitive semantics, embodiment and enacted cognition as approaches in the study of cognitive processes enjoy widespread popularity, there are also many scholars who conduct experimental work in connection with innate mechanisms. The experimental work of developmental psychologists such as Spelke provides data which supports the hypothesis of multiple innate mechanisms with which infants are equipped at birth. Spelke suggests that "perception, thought, value and action depend on domain-specific cognitive systems" and "each system has its own innate foundations and evolutionary history" ([39], p. 204). For example, in a recent study Izard, Sann, Spelke and Steri [40] report findings that support the assertion that infants at birth are equipped with abstract, numerical representations. Yet other cognitive scientists do not readily accept the notion that there are innate foundations for cognitive capacities, particularly for certain capacities, such as language. It, thus, seems that cognitive science at large is still grappling with questions concerning innateness.

The debate around the nature of the archetype is further enriched by archetypal psychology which sees the place of the archetype in imagination and stresses the transcendental nature of the archetype [1,9]. Although this approach to the archetype might not resonate with many mainstream psychologists, there are tendencies in contemporary studies of consciousness which are compatible with the ideas of archetypal psychology. The Hameroff and Penrose quantum theory of consciousness [41], the idea that consciousness "emerges as natural processes" that involve quantum phenomena "unfold[ing]" [42], and the hypothesis that the brain does not produce consciousness but serves the purpose of receiving and transmitting information which exists from beyond it [43] can all be seen to resonate with some of the basic ideas of archetypal psychology concerning the archetype. Furthermore, the notion of synchronicity—meaningful coincidences—based on an acausal connection principle, which Jung developed in exchange with Wolfgang Pauli and Albert Einstein, and which can be seen as an expression of a constellated archetypal field at work [6,44], finds in recent days, support through discoveries in complexity theory and the dynamics of complex adaptive systems [7].

Given all these ideas how are we to understand the archetype? Are archetypes transmitted biologically or are they transmitted by culture as Roesler [1] asks? Can we understand the collective unconscious in terms of subliminal transmission and inter-individual neuronal format as Roesler [1] proposed or is it a form of archetypal memory as Rosen *et al.* [2] suggested? However we reformulate

the theory of the archetype and the collective unconscious most Jungian scholars would agree that the basis of the archetype and the collective unconscious is both innate and environmental. The differences are more in terms of degree and the role of each of the two factors.

While the above developments in psychology provide much food for thought, finding a way to test notions about archetypes, however this notion is formulated, would be instructive. We thus turn to two previous empirical studies which attempted such a test and found empirical support in favor of the existence of something akin to archetypes, henceforth termed *the archetype hypothesis*.

1.2. Previous Research

Apart from the above mentioned theoretical discussions concerning the nature of the archetype a few scholars have sought to empirically test the hypothesis of archetypes and archetypal memory. As mentioned above, Rosen *et al.* [2], as well as Huston, Rosen and Smith [45], Bradshaw and Storm [12] and Maloney [10] examined this in the domains of memory and preferences.

Maloney [10] asked a community sample of 151 participants to rate their preferences to images containing archetypal themes and factor analyzed the responses. The images included the archetypal themes of the mother and the hero in both anthropomorphic (e.g., woman gazing lovingly at a child for the positive mother, Hercules for the positive hero) and non-anthropomorphic (e.g., the cave as a symbol of the Great Mother, the heraldic lion as a symbol of the hero) form. Both positive and negative aspects of these themes were examined. The study used an unconstrained Q-sort method. Participants were presented with sets of six images and asked to rate their responses to three questions in respect to the images using a limited set of possible answers. The analysis demonstrated a stable three-factor structure underlying responses to the question "If I were to keep this image with me forever, I would be". Factor 1 contained images related to a quest theme—the positive hero, the non-anthropomorphic hero, the non-anthropomorphic mother, according to the author. Factor 2 was reported to contain images related to an attachment theme—positive mother. Factor 3 was interpreted as being related to a conflict theme. The author thus concluded that "archetypal structure underlies adult affective responses" ([10], p. 110). Furthermore, Maloney concluded that the images alone were not enough to evoke an archetypal structure, they had to be viewed in a certain way so that the structure was triggered which in the design of his study was achieved through the question that the subjects had to answer. Only the question which required most active participation on the part of the participants in assessing the images yielded significant results.

A different experimental paradigm was developed by Rosen, Smith, Huston and Gonzales [2]. Rosen and colleagues argued that a natural extension of Jung's own early studies with the Word Association Test would be the study of associations on the basis of symbols. They developed an inventory of forty symbols and forty associated words which were intended to correspond to the symbol's archetypal meanings—The Archetypal Symbol Inventory (ASI). Furthermore, they designed a cognitive psychological experimental paradigm to test the hypothesis that archetypal symbols were strongly associated to these proposed underlying meanings and that the association lies beyond conscious retrieval under ordinary conditions. Rosen *et al.* conducted a series of three experiments with undergraduate students in psychology at a large university in southwestern U.S. The first two experiments tested participants' conscious knowledge of the symbols and their meanings. When they

were shown each of the ASI symbols, and asked to guess the meaning of each symbol, American participants could not come up with the designated meaning of the symbols. Even more surprisingly, when they were given the 40 ASI symbols with a randomly ordered list of the meanings, participants were unable to match symbols to their correct meanings above the level of chance. These results show that participants were not consciously aware of the meanings of the symbols. The third experiment was a paired-associate learning task in which students (divided into two groups) were first shown all forty symbols. Each group was given half of the symbols matched with the proposed associated meanings and the other half with symbols and meanings mismatched (the particular pairings were counterbalanced across the two groups). After a one minute rest participants were shown only the symbols and were asked to remember and write down the word they initially saw paired with the symbol. It was found that students learned and recalled significantly better the words whose meanings corresponded to the proposed meanings of the archetypal symbols than those that were unrelated to the purported meaning of the symbols. From the list-learning research literature (e.g., [46,47]) it is known that pairs of strongly associated words are learned better than less associated pairs. This gave ground to the authors of the study to conclude that archetypal symbols are strongly associated to the proposed related meanings and that the association is unconscious.

Huston, Rosen and Smith [45] proposed a mechanism to explain the observed effects in the original Rosen *et al.* study and a second variation of the research [11]. They suggested that when a symbol was presented paired with its associated "archetypal" meaning priming occurs which facilitates later recall. The correctly paired symbol with its proposed related meaning also triggers an emotional response which contributes to the "activation and constellation of an archetypal image" ([45], p. 147). The constellated archetypal image and the associated meaning presented to participants together led to priming of memory for the association and facilitated later recall. The mechanism proposed by the above authors is still in the realm of hypothesis and needs to be experimentally tested.

In a recent study Bradshaw and Storm [12] conducted three experiments based on the Rosen and Smith paradigm using 30 out of the original 40 symbols from the ASI in a sample of 237 students and members of the general public in the state of Victoria, Australia. The sample consisted of predominantly Australian/New Zealander citizens (81%) and was predominantly English native speaking (around 86%). The other countries/regions represented were respectively, Britain (3%), Europe (4%), Asia (7%), America (North and South 2%) and Other 3%. The authors replicated the results of Rosen and Smith in the free association task (Experiment 1) and detected in the forced association task (Experiment 2) seven out of 30 symbols which could be consciously known by the participants. For the rest of the symbols there was no statistical evidence in the forced association task for conscious knowledge. The authors modified the paired-associate learning task used in the third experiment of the paradigm. To additionally control for intermediate effects they presented four randomized versions of symbol-word sets, *i.e.* instead of two counterbalancing conditions they had four. Furthermore they modified the timing in the list learning task giving participants 8 seconds in the learning phase as opposed to 5 seconds in the original paradigm and 20 seconds in the recall phase as opposed to 8 seconds in the original paradigm. As stimuli the authors used a set of pictures and drawings of the symbols predominantly downloaded from Internet instead of the original images from the ASI. There was no explanation given for the above modifications. The results replicated the findings of Rosen *et al.* [2] and Huston [11]. Matching words with the symbol that they are associated

with, benefitted learning and subsequent recall of the words. The authors reported a statistically significant difference between the different versions of the main experiment. There was a statistically higher recall rate for both matched and mismatched recall in one of the versions. This was partially explained by the age difference between the participants in this version (M = 23 years) and one of the other versions (M = 30 years). No information is available about the mean age in the other groups, as well as the means and standard deviations for matched and mismatched recall in the different groups. Furthermore, the authors detected increased difficulty in learning and recall of mismatched pairs with increased age in their sample (mean age 27, SD = 11 years). No significant interaction between country and ethnicity and performance was found on any of the tasks in all three experiments. This is not surprising since as noted above the sample consisted of predominantly Australian/New Zealander citizens (81%). The number of participants from other countries of origin was very small. As such it could be argued that the sample size of the individual ethnic groups (distributed across the 6 different conditions) was too small to detect any meaningful difference. There is also no information available about how the different ethnic groups or counties of origin were represented across the different experimental conditions. Furthermore, the experiment was carried out in English. All participants, even those who were not native English speakers (14% or less since the authors did not control for language which the participants consider to be their native language) used English as the experimental language. In this sense, it cannot be ruled out that the effect which the authors report (no difference in performance between the different ethnic groups, as well as the significant effect of matching on learning and recall) can be explained by characteristics specific to the English language.

Following its publication the Rosen *et al.* study led others to wonder how robust or generalizable the findings were. Jill Gordon [48] posed the question whether the images used by the team could be considered to be archetypal before additional, cross-cultural, research is conducted using the same paradigm. Similarly, Gordon stressed the importance of conducting cross-cultural studies to determine whether the images used really had the qualities of archetypal images, namely, whether these were "forms that provoke more or less similar or even identical associations from a majority of people" ([48], p. 229). Raya Jones argued in a similar fashion that the results observed by Rosen *et al.* could be explained either in terms of "cultural convention" or as "artifacts of the statistical procedure" ([49], p. 707).

2. Present Study

Motivated by the question of whether the findings of Rosen *et al.* [2] are replicable in a different language and in a different cultural context we decided to conduct the same experiment in another context. We chose for the setting of our study the German-speaking part of Switzerland; although English and German are related languages, there are sufficient cultural differences between the southwestern region of the United States and Switzerland that we felt justified in considering the latter to be a sufficiently different cultural environment. We reasoned that if the results observed by Rosen and colleagues were related to the archetypal nature of the symbols used in the experiments then these results should be replicable in cross-cultural studies conducted in a different language and a different cultural context.

Thus we hypothesized that if the "archetype hypothesis" has merit, then symbols representing archetypes and their proposed German meanings would also be significantly better learned and

recalled than mismatched pairs. The Archetypal Symbol Inventory is composed of forty symbols with occurrence in different cultures and their accepted meanings, that is, the associated accepted meaning of the symbols across cultures. Since the main idea of the present study was to test the replicability of the results from the initial Rosen *et al.* [2] study in a different cultural and linguistic context, it was agreed to apply exactly same procedure for the present experiment.

2.1. Participants

A total of 412 college students were recruited for the experiment. They included two different groups of randomly assigned first and second year students from the Medical School at the University of Bern, as well as 14 randomly assigned psychology students from the University of Basel. None of the students had studied archetypal symbolism. Ten students' data were excluded from the analysis due to incomplete completion of the protocols. Thus the total number of participants in the subsequent analysis was 402.

The experiment was conducted in two groups (counterbalancing conditions where the participants were assigned randomly). There were 221 students in counterbalancing condition 1 (CB1) and 181 students in counterbalancing condition 2 (CB2). The average age of participants was 21 years; one participant did not indicate her age. Overall 224 women and 178 men took part in the experiment.

In terms of language background, a total of 366 participants indicated that their primary language was German. An additional 35 participants indicated having a native language other than German; one participant did not indicate native language. The first languages of these participants included Hindi (1), Spanish (2), Serbian (1), French (6), Czech (1), Romansh (3) (the fourth official language of Switzerland), Italian (6), Dutch (1), Tamil (3), Bosnian (1), Croatian (1), Portuguese (1), Turkish (2), Bulgarian (1), English (2), Polish (1), Albanian (1), and Slovenian (1). However, since all participants were studying in fields which required passing a highly competitive entrance exam in German and subsequently took classes and exams in the German language, the research team assumed that the level of language proficiency of these participants is close to that of German speaking native speakers.

2.2. Materials

The original English Archetypal Symbol Inventory (ASI) was translated into German (for a description of the process of development of the ASI see Rosen *et al.* [2]). For this purpose the first three authors individually translated the forty items from English to German and then through a process of inter-rater agreement arrived at the final set of German translation equivalents for the forty symbols. An external expert from the Baumann Foundation (Basel) with long experience as a Jungian analyst, supervisor and training analyst, was asked to proof read the translations as well [50].

2.3. Procedure

Following Rosen *et al.* [2], a paired-associate learning task was devised. Each group of participants was presented the whole set of forty symbol-word pairs, however, twenty of these were matched with their related meanings and twenty were mismatched, that is, paired with unrelated meanings. The matched pairs in the first counterbalancing condition were presented mismatched in the second

counterbalancing condition and *vice versa*. Furthermore, in counterbalancing condition 2 (CB2) the images were shown in reverse order from the order of presentation in counterbalancing condition 1 (CB1) to control for any residual effects related to the order of presentation, as done in the original study. Students were instructed to try to remember the pairs they were shown and received no explanation as to the relationship between the image and the word.

The participants in each group initially saw each image-word pair for 5 seconds and after a 1- minute rest they were shown the images in the same order as in the beginning. This time each image was presented without the word for 8 seconds on the screen. During this time the participants had to try to recall the word they saw initially paired with the image and write it in the respective field of the test protocol. The stimuli were presented using Microsoft Power Point.

Finally, participants were asked to fill out a subjective report consisting of four questions after the end of the experiment. The questions were as follows:

(1). Were any of the image-word pairs familiar to you already before the experiment? If yes, which ones?
(2). Were there among the image-word pairs, ones that you found particularly intriguing? If yes, which ones?
(3). Did you use any particular strategy to be able to learn better the image-word pairs? If yes, then what was it?
(4). Do you have any other comments about the experiment?

3. Results

The responses given by participants were scored using a strict criterion. Only words which were the same as the stimulus words or their word forms were coded as "correct", no synonyms or association words to the stimuli were allowed. Three stimulus words proved to be particularly difficult for the participants—*Unbewusstes* (unconscious), *Vervollständigung* (completion) and *Schöpfungskraft* (generativity). Among the answers there were a small number of word forms such as for *Unbewusstes—Unterbewusst(sein)* (34 in CB1 and 14 in CB2), for *Vervollständigung—Vollständigkeit* (6 in CB1 and 3 in CB2) and for Schöpfungskraft—*Schöpfung* (57 in CB1 and 35 in CB2) which needed special attention since these were rather distant word forms of the stimulus words. These word forms appeared as answers in both conditions independent of the fact whether the stimulus word was correctly matched with the symbol whose meaning it represents or not. The subsequent analysis demonstrated that the manner of coding of these answers did not affect significantly the results and it was decided to code the word forms as "correct".

Furthermore, a technical mistake in the power point presentation of CB2 was discovered. The slide with the mismatched pair-square with the word '*Wohltätigkeit'* (charity), had appeared sizably shorter on the screen which had prevented the participants from learning the pair, therefore both symbols affected by the mistake the Square (No. 7) and the Heart (No. 5) were removed from the subsequent analysis in both conditions.

A repeated measures factorial ANOVA with one within-subjects variable (Stimulus Type—matched *vs.* mismatched symbol-meaning pair) and one between subjects variable (Counterbalancing—CB1 *vs.* CB2)

was conducted to analyze the data. The means and SD of the recall rates for matched and mismatched pairs in each counterbalancing condition are summarized in Table 1.

Additionally percentages of correctly recalled matched and mismatched words were calculated for each group following the procedure of Rosen *et al.* [2]. The total number of correctly recalled matched words in each condition was divided by the total possible number of correctly matched responses in the condition and the same procedure was repeated for the mismatched pairs in both conditions. Overall percentages of correctly recalled matched and mismatched words for both conditions were calculated as well. The results are summed in Table 1. In both groups, and for all subjects, the percentage of correctly recalled matched words was higher than the percentage of correctly recalled mismatched words.

Table 1. Means, SD and percentage correct answers for both conditions.

	Matched			Mismatched		
	%	Mean	SD	%	Mean	SD
Counterbalance 1 (CB1) (N = 221)	70	12.59	2.66	60.27	12.05	3.29
Counterbalance 2 (CB2) (N = 181)	64.72	12.94	3.3	59.48	10.71	3.2
Total (N = 402)	67.47	12.75	2.97	59.93	11.45	3.32

The main effect of stimulus type was significant, F (1, 401) = 125.83, $p < 0.001$, MSE = 3.047, effect size $\omega^2 = 0.22$; indicating a significantly higher recall accuracy for matched pairs than for mismatched pairs (see Table 1). Matching the symbols with their proposed associated meanings benefited learning and the subsequent recall.

3.1. Item Analysis

We also conducted analysis of the individual items of the ASI following the model of Rosen *et al.* [2]. Our intention was to compare the ranking of the symbols in our study to the ranking which symbols had in the original study. Rosen and team demonstrated that not all symbols were equally useful in their study through calculating an ASI Index for each symbol. The ASI Index was calculated taking into consideration the percentage of correct responses when the symbol and the word were correctly matched and the percentages of correct responses for respectively the symbol and the word when each appeared in a mismatched combination with another word (for the symbol) and another symbol (for the word). For each item the percentage of correct responses when the symbol was mismatched and the percentage correct responses when the word was mismatched were subtracted separately from the percentage correct responses when symbol and word were correctly matched, the two differences were added and divided by two to obtain the ASI index. We conducted the same analysis for all items and the results are presented in Table 2.

Table 2. Archetypal Symbol Inventory (ASI) Summary of item analysis: rank-ordered ASI.

Symbol G/E	ASI No.	% correct answers match	% correct answers mismatch symbol	% correct answers mismatch word	ASI Index
Zorn/Wrath	40	96.13	33.03	43.44	57.9
Geburt/Birth	3	97.73	34.81	74.59	43.03
Schönheit/Beauty	2	96.83	41.99	73.48	39.1
Böse/Evil	9	82.81	22.65	70.72	36.13
Rettung/Salvation	29	90.6	62.44	46.61	36.08
Möglichkeit/Possibility	21	72.38	43.44	33.03	34.15
Einheit/Unity	37	74.66	70.72	22.65	27.98
Männlich /Masculine	17	83.43	24.89	88.24	26.87
Macht/Power	23	83.71	54.14	64.64	24.32
Schlaf/Sleep	31	70.59	35.36	58.56	23.63
Schutz/Protection	25	80.54	75.14	40.88	22.53
Leben/Life	16	83.71	65.19	61.88	20.18
Unbewusstes/Unconscious	36	58.56	39.37	48.87	14.44
Gesundheit/Health	14	72.38	67.42	51.13	13.11
Mut/Valor	38	86.74	74.21	74.21	12.53
Geist/Spirit	33	72.4	59.67	60.22	12.46
Potenzial/Potential	22	69.23	64.64	54.14	9.84
Ewigkeit/Eternity	8	63.35	74.59	34.81	8.65
Wissen/Knowledge	15	57.46	42.08	57.92	7.46
Synthese/Synthesis	34	64.09	51.13	67.42	4.82
Aufstieg/Ascent	1	92.27	92.76	83.71	4.04
Reinigung/Purification	26	65.19	66.52	62.44	0.71
Weiblich/Feminine	10	87.85	83.71	92.76	−0.39
Ursprung/Origin	18	62.9	61.88	65.19	−0.64
Perfektion/Perfection	20	52.04	40.88	75.14	−5.97
Rationalität/Rationality	28	40.27	58.56	35.36	−6.69
Zentrum/Center	4	56.91	62.44	66.52	−7.57
Virilität/Virility	39	80.54	89.5	87.29	−7.86
Fruchtbarkeit/Fertility	11	65.75	74.21	74.21	−8.46
Paradox/Paradox	19	64.09	64.25	81.9	−8.99
Seele/Soul	32	64.09	81.9	64.25	−8.99
Schöpfungskraft/Generativity	12	33.7	48.87	39.37	−10.42
Fortschritt/Progress	24	40.33	46.61	62.44	−14.2
Verwandlung/Transformation	35	42.99	60.22	59.67	−16.96
Harmonie/Harmony	13	32.6	57.92	42.08	−17.4
Suche/Quest	27	39.37	73.48	41.99	−18.37
Selbst/Self	30	65.61	87.29	89.5	−22.79
Vervollständigung/Completion	6	9.95	88.24	24.89	−46.62

Items that were recalled better when correctly matched than in any of the other two conditions were ranked the highest. Items that were recalled better when incorrectly matched in both conditions were ranked lowest.

Although there was a partial overlap of the ranking of items in both the Rosen *et al.* [2] study and our German-speaking study such as having the symbols for power *(Macht)*, unity *(Einheit)*, birth

(Geburt), masculine *(Männlich)* and protection *(Schutz)* rank among the top third of the ASI index as best recalled when in the matched condition, there were also notable differences. The summary of the comparison of the ranking of the ASI symbols according to their ASI Index for both studies is given in Table 3. Surprisingly symbols as the ones for soul *(Seele)* and feminine *(Weiblich)* dropped to the lowermost third of the ranking in the German study while ranking in the topmost third in the US study. Similarly, the symbol for ascent *(Aufstieg)* that ranked highest in the rank-order of the US ASI study was in the lower end of the middle group of the rank-order in the Swiss study. The ranking of the symbols in the Swiss study was topped by the symbol of wrath *(Zorn)*.

Table 3. Swiss-German ASI Index and US-English ASI Index Comparison.

Symbol G/E	ASI No.	German ASI Index		US ASI Index	
		Ranking	Value	Ranking	Value
Aufstieg/Ascent	1	21	4.04	1	54
Schönheit/Beauty	2	3	39.1	17	11.5
Geburt/Birth	3	2	43.03	8	22
Zentrum/Center	4	27	−7.57	2	47
Vervollständigung/Completion	6	38	−46.62	25	0
Ewigkeit/Eternity	8	18	8.65	19	10.5
Böse/Evil	9	4	36.13	24	1.5
Weiblich/Feminine	10	23	−0.39	10	19.5
Fruchtbarkeit/Fertility	11	29	−8.46	26	0
Schöpfungskraft/Generativity	12	32	−10.42	31	−9
Harmonie/Harmony	13	35	−17.4	30	−8
Gesundheit/Health	14	14	13.11	22	7.5
Wissen/Knowledge	15	19	7.46	20	10
Leben/Life	16	12	20.18	23	7.5
Männlich/Masculine	17	8	26.87	12	15
Ursprung/Origin	18	24	−0.64	34	−15
Paradox/Paradox	19	31	−8.99	11	19
Perfektion/Perfection	20	25	−5.97	14	14
Möglichkeit/Possibility	21	6	34.15	15	14
Potenzial/Potential	22	17	9.84	36	−24.5
Macht/Power	23	9	24.32	5	33
Fortschritt/Progress	24	33	−14.2	27	−4
Schutz/Protection	25	11	22.53	9	20
Reinigung/Purification	26	22	0.71	35	−17.5
Suche/Quest	27	36	−18.37	37	−38
Rationalität/Rationality	28	26	−6.69	33	−11.5
Rettung/Salvation	29	5	36.08	28	−4.5
Selbst/Self	30	37	−22.79	29	−5
Schlaf/Sleep	31	10	23.63	21	9.5
Seele/Soul	32	30	−8.99	4	38
Geist/Spirit	33	16	12.46	18	11
Synthese/Synthesis	34	20	4.82	38	−39
Verwandlung/Transformation	35	34	−16.96	6	33
Unbewusstes/Unconscious	36	13	14.44	32	−11
Einheit/Unity	37	7	27.98	3	46.5
Mut/Valor	38	15	12.53	13	14.5
Virilität/Virility	39	28	−7.86	7	33
Zorn/Wrath	40	1	57.9	16	12

The observed differences can possibly be explained by the different contexts of the samples in the two studies, *i.e.*, socio-cultural factors might have exerted an influence on the results. These may include, for example, cultural value systems, cultural complexes, and/or current culturally specific social, economic and political issues. Central themes for the participants at the time of the experiment might have also affected the results (e.g., the nearing of exam session for the medical students). Among the psycholinguistic factors that could have affected the observed results are word length and frequency of use in daily speech for the respective word-stimuli used in the experiment. As stated earlier some of the verbal stimuli in German presented a significant challenge for the participants (e.g., *Unbewusstes* (unconscious), *Vervollständigung* (completion) and *Schöpfungskraft* (generativity)).

3.2. Subjective Report

A total of 184 out of 221 participants in CB1 and 108 out of 181 participants in CB2 indicated that they did not know any of the image-word pairs used in the experiment before taking part in it. Among the rest of the participants in both groups there were participants who listed some pairs—both matched and mismatched—as already familiar.

In CB 1 the pairs that were listed by the highest number of people as familiar were *Taube—Geist* (pigeon—spirit) named by 14 participants and *Ring—Ewigkeit* (ring—eternity) written by 8 participants. This is not surprising since both pairs are culturally well-known. The participants in CB2 listed as familiar the combinations *Schlange—Gesundheit/ Medizin* (snake—health/medicine) named by 29 people, *Treppe—Aufstieg* (stairs—ascent) named by 18 participants, *Mond—Weiblich* (moon—feminine) listed by 12 people, *Sonne—Männlich* (sun—masculine) written by 11 people, *Arche—Rettung* (ark—salvation) named by 9 participants and *Apfel – Wissen* (apple—knowledge) written by 6 participants. In this case as well, most of the symbols, listed as familiar from before the experiment, are well culturally known symbols. We can also say that the association between the snake and health/medicine is related to the major of the participants in our study (medicine).

To control for previous conscious knowledge of the above pairs listed by the participants in their subjective report, we identified and excluded from the analysis all correct answers which corresponded to the pairs listed by the respective participants as familiar from before the experiment. The data were then reanalyzed. There was no change in the results. The effect of matching on learning and recall was still significant, $F(1, 401) = 55.78$, $p < 0.001$. Thus we can say that even after controlling for previous knowledge the appropriate matching of the symbols with the associated meaning benefited learning and subsequent recall of the words and the associations were not considered to be consciously familiar by the participants.

Almost all pairs—both matched and mismatched—in both groups were listed by some participants as intriguing. Some participants indicated that the intriguing pairs were the ones that they listed as familiar. These answers are particularly interesting since they raise the question about the subjective experience of the participants during the experiment and the personal associations of participants. While this was outside the scope of the present study it is worthwhile investigating in subsequent studies.

A total of 41 participants in CB1 and 12 participants in CB 2 answered that they used no strategy in learning the pairs in the experiment. However, many participants listed a number of strategies they used to learn better the image-word pairs. Among these the most common ones were: making

associations between image and word, mentioned by 71 participants in CB1 and 48 in CB2, constructing stories/sentences with the image and the word, named by 61 participants in CB1 and by 74 participants in CB2, building associations to previous experiences or known facts, given by 23 participants in CB1 and 18 in CB2, finding a personal meaning or associating to a personal memory (memory aid) by 12 people in CB1 and 14 in CB2, connecting image and word with emotions , named by 2 people in CB1 and 5 in CB2, constructing scenes or pictures with the image and the word, listed by 13 people in CB1 and 9 in CB2. It is of particular interest that participants note the use of personal experience or associations related to the image-word pairs, as well as emotion. The last strategy relates to the mechanism proposed by Huston *et al.* [45] which explains the observed effect of matching where the constellated archetypal image evokes an affective response and the affect facilitates the later recall of the word through building association with personal experiences. However, these subjective reports do not suffice as proof of the mechanisms and further research is necessary before any definite statements can be made.

Among the more common remarks about the experiment were suggestions for improvement of the experimental design such as including numbers on the slides with the images in the second part, showing the image-word pairs longer on the screen, reducing the number of images. Some included comments concerning the fit of image and word (these did not fit together) or mentioned being able to recall the associations but not the words. These remarks are not surprising and demonstrate the difficulty which the experiment presented for the participants.

4. Discussion

The cross-cultural study of the associations between archetypal symbols and their proposed meanings in a German-speaking sample of Swiss students replicated the findings of Rosen *et al.* [2] and demonstrated that there was a highly significant effect of matching on learning and subsequent recall of words correctly matched with the archetypal symbols whose meaning they represent. These results extend to Swiss German speakers the findings of Rosen and colleagues [2] reported in a sample of English speaking students. Being able to replicate the findings of superior memory for related than unrelated pairs in a German speaking sample provides further evidence that archetypal symbols are truly associated with their accepted meanings. The fact that even after excluding the pairs which were listed by the participants as familiar from before the experiment the effect of matching on learning and recall was still highly significant supports the hypothesis that the associations between symbols and their meanings are not conscious. Furthermore, this cross-cultural evidence of the association between archetypal symbols and their meanings demonstrates that it is less likely that the observed effect is related to cultural context or is a linguistic artifact. In this sense, it can be said that our results provide more evidence that the collective unconscious and archetypes as hypothesized by C. G. Jung might have a universal nature.

The differences in the rank—order of the archetypal symbols in the US study and in the Swiss-German study suggest that it is likely that depending on circumstances some archetypes come to the fore and affect stronger conscious life than others. As mentioned earlier, according to Jungian scholars, we all have the potential or predisposition to recognize the archetypal image, however, our environment influences our experiences. The differences in the rank-order of the items in both the US

and the Swiss-German ASI studies empirically support such reasoning. It is highly interesting that some symbols which at first glance seem to have an obvious association to their proposed meaning were not ranked high as would be expected—e.g., Ascent *(Aufstieg)*. Also symbols that were highly culturally bound such as the symbol for soul *(Seele)*, for example, dropped in the lowermost third of the ranking against our expectations. Since we do not know how exactly the symbol-word pairs represent the archetypes and how the archetype enhances memory, as Bradshaw and Storm [12] point out as well, the index and the comparison between the different studies can potentially hint to processes which are at work. It might well be that this Symbol Association Test which Rosen and Smith first proposed functions similar to the Word Association Test used by Jung, in the work with which Jung first came across the phenomenon of the archetype. More research is needed on the personal associations of participants involved in the paired associate task and cross-sample comparison of the indexes for each item to be able to make definite conclusions.

Furthermore, some participants indicated in their subjective report that there were pairs they knew from before the experiment. It is of course possible that the participants were familiar with the indicated pairs, since most of the pairs mentioned as familiar were culturally known symbols. However, it is also noteworthy that this was an experiment where archetypal associations were investigated and it is known that often an archetypal experience, correlating the presentation of an archetypal image and meaning, is followed by a strong feeling of having already known the experience or familiarity [51]. Regardless it is clear that among the pairs listed as familiar there were some mismatched pairs. While from a Jungian point of view this must indicate strong personal associations reflecting the activation of a complex, it would also be interesting to research this phenomenon in the context of illusions of competence in monitoring one's won knowledge as done by Koriat and Bjork [46].

Although our empirical investigation demonstrated that archetypal symbols are strongly associated in two different cultures and two different languages, English and German are languages from the same language group and share many similarities. Therefore, to convincingly demonstrate the universality of these findings, future research should attempt to replicate the experiment in non-Indo-European languages such as Japanese, Chinese, Turkish, Hebrew, Arabic, *etc.* or other Indo-European languages which are less related to English and German, such as Slavic languages for example. Furthermore, it would be of interest to conduct the paired associate learning task with the archetypal symbols from the ASI and their associated meanings in a larger sample of bilingual participants to test if bilingual participants will demonstrate the same pattern of learning and recall.

Although the cross-cultural replication of the original study with the Archetypal Symbol Inventory replicated the findings, there still are many questions that deserve further research. A question raised by a reviewer of this article and addressed by Bradshaw and Storm [12] is whether the observed significant effect of matching cannot simply be explained by the fact that meaning-words demonstrate a degree of descriptive similarity to the visual images of the symbols from the ASI. To control for a possible effect of descriptive similarity between the image and its associated meaning-word on the observed results, symbols and meaning-words were presented also mismatched to the participants. As already noted by Rosen *et al.* [2] some words were better learned and recalled when mismatched as reflected in the calculation of the index in item analyses. A similar phenomenon was observed by Bradshaw and Storm [12] as well. These authors reported having identified six words which were recalled better when mismatched. They argued that this memory enhancement could be based on

descriptive similarity. The question is whether this phenomenon is not better explained as resulting from the personal associations of the participants and the complexes which were triggered rather than descriptive similarity. The very fact that there is such variability of learning and recall of the words from the ASI in the different samples as demonstrated by the comparison of the indexes in the item analyses of the US study and the Swiss study would seem to support such a hypothesis. However, further research on the associations of people using symbols from the ASI is necessary to be able to have a better understanding of the processes involved.

Furthermore, whereas there is clearly a strong association between the archetypal symbols and their proposed meanings independent of linguistic and cultural context, it still is not exactly clear how this can be explained. Are the observed results due to the effect of embodiment on cognition in terms of the dynamic system's approach to cognition and action and the theory of image schema? The embodied cognition approach proposes that "cognitive processes are deeply rooted in the body's interactions with the world" ([52], p. 625). What is more, this approach argues that "we represent our knowledge together with the sensory and motor features that were activated during its acquisition" ([53], p. 161), and which in part constitute the image schemas as neuronal activation patterns that underlie even abstract knowledge and concepts [19]. As pointed out earlier, the dynamic systems approach to the development of cognition and action suggests that as a result of experience attractor states are formed in the infant's brain; these correspond to particular neuronal activation patterns which encode the experience resulting from the interaction of the organism and the environment where the environment has to be understood both as social and physical. These patterns underlie also conceptual understanding and are associated with feelings which have accompanied the respective experience. These basic patterns of neuronal activation form the basis of most of our cognitive and emotional functioning. In this sense it seems worthwhile experimentally investigating the hypothesis that the associations between archetypal symbols and their meanings can be explained in terms of encoding the same sensory-motor experience in a different form. Testing this hypothesis experimentally can also provide evidence in favor of or against the assertions that the archetype-as-such can be understood in terms of image schema.

Do our results, on the other hand, support the debated innateness of the archetype? Although our study found out that in different language and cultural contexts archetypal (presumably universal) symbols are strongly associated to their accepted meanings and the nature of this association is unconscious, the question still remains whether this memory effect can be explained as a result of innate mechanisms and predispositions or as Roesler points out using Seligman's term "preparedness to learn" as an innate factor, or if the observed memory effect can be viewed as resulting from the quality of the brain as a system to form stable attractor states based on accumulated experience in the environment both physical and social (image schemas). We could demonstrate the presence of unconscious implicit memory of the associations between symbols and their proposed meanings in the absence of conscious awareness of the associations, but the source and quality of this form of memory needs further investigation. It would be particularly interesting to conduct functional brain imaging of participants involved in the main experiment to be able to delineate the activation pattern which underlies the performance on the cognitive tasks involved in the main study. Furthermore, comparing the activation pattern observed in such a study to the activation pattern underlying a constellated

complex from the brain imaging study of Bechtel [54] could shed more light as to the neural correlates underlying the complex and the archetype.

Although we could demonstrate that participants from two different language and cultural backgrounds could more easily learn and recall matched archetypal symbol-meaning pairs, the question remains whether these associations are moderated by age. Bradshaw and Storm [12] demonstrated a significant correlation between age and learning and recall of mismatched pairs in a sample of 154 participants with mean age of 27 years (SD = 11 years). However, the question still remains whether the results are replicable among the elderly and/or children. Demonstrating that in a large enough sample of children or elderly presenting the symbols together with their archetypal meanings benefits learning and subsequent recall of words would be a further argument supporting the proposed by Jung universality of the archetype and is a necessary further step in this line of research. Furthermore, it would be of interest to conduct the experiment with patients who have amnesia, as suggested by Huston, Rosen and Smith [45]. Results from such a study would be revealing as to the type of memory involved in the mechanisms which underlie the observed effects.

Given the answers of the participants to the questions in the subjective report it seems also worthwhile to investigate the subjective experience of the participants when they are presented the symbol-word pairs and in this sense to systematically use symbols in the study of personal associations in a manner similar to the studies conducted using the Word Association Test. Thus developing a symbols association test would be a further important step in the study of the complex and the archetype.

Furthermore, all the studies based on the Rosen and Smith paradigm until now were conducted in samples of students or the general public. In this sense, it would be interesting to conduct studies using the ASI with Jungian analysts. It would also be particularly valuable to test the model validity of the ASI in a study with trained Jungian analysts and or Jungian scholars to test the degree to which this model of presentation of the archetype is acceptable to the general Jungian community.

Finally, it is important to acknowledge that although our findings are consistent with the framework of archetypes that there may be other underlying factors that may have made the matched pairs easier to learn and recall than the mismatched pairs. Possible stimulus-related characteristics to screen in additional research would be word length and frequency of daily use for the verbal stimuli.

5. Conclusions

To conclude, our study demonstrated that presenting symbols matched with their accepted meanings exerts a statistically significant effect on learning and recall independent of language and culture, even though participants lack conscious awareness of the associations. Our findings which replicated the initial findings of Rosen *et al.* [2], suggest that there is indeed an "archetypal memory advantage". However, there is need for further experimental work to be able to answer many of the questions concerning the nature of the archetype and the collective unconscious.

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Conflicts of Interest

The authors declare no conflict of interest.

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APPENDIX B

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Empirical study of Kanji as archetypal images: understanding the collective unconscious as part of the Japanese language

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Abstract: Chinese characters originated as a semiotic system independent from spoken language and in the Japanese language they function non-phonetically with speakers exhibiting right-hemispheric advantage in their processing. We tested the hypothesis that Chinese characters are archetypal images and therefore part of our collective unconscious memory.

Our study builds on the first empirical study of archetypal memory of Rosen et al. (1991) which demonstrated that archetypal symbols presented matched with their correct meaning were better learned and recalled. In a series of three experiments we used 40 Chinese characters instead of the archetypal symbols used by Rosen, et al. (1991). The results provided empirical evidence that Chinese characters matched with their correct meaning were significantly better recalled than the ones that were mismatched. Thus, we demonstrated that there appears to be unconscious knowledge of the meaning of the Chinese characters which was triggered as a result of priming when the characters were correctly matched with their meaning. On this basis, we suggest that Chinese characters exhibit the same cognitive qualities as archetypal symbols. Thus, in the Japanese language an archetypal image is integrated non-phonetically into the system of language and signifies the concept independent from the phonetic signifier and is equal to it.

Key words: archetypal memory, Chinese characters, collective unconscious, image schema

Introduction

The collective unconscious and archetypes are the most typical Jungian topics on the one hand and yet the most controversial on the other. They either attract researchers to analytical psychology or detract them because they are viewed as not scientific. Empirical studies of the collective unconscious and archetypes are sparse. The research reported here builds on earlier studies of archetypal, collective unconscious memory (Rosen, Smith, Huston & Gonzales 1991; Huston 1992; Huston, Rosen & Smith 1999) and empirically investigates the topic of the archetypal image. We investigated *kanji*, Chinese characters, used in the mixed writing system of the Japanese language. We were interested

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to ascertain empirically whether we could show that Chinese characters as images were archetypal.

Background

Chinese characters

Chinese characters (*kanji*) originated as a semiotic system independent from spoken language, and as such they were used to divine the future as part of the religious practices and rituals of the late *Yin* kingdom (BC 1300–BC 1000) (Atsuji 1989). The oldest characters familiar to us today are the so called *kōkotsumoji* or characters inscribed on bones and tortoise shells. For divination, most commonly the abdominal parts of tortoise shells and cow bones were used (Atsuji 1989). The shells or bones were given regular form, then oval indents were made on the back side, and right next to them tiny holes in which burning sticks were placed. As a result of the warming, cracks would appear on the surface of the bones or the shells that were believed to represent the oracle of the deities. After the divination, the contents of the oracle and the result, as well as additional remarks concerning it, were inscribed on the bones or shells. This inscription was done using the oldest forms of the characters known today.

These symbols/signs were adopted as a writing system in the Chinese language and later in the Japanese language where they are used presently as a component of a mixed system of writing together with two syllabaries (*hiragana* and *katakana*), sets of characters which write the smallest segment of language in Japanese—the mora. The syllabaries that evolved with time, on the basis of the Chinese characters, are used in modern language to write the inflectional endings or functional words not represented by Chinese characters (*hiragana)* and to write words of foreign origin (*katakana*). The syllabaries function phonetically.

However, Japanese *kanji* function non-phonetically (Sotirova 1997; Chen, Yamauchi, Tamaoka & Vaid 2007) in the system of language and contribute to a slightly different structure of the linguistic sign as a graphic image (Sotirova 1997). At present, when characters are used to write words of Japanese origin in which the inflectional endings and/or a part of the phonetic (sound) sequence of the word that cannot be represented by the character are written using a syllabary, the character represents a unit that is morphologically not definable. Also the character is not a stable phonetic segment and often adds a further element of meaning to the written word that does not exist in the spoken word. The connection between the image of the character and the concept it signifies was motivated in one way or another, normally in the earlier stages of usage of the characters as a writing system; this motivated link represents an aspect of the cultural and mythological tradition of the Japanese culture. To illustrate the connection between the graphic imagery of a character with some familiar mythological motifs we can take, for example, the character which today in Japanese is used to write down the verb to stream, to flow, to float, to get a

drift- *nagareru*. (The example is from Atsuji 1993.) Graphically the image of the modern character (lowermost image to the right) consists of two components: the left side meaning water and the right side being the image of a child turned with the head down and whose hair is floating or hanging down.

(The first column represents the process of simplification of the image of a child turned with the head down as at birth which pictograms undergo when simplified as elements of the writing system. The second column represents the process of simplification of the pictogram of a child turned with the head down whose hair is waving [Atsuji 1993]. The third column represents the evolution of the image for the character *nagareru*—to float; the first image is the pictographic depiction of a child floating on the surface of the water with the hair waving down, the second image in the column is the modern version of the character—the element on the left side means water, the element on the right side represents the child floating with the head down.)

Thus, graphically, the character represents a child that has been set adrift in the river. According to Atsuji Tetsuji, in olden times there used to be a ritual in which a small child was set adrift on the waters of a river and the above character represents it graphically. The ritual is also depicted in the Japanese myth about Izanagi and Izanami in which the first child born from the marriage of the two deities could not stand even at the age of three years and the divine couple decided to put it in a boat and set it adrift on a river (Atsuji 1993). The description of a similar act can be observed in the Old Testament story about the birth of Moses where the newly born child was put into a papyrus boat three months after birth, placed among the reeds of the Nile shore and later was found and adopted by the daughter of the Pharaoh. Many further examples can be found in literature in which similarly a child is set adrift on a river or in which the same is perpetrated with children born on a day considered to be unlucky. In a psychological sense this can be regarded as an expression of the aspect of the child archetype known as the abandonment of the child (Jung 1959/1968, para. 285–88).

Similarly, the graphic image of the characters, which currently in Japanese mean 'to throw away' and 'to bring up', can be linked structurally with rituals and beliefs that existed in ancient China and other parts of the world.

(The first and the second image are two versions of the character to throw *ki/suteru*. The third image represents the character *iku/sodateru* to bring up. Atsuji 1993)

The character to bring up—*iku/sodateru* (the third image above)—graphically represents a child turned head down which is under the body. Thus it originally meant to give birth and later derivatively, it started to be used with the meaning to raise, to bring up. In the same way, the character to throw away, to abandon—*ki/suteru* (the first and the second image above)—graphically represents an abandoned child in a dustbin. There is a version of the character (first image) in which the child is not in a dustbin but held in the hands and thrown away. In this case, too, the graphic image records a ritual from olden times when the newly born child is abandoned on the road side or in a forest after birth and then once again picked up and brought up (Atsuji 1993).

These are a few examples to illustrate the rich imagery of the graphic forms of the Chinese characters which, as a writing system and part of the linguistic sign, link the concept/meaning of a word to the repository of a cultural tradition and are tightly linked as an independent semiotic system with the deepest layers (in the Jungian view) of the human psyche (the collective unconscious and archetypes) reflected by mythology, fairy tales, religious symbolism and rituals. Therefore, we hypothesize that on the level of the structure of language they graphically code psychic contents which, in the case of the alphabetic languages, tend to be suppressed by the domination of the phonetic signifiers. There is right-hemispheric advantage for *kanji* and left-hemispheric advantage for *kana* (*hiragana* and *katakana*) processing (Morikawa 1981; Yamaguchi, Toyoda, Xu, Kobayashi, & Henik 2002) in the case of Japanese speakers. This fact suggests that *kanji* are linked to visual schemas or archetypal images. *Kanji* reading is said to involve more heavily visual orthographic retrieval and lexical-semantic system through the ventral route, while *kana* transcriptions of *kanji* words require phonological recoding to gain semantic access through the dorsal route (Thuy et al. 2004). Furthermore, Kansaku et al. (1998) demonstrated that recognition of concrete characters involves a stronger initial process in the left occipital temporal cortices than recognition of abstract characters. Presentation of characters representing 'abstract concepts' in the experiments conducted by the team activated the bilateral occipital region without a significant difference between the bilateral occipital and temporal regions. Dong et al. (2005) studied the neural mechanisms underlying the processing of Chinese words

and demonstrated that in a semantic association task in native speakers of Chinese language, who were presented with words written in *kanji,* there was an activation of the right parietal and frontal network. They explain this indicating that with the nature of the Chinese characters as pictorial representation of concepts in the semantic processing there exists a strong element of spatial decoding. The authors further suggest that spatial decoding and analysing of Chinese characters occurs unconsciously when semantic information is demanded. While neuroimaging data suggests left-lateralized activation during reading of non-alphabetic orthography in Chinese and Japanese language, there is multiple data which demonstrates the right hemispheric advantage of visual recognition of *kanji* (Nakamura et al. 2005).

Archetypes

C.G. Jung cited Plato and defined the archetype in the context of analytical psychology as ancient motifs and predispositions to universal ideas, images, or patterns of behaviour. It is a term that denotes archaic, universal images that have existed as long as humanity has and Jung uses it to express the form of the pattern of instinctual situations and images which is given *a priori* and needed for the existence of instinct. These archetypes represent patterns of behaviour and are infused with distinctly numinous character when they appear. Although they have 'affinity with instinct', they can be said to represent the 'authentic element of spirit' which is 'not identified with human intellect' (Jung 1947, para. 406, p. 206). As such they are the basic elements of what he defined as the deepest layer of the psyche—the collective unconscious.

Archetypes-as-such are unknowable. They manifest symbolically as archetypal images in dreams, myths, fairy tales, religious symbolism and creative art products. We experience their effects in consciousness through their *ability to organize experience*. These qualities of archetypes-as-such prompted Jean Knox (2003) to hypothesize that they might be what cognitive semantics calls image schemas.

Image schemas were established as one of the basic concepts in cognitive semantics by Leonard Talmy (1983), Johnson (1987) and Lakoff (1987). They are believed to be the earliest forms of representations formed in the infant's brain employing the inborn capacity of the brain as a complex adaptive system to self-organize. Mark Johnson defines an image schema as a 'dynamic, recurring pattern of organism-environment interactions' (Johnson 2007, p. 136). They are 'structures of sensorimotor experience that can be recruited for abstract conceptualization and reasoning' (ibid., p. 141). They are 'preverbal and mostly nonconscious' (ibid., p. 144), and represent a form of 'emergent level of meaning' (ibid., p. 144). Image schemas are used by Johnson in his theory of embodied cognition which aims on the basis of findings from modern neuroscience to break the long tradition of the split between body and mind

in Western civilization expressed in the profound dualism of body versus mind, thought versus feeling (Johnson 2007). Image schemas code perceptual experience and are the basis of conceptual thought and abstract concepts due to such mechanisms as iconic memory and metaphoric extension. Embodied cognition argues against a representational theory of mind where we have mental images which represent the outer world to the inner mind. Although image schemas are in a sense representational, they are the precise structure that leads to the realization that there are no concepts that re-present reality, but concepts are 'neural activation patterns that can either be "turned on" by some actual perceptual or motoric event in our bodies, or else activated when we merely think of something without actually perceiving it or performing a specific action' (Johnson 2007, p. 157). Essentially concepts are seen as an abstraction of encoded forms of experience in the body, i.e., they are grounded in sensorimotor aspects of experience. Conceptual metaphor is a mechanism through which abstract concepts are defined by systematic mappings from body-based, sensorimotor source domains onto abstract target domains (Johnson 2007). Thus, if the archetype is as Knox (2003) contends image schema then we can say that archetypes are early products resulting from the quality of self-organization of the brain and they are forms of encoded experience associated with qualities of the experience encoded as feelings.

The discoveries in cognitive psychology, neuroscience and complex systems, however, provoke other prominent scholars to suggest different views on the nature of the archetype from the point of view of mainstream academic research. Some Jungian scholars have suggested considering the nature of the archetype from the point of view of complexity theory. Hogenson (2005) and Saunders and Skar (2001) suggest that the archetype 'does not exist, in the sense of being a discrete ontologically definable entity with a place in the genome or the cognitive arrangement of modules or schemas in the brain' (Hogenson 2005, p. 279). Hogenson further writes that the archetype is an 'iterative moment in the self-organization of the symbolic world' (ibid., p. 279). Saunders and Skar (2001) propose that the archetype is an emergent structure which derives from the self-organizing properties of the brain which makes it in fact close to the nature and formation of image schemas.

McDowell (2001) proposes that the archetype-as-such is a pre-existing principle of organization in the personality as a complex adaptive system characterized by self-organization. He argues that in a dynamic system the principle of organization is not a static form, but rather is an ordered way for the energy to flow. McDowell stresses that psychoanalytic writers have concluded that the personality is a self-organizing dynamic system (Sander 1985, pp. 23–4; 1987, pp. 340–41; Beebe & Lachmann 1988, p. 307). He continues to emphasize that since the personality is a dynamic system it follows that, like all other dynamic systems, it must self-organize to express a principle of organization which in his view is the archetype-as-such (McDowell 2001).

Image schemas, language and the brain

However, are the dynamic systems views and the cognitive semantics view of the archetype essentially different? Raymond Gibbs (2005) provides a view of image schemas as attractors in self-organizing systems which seems to suggest further similarities in the understanding of archetypes and image schemas as psychic phenomena. According to Gibbs, image schemas 'are best understood as experiential gestalts which momentarily emerge from ongoing brain, body and world interactions' (ibid., p. 115). They bind embodied experience, thought and language facilitating simulation of events/experience in the body as the basis of linguistic understanding. This function of image schemas is facilitated by the existence of 'mirror neurons' in the premotor cortex (Rohrer 2005). In other words, understanding language is in Gibbs' view related to evoking bodily sensations which underlie the meaning we attribute to linguistic expression and image schemas are not mapping or a form of representation which is recruited but have an emergent and dynamic quality and result from the constant interplay between brain, body and environment. Although most authors agree that image schemas are not representations Gibbs seems to go a step further in suggesting that image schemas momentarily emerge as a result of on-going interactions between brain, body and environment. In this context Gibbs describes image schemas as 'emergent properties that arise from different "cycles of operation" constituting a person's life and represent a kind of "structural coupling" between brain, body and world. Image schemas reflect a form of stability within cognitive systems' (ibid., p. 131) and as such can be viewed as 'attractors' within the human self-organizing system in dynamic systems terms. This is a quality of the image schema which lends further evidence of its similarity to the archetypes in their classical and modern definition as pointed out above. What is more, such understanding of archetype and image schema provides a possibility of looking at the archetypal basis of language and linguistic meaning from a different angle. It gives ground to think of the archetypal basis of language not simply in terms of the universal grammar as proposed by Noam Chomsky, but in the sense that there is archetypal/image schematic basis of the meaning of each concept. There is convergent evidence from cognitive neurosciences to suggest that 'semantic understanding takes place via image schemata located in the same cortical areas which are already known to map sensorimotor activity' (Rohrer 2005).

Apart from the evidence for the role image schemata play in linguistic understanding, there is evidence to suggest that we can speak of situated image schema acquisition mediated by formative special practices or settings such as ritualized postural techniques, overt and covert body practices, and cultural environment of artefacts and spatial arraying (Kimmel 2005). Kimmel's view of the image schema and its relation to ritualized body practices and cultural artefacts and tradition sounds also in congruence with Jung's ideas about archetypes and their relation to mythology, ritual and art. As we have already tried to demonstrate, the imagery of Chinese characters also can be

viewed as encoded forms of representation of ancient beliefs and practices. Research, however, on the image schematic structure of the images of *kanji* is still extremely sparse.

Yu Xin Jia (Jia 2006) argues that the Chinese character is an embodied and metaphorical conceptual system whose function is to iconically characterize and reconstruct the Chinese culture, the Chinese mind, Chinese social reality, and the world. Jia provides in his work evidence of how the evolution of Chinese characters as a semiotic system and their nature as signs is related to recent assertions of embodied cognition concerning the bodily basis of language understanding, and how these new developments in cognitive neuroscience reflect some traditional Chinese linguistic concepts. The author argues that the imagery of Chinese characters demonstrates that conceptualization is not arbitrary. The imagery of Chinese characters represents 'iconic characterization' (Jia 2006) of human bodies and bodily activities and experiences of a sensorimotor nature. Although Jia's work provides no empirical data to support the theoretical assertions, it demonstrates a very reasonable way of describing the origination and the quality of Chinese characters as images.

Previous research on archetypal memory

A series of experiments conducted by Rosen et al. (1991), Huston (1992) and Huston et al. (1999) provided empirical support for the existence of archetypal memory. The series of experiments showed that archetypal symbols had a higher learning and recall rate when they were initially shown to participants in the study paired with their correct meaning (Rosen et al. 1991; Huston 1992; Huston et al. 1999) The results from these studies suggested that pairing the archetypal symbol with its correct meaning caused an effect of priming, resulting from a pre-existing collective unconscious knowledge triggered in consciousness.

Rosen et al. (1991) investigated the learning effect and recall rate of 40 archetypal symbols matched in half with their correct or an incorrect meaning. The study found that symbols matched with their correct meaning were better recalled than symbols that were mismatched. Huston reached the same conclusions in her study (1992). Later Huston et al. (1999) proposed a possible mechanism for evolutionary collective unconscious (archetypal) memory. They explain the effect of better recall of meanings when they are matched correctly with a symbol as being a result 'of interhemispherical connection, mediated by the corpus callosum, which allows for the recall of the accurate meaning of the archetypal symbol triggered by the affective response' (Huston et al. 1999, pp. 145–46). According to these authors the right hemisphere is the seat of archetypal patterns, symbols and their affectively charged visual images, while the left hemisphere is the seat of verbal knowledge. It is proposed that when an archetypal symbol is presented matched with its correct meaning there is an affective response which constellates a certain archetypal image in the

right hemisphere which has the effect of priming the evolutionary unconscious archetypal memory. The authors further suggest that it is this affective response which facilitates retrieval of the correct meaning (word) of the symbol when the symbols are presented later by themselves.

The mechanism which Huston and colleagues propose is well justified by findings and developments in neuropsychology. In 'Cerebral hemispheres in analytical psychology' Ernest Rossi (1977) describes the specialization of the two hemispheres and the constant need of integration of their functioning. On the basis of the empirical data existing at the time, he qualified the left hemisphere as verbal, logical-analytical, associational, abstract and temporal-sequential and the right hemisphere as visuospatial, synthetic-gestalt, apperceptive, concrete-spatial, part-whole oriented, and simultaneous. We can add that while the left hemisphere specializes in logic and reason, the right is believed to specialize in feeling and music, and both hemispheres specialize in the contralateral sensory-motor functioning. Rossi (1977) connects the specialization of the two hemispheres with some notions in analytical psychology. He points out that the right hemisphere is the seat of symbols and the collective unconscious, autonomous fantasy, myth and fairy tales, mysticism and numinosity among others, while the left is the seat of ego-consciousness, complex and rationality among others. Interhemispheric communication is essential to the normal functioning of the organism since the hemispheres complement each other to a certain degree. It is realized primarily over a large bundle of nerves, called *corpus callosum*. The constant balance and the integration of the functioning of the two hemispheres is described by Rossi (1977) as the possible neurological basis of what analytical psychology calls transcendent function—the union of conscious and unconscious. Although today scientists agree that the left hemisphere is more specialized in the processing of audio-linguistic information, storage and application of rules and strategies and the right hemisphere is more specialized in establishing rules and strategies, as well as processing of visuospatial information, research shows that the right hemisphere also possesses the ability to perform certain linguistic operations. In her review of recent findings concerning the abilities of the right hemisphere to process language, Julie Kane (2004) provides evidence that the initial distinctions of the functioning of the two hemispheres is in some instances not completely adequate. She demonstrates using a vast array of empirical studies that there are certain verbal aspects which are just as well processed by the right hemisphere, among which are metaphor, symbolic expression and imaginative language.

The research of Rosen et al. (1991) on archetypal memory was criticized by Jill Gordon (1991) for describing the used stimuli as archetypal symbols, which in the view of Gordon would have to be proven by the research. While Gordon is correct that there exist multiple possibilities to improve the experimental design, this remains one of the few attempts to provide empirical evidence of unconscious/pre-existing knowledge of symbols which are qualified by the Jungian community as archetypal and in this sense is a valuable attempt to

bring experimental psychology and analytical psychology closer. Therefore, we decided to extend the existing empirical tradition of study of archetypal symbols and use it as a point of reference in a study of Chinese characters as archetypal images.

Present study

Considering the circumstances of the origination of Chinese characters, as well as the peculiarity of their mode of cognitive processing as part of the system of Japanese language, the question arises of what is their nature as images. We theorize that Chinese characters might represent symbolic archetypal images and we sought to test this premise empirically.

Our study builds on the initial studies of archetypal memory conducted by Rosen et al. (1991), Huston (1992) and Huston et al. (1999). We conducted a series of three experiments to test the hypothesis that *kanji* are archetypal images. Experiments 1 and 2 were studies based on the original research to test if there is any conscious/cultural knowledge of the correct meaning of the 40 Chinese characters which would facilitate learning and recall of the characters. Experiment 3 (the main study) was designed to test if showing characters matched with the correct meaning would have an effect on learning and recall.

In all three experiments we used the same set of 40 characters written in *tensho* style (See Appendix). *Tensho* style is one of the oldest available forms of the Chinese characters. It was formed during the Chou dynasty (1100 BD–256 BD) and the form of the characters used in Japanese language today evolved on the basis of the *Tensho* style. Although to the uninformed observer all Chinese characters look like pictograms and there is a tendency to term them so, strictly speaking just a small group of characters are pictograms in the classical meaning of the term. One of the oldest classifications of the Chinese characters as a semiotic system called Rikusho divides the Chinese characters in six categories according to their structural principle. These categories are as follows—pictograms, simple ideograms (indexes), complex ideograms, phonoideograms, phonetic loans and derivatives. A detailed presentation of the six categories is beyond the scope of this article (for more information see Sotirova-Kohli 2010). The set of 40 characters which we used in our experiments contained characters from all of the first five categories. The majority of the images used were complex ideograms and phonoideograms, which reflects the actual balance between the groups in contemporary language.

To avoid biased samples we applied random sampling and random assignment to conditions. The participants in all three experiments were undergraduate students taking an introductory psychology class who participated in research for course credit. Participants signed up online choosing blindly an experiment from a pool of multiple experiments. Prior to the beginning of the respective experiment the participants had no knowledge of the nature and the contents of the study. There was no duplication in the use of the participants as

none of the participants who took part in one of the experiments was admitted as a participant in the others. This was done to avoid confounding the data with residual testing effects. Sample size was determined following the standard statistical procedures to ensure enough statistical power, i.e., the probability of finding effects that really are there, in each experiment.

Experiment 1

In the first study, we hypothesized that the subjects who had not studied any Eastern language would not have spontaneous conscious knowledge of the meaning of the characters.

Participants

The participants were twenty-nine (n = 29) randomly assigned undergraduate psychology students at Texas A&M University. Two (n = 2) participants were excluded from the analysis because of having native language other than English, so the number of analysed cases were 27 (n = 27). None of the participants had studied any Eastern language such as Chinese and Japanese.

Method

Experiment 1 was a 'free association task' and 40 Chinese characters (see Appendix) were shown for 20 seconds each in which time the students were asked to come up with the word that, in their opinion, best represented the image.

Results

There were only three correctly recognized characters out of a total of 1080 (40 × 27) possible correct answers. This makes 0.3% correctly recognized characters. These results reveal little if any conscious knowledge of the meaning of the characters.

Experiment 2

Whereas Experiment 1 showed that participants could not generate associates of the Kanji characters that reflected the meaning of the characters, it may be that the free association task was too difficult to show conscious knowledge of the meanings. In Experiment 2 we used an easier task in which participants needed only to match symbols with their meanings from among alternatives. If participants had conscious knowledge of the symbolic meanings, this easier matching task should show that meanings could be matched with their correct symbols more often than chance. Alternately, if conscious awareness of the symbols' meanings was lacking, then correct matching should occur at no better than chance levels.

Participants

The participants were twenty-nine (n = 29) randomly assigned undergraduate psychology students at Texas A&M University.

Method

Experiment 2 was a 'forced association task'. The participants were given the same 40 Chinese characters as in Experiment 1 and a list of 80 words, 40 correct and 40 incorrect meanings/words. The students were asked to choose the word which in their opinion represented the correct meaning of the respective character.

Results

Chance performance on the matching task was one out of 40, or 2.5% correct matches. The results of Experiment 2 showed that 26 characters out of 1160 (40 × 29) possible correct answers were correctly recognized. In other words, 2.2% of the characters were correctly recognized, slightly less than chance performance. A one sample t-test showed that this difference was significant, $t(28) = 2.187$, $p < .05$, showing that participants were poorer than expected by chance at matching symbols with their correct meanings. This experiment confirms the findings from Experiment 1 that participants have no conscious knowledge of the meaning of the characters.

Experiment 3

In the main part of our research, we hypothesized that if Kanji characters, like archetypal images (Rosen et al. 1991), were matched with their correct meanings, these correctly matched pairs would have a higher rate of learning and recollection than characters paired with incorrect meanings.

Participants

Two different groups of randomly assigned introductory psychology students at Texas A&M University (Group 1, CB 1, (n = 106), and Group 2, CB 2, (n = 86), students, total of 192 students) took part in the study. Twenty-two subjects were not included in the data analysis to control for knowledge of an Eastern language such as Chinese or Japanese, having native language other than English or not filling in the required data, so a total of 170 students were used (n = 170).

Method

Experiment 3 (main study) was a 'paired association learning task'. The same set of 40 Chinese characters was used as in Experiments 1 & 2. The set was divided in two subsets—Set A and Set B, each one of which contained 20 characters (See Table 1 and Table 2).

Table 1

Set A			
	Talent		Row
	Knowledge		See
	Separation		Oneself
	Dread		Scripture
	Dream		Life
	Suffering		Receive
	Collection		Differentia-tion
	Death		Mind
	Law		Distant
	Child		Centre

20 Chinese characters included in Set A

Table 2

Set B			
	Deity		Depth
	Benefit		Contemplate
	Possession		Heart
	Fear		Nothing
	Path		Phase
	Wisdom		Thought
	Elder		Sensuality
	Light		Everybody
	World		Body
	Sky		Love

20 Chinese characters included in Set B

Each subgroup was presented with the two sets. In each of the subgroups one of the sets was matched correctly with the meaning of the characters, while the other one was mismatched. The characters that were matched correctly and those mismatched in the first group were switched in the second group. The students were first shown the character and word pairs for 5 seconds and after a rest of 1 minute they were shown the characters alone for 8 seconds. They were then asked to remember and write the word they saw the images paired with previously. Counterbalancing aimed to demonstrate what part of the observed variance in learning and recall was due to the peculiarity of the Chinese characters as images, excluding any variance which was due to the participants. Switching the matched and mismatched groups of characters in each counterbalancing condition aimed to help partial out the variance which might be due to characteristics of the images other than their nature as archetypal images.

Results

The results were scored strictly. Only words which were the same as the presented stimulus words were counted in the process of scoring (i.e., synonyms were not accepted as correct answers.) A repeated measures factorial ANOVA with one within-subjects variable (matching-matched vs. mismatched) and one between-subjects variable (counterbalancing) was conducted to analyse the data. The means for the recall rates of matched and mismatched characters in each counterbalancing (CB) condition (CB 1 and CB 2) are summarized in Table 3 below. The means of the recall rates for each set of characters (Set A and Set B) when presented matched correctly with the meaning and mismatched are presented in Table 3 and Figure 1.

The main effect of matching was significant, $F(1, 168) = 12.986$, $p < .001$; significantly more meanings were recalled for matched pairs than for mismatched pairs. Matching Chinese characters with their correct meanings at the time of study benefited learning and subsequent recall. This result mirrors the results of Rosen et al. (1991) and supports the idea that kanji characters are associated with their correct meanings; such pre-existing knowledge makes

Table 3

	Matched		Mismatched	
	Mean	SD	Mean	SD
Counterbalance 1(CB 1)	4.52	3.172	2.60	2.322
Counterbalance 2 (CB 2)	3.48	2.767	4.15	2.985
Total	4.06	3.036	3.28	2.737

Recall Rates for *Kanji Characters*

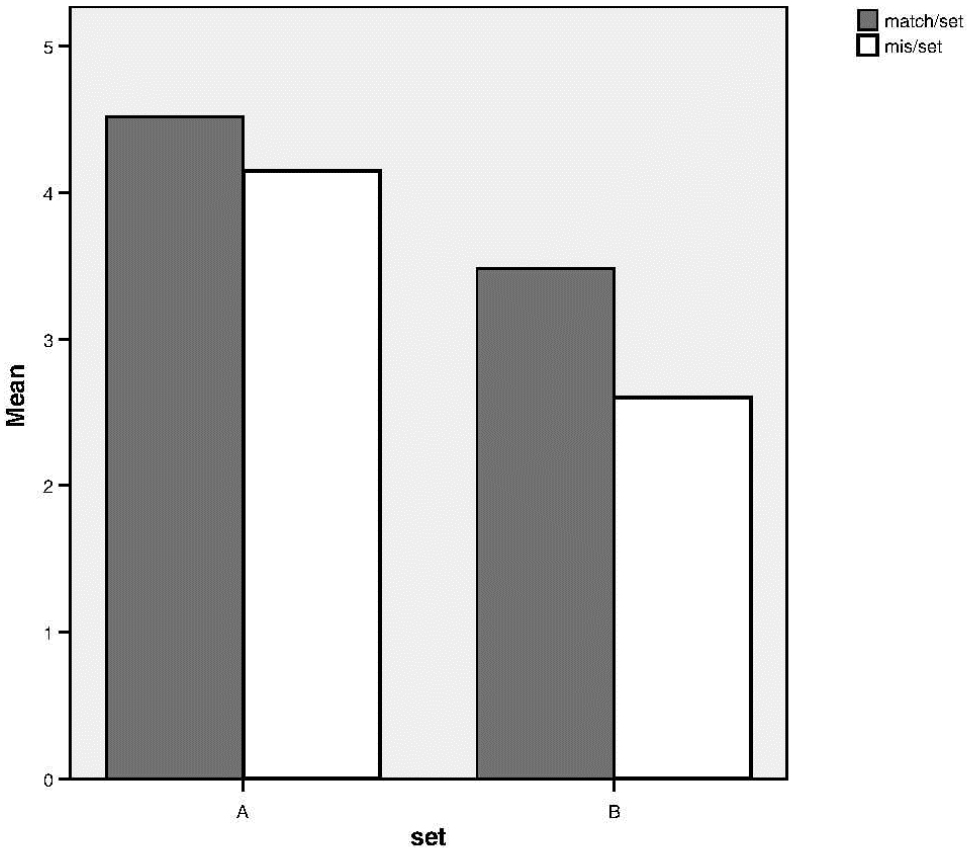

Figure 1. Means for correctly recognized matched and mismatched characters in the two sets of 20 characters

paired associates easier to learn and recall, as compared to paired associates that are not meaningfully paired (e.g., Thomson & Tulving 1970). Given the results of Experiments 1 and 2, it appears that this pre-existing knowledge of symbols' meanings is unconscious. It deserves attention that by chance the two sets of characters presented different degrees of difficulty for the participants. Each of the sets was recalled better when presented paired with the correct meaning (see Fig. 1), however, Set A was easier to learn and remember than Set B (see Fig. 1). This might be related to the nature of the English words which were associated with the image, i.e., words with higher frequency in daily use such as centre, child, dream, knowledge, talent, or to the nature of the images-complexity, stroke number. While on this occasion our attention in selecting the stimuli was mainly focused on having stimuli from all categories of kanji as a semiotic system, we suggest that future studies control for this effect by paying more attention to the English words used in the experiment, as well as the stroke complexity of the images used.

We further tested the strength of the relationship between correct matching of image and meaning and learning and recall. We used omega-squared as a less biased estimate of the effect size for an F-ratio in ANOVA. Omega-squared for the main effect of matching was 0.08. In other words, we can say that 8% of the observed variance in learning and recall of the images can be explained by the effect of correct matching on learning and recall. How this is to be interpreted is to a great degree a theoretical question. Even though the strength of the relationship between correct matching and learning and recall falls in the range of small effect, we can say that as a pioneering research it nevertheless demonstrated a meaningful effect which deserves further attention and investigation.

Discussion and conclusions

The results from Experiment 1 and Experiment 2 sought to demonstrate that there was little or no spontaneous conscious knowledge of the meaning of the Chinese characters. The results from the main study (Experiment 3) lend weight to the hypothesis that there is unconscious knowledge of the Chinese characters and their meanings which is triggered as a result of priming when subjects are shown correctly matched pairs of characters and their meanings.

The results from our study are similar to the previous studies of collective unconscious (archetypal) memory of Rosen et al. (1991), Huston (1992) and Huston et al. (1999). Chinese characters as images seem to behave on a cognitive level in a similar way to the archetypal symbols. In addition to the findings that Chinese characters in Japanese language do not function phonetically (Chen et al. 2007) and that they have the quality of denotative signs from the time of their first emergence as signs/symbols (Sotirova 1997), we can say that there is empirical evidence to suggest that they function as images that trigger within the system of language unconscious/implicit knowledge of meanings similar to archetypal symbols. The nature of Japanese language allows, in this respect, consciousness of contents of the archetypal level independent from the phonetic signifiers of language by means of the graphic representation of the concepts in language through Chinese characters. The concept in Japanese language is represented in consciousness through both phonetic signifiers and, attached to them, Chinese characters (as the pairs of character and correct meaning presented in Experiment 3). Even though proponents of the theory of embodied cognition argue that concepts in alphabetical languages are also metaphoric extensions of image schemas, we can argue that including a graphic image with archetypal qualities as equal to the phonetic image of the word contributes to a different pattern of encoding and representation of information in the conscious mind.

Although there were limitations to our study as mentioned by Jill Gordon (1991), the findings from the present study are encouraging in that they reaffirm the possible empirical study and of the existence of collective unconscious (archetypal) memory (Rosen et al. 1991; Huston 1992; Huston et al. 1999)

and reinforce the proposed connection between the archetype and its cognitive semantic nature as image schema (Knox 2003). Although our experiments were not designed to test whether Chinese characters are metaphoric extensions of image schemas, embodied cognition seems to offer an additional explanation of the observed results. Future research is needed to empirically demonstrate the validity of the theoretical speculations that archetypes are what cognitive semantics call image schemas. The results of our study support such an assertion, although they do not directly test this relationship. Maybe the actual question is not so much whether image schema and archetype are the same thing expressed in different terms, but what is the consequence for the psyche and for the structure of consciousness when it is possible to encode information of such deep layers of the mind in consciousness through non-phonetic images.

Future directions

The encouraging findings from the present study could indicate archetypal activity related to the Chinese characters as images. Although this type of inquiry provides challenges, we feel that it warrants further research. The present study was limited to testing the archetypal nature of the Chinese characters using non-Japanese and non-Chinese speakers. Cross-cultural investigation with Japanese and Chinese native speakers testing the same parameters might provide further evidence as to the archetypal nature of the Chinese characters as images.

In our study we used, as already pointed out, Chinese characters written in *Tensho* style as one of the oldest standardized styles on the basis of which the modern style of Chinese characters—*Kaisho*—evolved. However, the question remains—would using another written style of the same images affect our results and if so, what the effect would be? Would it be that there are styles that are more archetypal in nature than others, or not? Furthermore, it would be of particular interest to test whether all categories of Chinese characters according to their classification as a semiotic system—*Rikusho*—share the same degree of archetypal nature.

We could extend the proposed possibilities for future research with non-speakers of Japanese by including images of the same words/concepts written in the syllabaries—*kana*—in the experiments. As mentioned earlier, *kana*, used in modern Japanese as a part of the mixed system of writing, functions along a phonetic principle and records the smallest phonetic segment in Japanese language which is the *mora*. Including such images which would phonetically be unintelligible for non-speakers of Japanese, and would represent another image associated with the concept, but which are not archetypal in nature can demonstrate whether Chinese characters exhibit the properties they have by virtue of really being archetypal in nature.

Furthermore, in the present study we concentrated on studying the effect of correct matching of the Chinese character with the correct meaning on learning

and recall as a demonstration of the effect of priming which triggers pre-existing, unconscious knowledge of the images and leads us to endorse their qualification as archetypal images. However, it would be particularly interesting to test the subjective affective responses of the participants to the images as another measure of archetypal activity associated to the image (The authors are indebted to Douglas Whitcher for this suggestion.)

To test whether the matched characters were somehow implicitly learned, that is, not consciously learned, younger participants could be tested. This could indicate, if the results were positive, that these images were not implicitly learned, but already in the unconscious as are archetypal images (see Schacter 1987 for more information on implicit memory).

The present study continued the existing tradition of empirical research of archetypal (collective unconscious) memory while at the same time expanding its scope by introducing new questions related to the connection between archetypal memory and script/language. Our hope is that by attempting to draw the attention of the scientific community to the possibilities of investigation related to the collective unconscious and language while adding the study of archetypal memory and the role of the linguistic sign in representation or repression of archetypal contents, we will stimulate more empirical research that will consider new questions that will be important in the future such as how archetypes affect the individual and the culture as a whole.

Translations of Abstract

Les caractères chinois se sont développés comme un système sémiotique indépendant du langage parlé. En langue japonaise, ils fonctionnent de manière non-phonétique avec des locuteurs développant de manière prédominante l'hémisphère droit au cours du processus. Nous avons testé l'hypothèse selon laquelle les caractères chinois seraient des images archétypiques et, donc, feraient partie de notre mémoire collective inconsciente. Notre étude s'appuie sur la première étude empirique sur la mémoire archétypique de Rosen et al. (1991), qui démontra que les symboles archétypique assortis de leur signification exacte étaient plus facilement mémorisés et remémorés. Dans une série de trois expériences, nous avons utilisé quarante caractères chinois en lieu et place des symboles archétypiques utilisés par Rosen et al. (1991). Les résultats ont apporté la preuve empirique que les caractères chinois assortis de leur signification exacte étaient significativement mieux remémorés qui ceux qui ne l'étaient pas. Ainsi, nous avons pu démontrer qu'il semblerait y avoir un savoir inconscient de la signification des caractères chinois qui se déclencherait à l'issue du protocole de jumelage du caractère et de sa signification. A partir de là, nous suggérons que les caractères chinois manifestent les mêmes qualités cognitives que les symboles archétypiques. Ainsi, dans la langue japonaise, une image archétypique est intégrée de manière non-phonétique au système de langage et signifie le concept indépendamment du signifiant phonétique et sur un mode équivalent.

Chinesische Schriftzeichen entstanden als ein von der gesprochenen Sprache unabhängiges semiotisches System. In der japanischen Sprache fungieren sie nichtphonetisch, wobei die Sprecher bei der Verarbeitung rechtshemispärische Überlegenheiten zeigen. Wir prüften die Hypothese, daß es sich bei chinesischen Schriftzeichen um archetypische Bilder handelt, die deswegen Teil unserer kollektiven unbewußten Erinnerung seien. Unsere Studie baut auf den ersten empirischen Studien zum archetypischen Gedächtnis von Rosen et al. (1991) auf die zeigten, daß dargebotene archetypische Symbole, die mit ihrer korrekten Bezeichnung versehen waren, besser gelernt und erinnert wurden. In einer Serie von drei Experimenten benutzten wir 40 chinesische Zeichen anstatt der von Rosen et al. (1991) verwandten archetypischen Symbole. Die Ergebnisse erbrachten empirische Belege dafür, daß chinesische Zeichen im Verbund mit ihrer korrekten Bedeutung signifikant besser erinnert wurden als solche mit unzutreffenden Bezeichnungen. Auf diese Weise zeigten wir, daß es eine unbewußte Kenntnis der chinesischen Zeichen zu geben scheint deren Auslösung das Ergebnis der Präsentation der Zeichen zusammen mit ihrer wirklichen Bedeutung ist. Auf dieser Basis vermuten wir, daß chinesische Zeichen dieselben kognitiven Qualitäten hervortreten lassen wie archetypische Symbole dies tun. Folglich ist im Japanischen ein archetypisches Bild nichtphonetisch in das Sprachsystem integriert und kennzeichnet das Konzept unabhängig vom phonetischen Bedeutungsträger und steht einem solchen gleich.

I caratteri cinesi hanno avuto origine come un sistema semiotico indipendente dal linguaggio parlato e nel linguaggio giapponese funzionano non-foneticamente con oratori che esibiscono nei loro processi un vantaggio dell'emisfero di destra. Abbiamo sottoposto a prova l'ipotesi che i caratteri cinesi siano immagini archetipiche e quindi parte della nostra memoria dell'inconscio collettivo. Il nostro studio si basa sul primo studio della memoria archetipica di Rosen e altri (1991) che dimostrò che i simboli archetipici che combaciavano con il loro significato corretto erano appresi e ricordati meglio. In una serie di tre esperimenti abbiamo usato 40 caratteri cinesi invece dei simboli archetipici usati da Rosen e altri (1991) I risultati forniscono una evidenza empirica che i caratteri cinesi accoppiati con il loro significato corretto venivano ricordati significativamente meglio che quelli che non erano accoppiati. Quindi abbiamo dimostrato che sembra esserci una conoscenza inconscia del significato dei caratteri cinesi che era attivata come risultato di una accelerazione quando i caratteri combaciavano correttamente con il loro significato. Su queste basi ipotizziamo che i caratteri cinesi esibiscono le stesse qualità cognitive dei simboli archetipici. Quindi nel linguaggio giapponese un'immagine archetipica viene integrata non foneticamente nel sistema del linguaggio e significa un concetto indipendente dal significante fonetico ma uguale ad esso.

Китайские иероглифы изначально возникли как семиотическая система, независимая от разговорного языка, а в японском языке они функционируют нефонетически, при том, что говорящие в процессе их переработки проявляют правополушарное преимущество. Мы проверили гипотезу о том, что китайские иероглифы являются архетипическими образами и, следовательно, частью нашей коллективной бессознательной памяти. Наше исследование строится на первом эмпирическом изучении архетипической памяти у Розена и др. (1991),

которое продемонстрировало, что представленные архетипические символы, совпадающие с их верным значением, лучше усваивались и вспоминались. В серии экспериментов мы использовали 40 китайских иероглифов вместо архетипических символов, употребленных Розеном и др. (1991). Результаты предоставили обоснованное свидетельство тому, что китайские иероглифы, совпадающие с точным значением, гораздо лучше вспоминались, чем те, что не совпадали. Таким образом, мы продемонстрировали, что, похоже, существует бессознательное знание значения китайских иероглифов, которое запускаеця в действие в результате зубрежки, когда иероглифы соответствуют своему значению. На этой основе мы сделали предположение, что китайские иероглифы проявляют те же самые когнитивные качества, что и архетипические символы. Таким образом, в японском языке архетипический образ интегрирован не-фонетически в систему языка и обозначает понятие, не зависящее от фонетического означающего, являясь ему равным.

Los caracteres chinos se originaron como un sistema semiótico independiente del idioma hablado y en el idioma japonés ellos funcionan no-fonéticamente con fonemas que se exhiben como manifestaciones del hemisférico derecho en su procesamiento.exploramos la hipótesis de que los caracteres chinos son imágenes arquetípicas y por lo tanto parte de nuestra memoria inconsciente colectiva. Nuestro estudio constituye el primer estudio empírico de memoria arquetípica de Rosen et Al. (1991) el cual demostró que aquellos símbolos arquetípicos presentados conjuntamente con su significado correcto fueron mejor aprendidos y recordados. En una serie de tres experimentos utilizamos 40 caracteres chinos en lugar de los símbolos arquetípicos utilizados por Rosen, et Al. (1991). Los resultados proporcionaron evidencia empírica de que los caracteres chinos emparejados con su significado correcto apreciablemente fueron recordados mejor que los que fueron mal emparejados. Así, demostramos que allí parece haber un conocimiento inconsciente del significado de los caracteres chinos el cual fue provocado a consecuencia de su elaboración cuando los caracteres fueron equiparados correctamente con su significado. Sobre esta base, sugerimos que los caracteres chinos exhiben las mismas cualidades cognoscitivas de los símbolos arquetípicos. Así, en el idioma japonés una imagen arquetípica es integrada no-fonéticamente en el sistema del idioma y significa al concepto independientemente del significante fonético y es igual a él.

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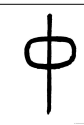
Appendix

talent	deity	knowledge	benefit	separation	possession
dread	fear	dream	path	suffering	wisdom
collection	elder	death	light	law	world
child	sky	row	depth	see	contempl-ation
oneself	heart	scripture	nothing	life	phase
receive	thought	differentia-tion	sensuality	mind	everybody
					
distant	body	centre	love		

APPENDIX C

Forum Psychoanal
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ORIGINALARBEIT

Das psychische Erbe der Menschheit

Forschungsstand und empirische Studien zum Archetypenkonzept C.G. Jungs

Christian Roesler · Milena Sotirova-Kohli

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Zusammenfassung Der Archetypenbegriff, das zentrale Konzept der Analytischen Psychologie, wird in seiner historischen Entwicklung und seinem Stellenwert für Theorie und Praxis ausführlich dargestellt. Angefangen von C.G. Jungs Definitionen des Archetyps bis hin zum heutigen Stand der Diskussion werden verschiedene Konzeptualisierungen auf biologischer, entwicklungspsychologischer und kulturtheoretischer Grundlage vorgestellt. Dabei zeigt sich zum einen, dass es empirische Belege für psychologische Archetypen zum Beispiel in den Neurowissenschaften, der entwicklungspsychologischen sowie der anthropologischen Forschung gibt, zum anderen aber auch, dass die klassische Konzeption einer Vererbung von komplexen symbolischen Mustern vor dem Hintergrund neuerer Erkenntnisse der Humangenetik, insbesondere der Epigenetik, nicht aufrechterhalten werden kann. Die prominenten Lösungsversuche dieses Problems aus der gegenwärtigen Analytischen Psychologie werden diskutiert, insbesondere emergenz- und systemtheoretische Argumentationen. Schließlich werden verschiedene empirische, teilweise experimentelle Studien aus der Analytischen Psychologie, unter anderem der Autoren selbst, vorgestellt, die die Hypothese der Existenz von Archetypen bzw. eines kollektiven (unbewussten) Gedächtnisses bestätigen. Insgesamt gibt der Beitrag einen Überblick über den Stand der Fachdiskussion zum Archetypenkonzept für eine Leserschaft über den engeren Bereich der Analytischen Psychologie hinaus.

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The psychological inheritance of mankind
State of research and empirical studies on the archetype concept of C.G. Jung

Abstract The historical development and importance in theory and practice of the term archetype, the core concept of Analytical Psychology, is extensively presented. Beginning with C.G. Jung's definition of archetype through to the current state of the discussion, various conceptualizations of biological, developmental psychological and cultural theoretical basis are presented. The results show that there is empirical evidence for psychological archetypes, for instance in the neurosciences, developmental psychological and anthropological research and that the classical conception of inheritance of complex symbolic patterns cannot be substantiated by more recent results in human genetics and particularly in epigenetics. The prominent attempts at solving this problem from the contempory Analytical Psychology will be discussed, in particular emergence and system theoretical argumentation. Finally, various empirical, partially experimental studies from Analytical Psychology, among others from the authors themselves, will be presented which confirm the hypothesis of the existence of archetypes and of a collective (unconscious) memory. The article gives a total overview of the state of specialist discussions on the archetype concept for the readership above and beyond the narrow field of Analytical Psychology.

Die Analytische Psychologie

Bekanntlich hat sich Carl Gustav Jung, ehemals Freuds Kronprinz, 1912 sowohl persönlich als auch theoretisch von Freuds Psychoanalyse distanziert und seitdem seine eigene Analytische Psychologie verfolgt. Das bei diesem Bruch entscheidende theoretische Konzept war das der Archetypen. Es ist seitdem das sicherlich am stärksten kennzeichnende Element der Jung'schen Psychologie, weitere zentrale Konzepte wie beispielsweise das kollektive Unbewusste, der Individuationsprozess und auch die praktische Vorgehensweise in der Psychotherapie bauen auf diesem auf. Wie steht es nun aber aus heutiger Sicht um dieses Konzept der Archetypen? Im vorliegenden Beitrag soll zunächst die klassische Auffassung der Archetypen bei Jung zusammengefasst werden, um dann die schon hier inhärenten Probleme des Begriffs deutlich zu machen. Insbesondere Jungs Behauptung, die Archetypen seien biologisch fundiert und würden auf biologischem Wege vererbt, erscheint aus der Sicht heutiger Kenntnisse zur Genetik zunehmend fragwürdig. Die umfangreiche Debatte um diese Frage innerhalb der Jung'schen Community wird ausführlich referiert, und verschiedene aktuelle Lösungsvorschläge werden dargestellt. Dabei wird auch auf aktuelle Erkenntnisse zur genetischen Weitergabe psychischer Merkmale eingegangen.

Andererseits gibt es mittlerweile aber auch zahlreiche empirische Belege dafür, dass so etwas wie psychische Archetypen tatsächlich existieren. Dies leitet über zur Darstellung verschiedener Untersuchungen aus dem jungianischen Bereich, unter anderem auch der Autoren selbst, die das Konzept der Archetypen einer Überprüfung mit empirischen Forschungsmethoden unterzogen haben.

Mit diesem Beitrag sollen der Stand der theoretischen Diskussion innerhalb der Analytischen Psychologie sowie die Differenziertheit aktueller Konzeptualisierungen einer breiteren analytischen Öffentlichkeit zugänglich gemacht werden, auch um dem nach wie vor verbreiteten Vorwurf entgegenzutreten, Jung'sche Konzepte seien mystifizierend und veraltet.

Der Archetypenbegriff bei Jung

Archetypen sind nach Jungs Verständnis angeborene Muster des Erlebens und Verhaltens, die stark affektiv aufgeladen sind und sich auf das Verhalten von Menschen unbewusst auswirken. Jung spricht den Archetypen die Qualitäten von Numinosität, Unbewusstheit und Autonomie zu und postuliert, sie seien universell, also überall auf der Welt zu allen Zeiten bei allen Menschen gleichermaßen vorhanden. Im Jahr 1912 verwendet Jung in *Wandlungen und Symbole der Libido* (Jung 1985, GW, Bd. 5) erstmals den Begriff Urbilder, was dann auch den Anlass zum Bruch zwischen Jung und Freud darstellt. Jung untersucht in dieser Publikation die Parallelen zwischen den psychotischen Fantasiebildungen einer jungen Frau und mythologischen Themen, zum Beispiel dem Heldenmythos. Im Jahr 1917 bezeichnet Jung das Konzept als unpersönliche Dominanten in der Psyche, die das Verhalten beeinflussen, und 1919 erscheint bei ihm erstmals der Begriff Archetyp: „In diesem tieferen stratum finden wir auch die apriorischen, angeborenen Formen der Intuition, nämlich die Archetypen der Wahrnehmung und Auffassung, welche die notwendigen a priori Determinanten aller psychischen Prozesse sind" (Jung 1919/1971, GW, Bd. 8). Hier zeigt sich Jung stark beeinflusst von der Philosophie Kants, der ebenfalls betonte, dass Zeit, Raum und Kausalität als apriorische Formen der Apperzeption jeglicher menschlichen Wahrnehmung vorauslägen. In gleicher Weise ist Jung beeinflusst von Platos Ideenkonzept.

Mitte der 1940er Jahre nimmt Jung eine Unterscheidung vor zwischen dem Archetyp an sich, der unanschaulich sei, und dem archetypischen Bild, seinem konkreten Ausdruck, das subjektiv erfahrbar ist. Der Archetyp sei eine Form ohne Inhalt, vergleichbar mit der Kristallstruktur, die in einer Lösung zur Ausformung eines Kristalls führt. Der konkrete Kristall ist jeweils unterschiedlich, aber die allgemeine Struktur der Anordnung der Moleküle ist bei allen Kristallen immer gleich (Jung 1976, GW, Bd. 9).

Jung ist keineswegs der erste, der die Idee von Archetypen formuliert. Der Psychologiehistoriker Shamdasani (2003) hat detailliert aufgezeigt, dass zu Beginn des 20. Jahrhunderts die Idee von Archetypen sozusagen in der Luft lag. Jung kannte beispielsweise die Debatte in der Ethnologie um das Konzept der „Völkergedanken" von Bastian (1881). Prägend für Jungs Weg zum Archetypenkonzept waren seine Erfahrungen mit psychiatrischen Patienten und deren Fantasiebildungen an der psychiatrischen Universitätsklinik Burghölzli in Zürich. Jung entdeckte, dass die Bildersprache dieser psychotischen Fantasien sich an Mustern orientierte, die in zum Teil hochgradiger Übereinstimmung mit Mythen und religiöser Bildersprache standen und dass dieses Material nicht dem Bereich der Erinnerung oder Erfahrung der Patienten entstammte – zumindest nahm Jung das an (Jung 1990, GW, Bd. 3). Den wichtigsten Fall stellt hier der sogenannte Sonnenphallus-Mann dar: Ein Patient im

Burghölzli berichtete, er sehe aus der Sonne eine Röhre bzw. einen Phallus herauskommen und dieser mache, dass der Wind wehe. Diese Fantasie stimmte in frappierender Weise mit einem mythologischen Bild aus einem antiken Kodex überein, den Jung zu dieser Zeit untersuchte. Auch hier nahm Jung also an, dass hinter beiden Äußerungsformen ein Urbild stehen müsse, und da der Patient keinerlei Kenntnis des antiken Mythos habe, das Bild also nicht durch Erfahrung erworben haben könne, müsse es eingeboren sein (Bair 2003).

Probleme und Widersprüche im Jung'schen Archetypenkonzept

Kryptomnesie

Schon in dem Fall des Sonnenphallus-Mannes und auch in anderen von Jung früh beschriebenen Fällen ergibt sich das grundsätzliche Problem nachzuweisen, dass keine Kryptomnesie vorliegt, dass also die betreffende Person nicht irgendwie in der Vergangenheit mit dem mythologischen Inhalt in Kontakt gekommen ist und ihn nun unbewusst erinnert. Wenn der Archetyp als angeboren definiert wird, darf er nicht durch Enkulturation erworben sein. Dies nachzuweisen ist im konkreten Fall aber sehr schwierig, daher steht diese Annahme Jungs häufig auf wackeligen Füßen (Bair 2003).

Ein weiteres interessantes Argument gegen den Sonnenphallus-Fall und ähnliche Fälle als Beleg für die Existenz von Archetypen: Wenn der Fantasie vom Sonnenphallus tatsächlich ein Archetyp zugrunde läge, müsste diese Fantasie viel häufiger auftreten als nur bei einem einzigen Patienten sowie in einem einzigen alten Kodex.

Widersprüchliche Definitionen bei Jung

Unterzieht man Jungs Schriften zum Archetypenbegriff einer theoriekritischen Analyse, dann finden sich mindestens vier verschiedene Definitionstypen. Häufig wird der Archetyp als biologisch fundiert und auf genetischem Wege vererbt dargestellt: „… ein vererbter Modus des psychischen Funktionierens, korrespondierend der angeborenen Weise, in der das Küken aus dem Ei schlüpft, die Vögel ihr Nest bauen, und so weiter … Mit anderen Worten, es ist ein pattern of behaviour. Dieser Aspekt des Archetyps, der rein biologische, ist der eigentliche Gegenstand der wissenschaftlichen Psychologie" (Jung, Bd. 18, § 1228). Entgegen dieser biologisch orientierten Argumentation äußert Jung aber auch immer wieder, dass die Archetypen einer transzendentalen Ebene entstammten, sie seien ubiquitär und lägen aller menschlichen Erfahrung voraus, seien nicht repräsentierbar oder der bewussten Erfahrung zugänglich und hätten keinen Ort, an dem sie existierten; er selbst zieht hier die Parallele zu Platos Ideenkonzept. Im Jahr 1947 schreibt Jung über den Archetypus: „Die wahre Natur des Archetyps ist nicht bewusstseinsfähig, das heißt, sie ist transzendent, weswegen ich sie als psychoid bezeichne" (Jung 1976, GW, Bd. 9/I, § 68).

Schließlich findet sich eine kulturpsychologisch-hermeneutische Sichtweise des Archetypus. Nach seiner Reformulierung der Archetypentheorie von 1947 und der Unterscheidung zwischen dem Archetyp an sich und seiner konkreten Manifestation

sagt Jung klar, dass die konkrete Ausprägung der Archetypen, ihr Inhalt, kulturell bedingt sei (Jung 1976, GW, Bd. 9/I, § 67). Vor allem aber findet sich eine kulturpsychologische Herangehensweise an den Archetypus in der Art und Weise, wie sich Jung mit Mythologie, Märchen und Religionsgeschichte beschäftigte. Hier geht Jung nämlich eindeutig hermeneutisch vor und behandelt die archetypischen Bilder als Kulturäußerungen, denen man sich nur über Interpretation nähern kann.

Eine vierte, im Grunde empirisch-statistische Definition findet sich in Jungs eigenen empirischen Forschungen mit dem Assoziationsexperiment (s. Abschn. „Studien zum archetypischen Gedächtnis"), in welchem sich über große Fallzahlen immer wieder vergleichbare typische Komplexkonsellationen nachweisen ließen, hinter denen Jung Archetypen vermutete (zu diesen widersprüchlichen Definitionen ausführlich: Roesler 2009, 2010).

Es fehlt eine konsistente Theorie der Archetypen in der Analytischen Psychologie

In der unterscheidenden Gegenüberstellung dieser vier Sichtweisen des Archetypus bei Jung wird deutlich, dass sich diese Konzeptualisierungen teilweise widersprechen, jedenfalls bei Jung selbst nie zu einer konsistenten Theorie zusammengeführt wurden. Die unterschiedlichen Definitionen erscheinen bei Jung miteinander vermischt: Auch wenn Jung zum Beispiel das transzendentale Verständnis von Archetypen vertritt, besteht er gleichzeitig darauf, dass die Archetypen biologisch/genetisch angelegt sind. Auch die spätere Konzeption des Archetyps an sich als nur Form und frei von Inhalt wird bei Jung kaum durchgehalten, vielmehr sind zahlreiche Beispiele von Archetypen bei Jung ganz klar inhaltlich bestimmt (zum Beispiel der Archetyp des Heldenmythos).

Ein weiteres zentrales Problem des Archetypenkonzepts bei Jung ist, dass sehr unterschiedliche Entitäten als archetypisch bezeichnet werden: primitive Wahrnehmungsmodi (zum Beispiel Gehaltenwerden), Lebewesen und Objekte (zum Beispiel Archetyp der Schlange), soziale Muster und Regeln (zum Beispiel Heirat), narrative Muster (zum Beispiel der Mythos des Helden), Bilder und Formen (zum Beispiel das Kreuz), Rituale (zum Beispiel Initiation), religiöse Ideen (zum Beispiel das Opfer), um nur einige zu nennen.

Nach Ansicht der Autoren hat auch in der heutigen Analytischen Psychologie noch keine theoretische Klärung und Systematisierung stattgefunden bezüglich der Frage, was man denn nun genau mit dem Begriff Archetyp meint. Ebenso verschwimmt in der Debatte immer wieder, wofür der Begriff denn nun eigentlich dienen soll, welchen Erkenntnisgewinn er liefert und – da es sich bei der Analytischen Psychologie ja auch um einen therapeutischen Interventionsansatz handelt – was der klinische Nutzen des Konzepts ist. Offensichtlich erfüllt das Archetypenkonzept in der Analytischen Psychologie vor allem zwei Funktionen: zum einen die einer Kulturtheorie, das heißt eines Erklärungsansatzes für die auffallenden interkulturellen Übereinstimmungen in religiösen und mythologischen Vorstellungen, in Bildmotiven, Ritualen und anderem mehr; zum anderen geht man in der theoretischen Begründung des psychotherapeutischen Vorgehens davon aus, dass die universell vorhandenen Archetypen in Krisen-

situationen bzw. bei psychischen Störungen wirksam werden – gefördert durch den therapeutischen Rahmen und die Beziehung – sich in Träumen und symbolischem Material äußern und Heilungsprozesse in der individuellen Psyche anstoßen bzw. strukturieren. Ein Beispiel, das dieses Verständnis verdeutlicht, findet sich in den sog. *Tavistock Lectures*, die Jung 1935 an der Tavistock Clinic in London hielt und die als Einführung in seine zu diesem Zeitpunkt ausformulierte Psychologie diente (Jung 1981, GW, Bd. 18). In der dritten Vorlesung befasst sich Jung explizit mit der therapeutischen Verwendung archetypischer Elemente im Traum. Jung bezieht sich hier auf den Traum eines 40-jährigen Mannes mit Schwindelsymptomatik. Im Traum des Mannes erscheint ein Monster in Gestalt eines Krebses. Jung interpretiert dieses Symbol als eine Nachricht aus dem Unbewussten, dass das zerebrospinale und sympathische Nervensystem des Träumers gegen seine bewusste Einstellung rebelliere, weil ein Krebs nur diese Art von Nervensystem habe. Hier wird eine schon bei Jung und bis heute in der Analytischen Psychologie übliche Praxis deutlich: Die Idee ist, dass das Unbewusste des Klienten im archetypischen Symbol einen Bezug zu einem Wissensbestand herstellt, der dem Bewusstsein des Träumers nicht zugänglich ist. Insofern transportiert das archetypische Element eine zusätzliche, das Bewusstsein übersteigende Information, die auf die Heilung des Patienten abzielt und für den therapeutischen Prozess nutzbar gemacht werden kann. Diese Information stammt aus einem Bereich jenseits des Bewusstseins und war per definitionem auch noch nie bewusst. Beispiele für dieses Verständnis und diese Praxis finden sich zuhauf in der Analytischen Psychologie; in der Regel werden dabei komplexere symbolische Strukturen wie zum Beispiel Märchen und andere mythologische Narrative angesprochen, das heißt, ein Traum ähnelt einem mythologischen Narrativ, und dieses liefert Information über die weitere notwendige Entwicklung der Persönlichkeit, der Therapie und so weiter (zum Beispiel in den Publikationen von Marie-Luise v. Franz).

Hier taucht die für eine Diskussion des Archetypenbegriffs entscheidende Frage auf, nämlich woher diese Information kommt, wenn sie niemals zuvor im Bewusstsein des Träumers war. Es wird hier deutlich, dass der jungianische Therapeut darauf vertraut, dass das Gesamt an archetypischer Information für jeden Klienten potenziell zugänglich ist und unter den gegebenen Umständen aktiviert, „konstelliert" werden kann. Dies wiederum bedeutet, dass die Analytische Psychologie von der Universalität der Archetypen ausgeht und dass es sich hierbei um komplexe symbolische Information handelt, nämlich Prozessmuster, die eine Entwicklung von einem Anfangspunkt hin zu einer Lösung beschreiben und die daher in narrative Form gefasst werden können. Im Folgenden sollen Ergebnisse der Forschung aus unterschiedlichen Disziplinen referiert werden, die Belege für dieses theoretische Konzept liefern.

Empirische Evidenz für Archetypen

Einen ersten empirischen Beleg dafür, dass es archetypische Muster geben muss, lieferte Jung selbst schon zu Anfang seines wissenschaftlichen Schaffens in seinen Assoziationsstudien (Jung 1979, GW, Bd. 2). Dies war zugleich einer der Wege, auf dem er überhaupt zur Idee von Archetypen fand. Hier untersuchte Jung unter experimentellen Bedingungen die Reaktionen von Probanden auf bestimmte emotional

bedeutsame Begriffe. Jung konnte hier auf streng empirischem Wege zeigen, dass es in der menschlichen Psyche unbewusste, affektiv aufgeladene und teilautonome Wirkfaktoren gibt, die er Komplexe nannte. Beim Vergleich vieler Probanden fiel auf, dass es eine Reihe solcher Komplexe gibt, die in ihrem inhaltlichen Kern interindividuell übereinstimmen. Dieser übereinstimmende Kern wurde dann später von Jung als Urbild oder Archetyp bezeichnet. Vom Standpunkt einer wissenschaftlichen Erforschung der Jung'schen Konzepte ist es äußerst enttäuschend, dass Jung nach 1912 diese Assoziationsstudien nicht fortsetzte, war er doch dabei, den Nachweis überindividueller Gestaltungsfaktoren der individuellen unbewussten Komplexbildungen auf streng empirischem Wege zu erbringen. Hier gelangte Jung zu der empirischen Feststellung, a) dass es unbewusste thematische Komplexe gibt, die um einen thematischen Kern kreisen, b) dass bei Untersuchung einer großen Zahl von Individuen deren Komplexe in eine begrenzte Zahl von Kategorien fallen, das heißt, es gibt über eine große Zahl von untersuchten Individuen nur eine begrenzte Zahl von immer wieder sich gleichartig wiederholenden Themenkernen. Die Hypothese Jungs ist hier: Im Kern dieser Kategorien befindet sich ein Archetyp, der das Erleben der Individuen steuert und dessen interindividuelle Gleichartigkeit hervorbringt. Diese Argumentationslinie wurde jüngst von Saunders und Skarr (2001) aufgenommen, die eine mathematische Definition des Archetyps entwickeln: Archetypen sind die Komplexe, die, statistisch betrachtet, in dieselbe Kategorie fallen.

Es wurde von verschiedenen jungianischen Autoren vorgeschlagen, dass die Archetypen in der gleichartigen Bauweise und Struktur des Gehirns begründet liegen, welche gleichartige Erlebens- und Verhaltensweisen produziere. In der Berliner Schule der Gestaltpsychologie wurde argumentiert, es sei eine Eigenschaft unserer kognitiven Struktur, prägnante, in sich stimmige Konfigurationen zu bilden, die sich dann stabilisieren, das heißt, weiteren Veränderungen Widerstand leisten. Diese „guten Gestalten" finde man deshalb ubiquitär, was auch experimentell untersucht wurde (Stadler und Kruse 1990). Probanden wurde ein Punktmuster präsentiert, dass sie dann aus dem Gedächtnis reproduzieren mussten. Diese Reproduktion wurde einem weiteren Probanden vorgelegt, der sie wiederum reproduzieren musste, diese wiederum einem weiteren und so weiter. Es war zu beobachten, dass die Ergänzungen irgendwann auf eine stabile Konfiguration hinausliefen, die nicht weiter verändert wurde und die über verschiedene Serien von Probanden übereinstimmte. Das dahinterliegende Wirkprinzip wird als Konvergenz bezeichnet und erklärt die überall in der Natur sich findende Übereinstimmung grundlegender Formen, die eben in sich selbst so gute adaptive Eigenschaften haben, dass sie nicht mehr weiter verändert werden. In der Weiterentwicklung der Gestalttheorie floss das Konvergenzprinzip in die allgemeine Theorie selbstorganisierender Systeme ein. Diese Theorie wiederum wurde in der Analytischen Psychologie von Saunders und Skarr (2001) aufgegriffen und auf das Archetypenkonzept angewendet als Prozess der Selbstorganisation des Gehirns, der gleichartige Muster hervorbringt.

Kulturübergreifende Forschung zeigt, dass es ein angeborenes, universelles Set voneinander deutlich unterscheidbarer Grundemotionen gibt, die schon beim Säugling vorhanden sind und die auch über alle kulturellen Unterschiede von Mensch zu Mensch eindeutig erkennbar sind (zum Beispiel über mimischen Ausdruck; Ekman et al. 1987).

Belege für angeborene psychische Strukturen

Linguistische Forschung belegt, dass Kinder über angeborene Fähigkeiten zum erleichterten Spracherwerb verfügen. In den 1960er Jahren konnten Neurolinguisten beim Versuch, künstliche sprachlernende Systeme zu modellieren, zeigen, dass Kinder allein aus den Sprachbeispielen, die sie in ihren ersten Lebensjahren hören, niemals das Niveau an sprachlicher Regelkompetenz erreichen könnten, welches sie tatsächlich erreichen, wenn der Regelerwerb allein auf Versuch und Irrtum basieren würde. Daraus leitete Chomsky ab, es müsse in der neuronalen Struktur eine Bereitschaft vorliegen, sprachliche Regeln (zum Beispiel der Syntax) schneller als zufällig zu erkennen und zu lernen, was seitdem als „angeborenes Spracherwerbssystem" bezeichnet wird. Dass so etwas existiert, konnte mittlerweile empirisch nachgewiesen werden (Markman 1989).

Neugeborene sind offensichtlich mit bestimmten rudimentären Wahrnehmungs- und Verhaltensprogrammen ausgestattet, die genetisch fixiert sind; bei einigen kennt man sogar das zuständige Gen. Die Kognitionsbiologen Johnson und Morton (1991, zit. nach Knox 2003) beschreiben ein genetisch fixiertes Verhaltensmuster, dessen genetischer Code bekannt ist und das sie CONSPEC nennen. Es bringt menschliche Neugeborene dazu, solche Strukturen, die dem menschlichen Gesicht entsprechen, länger zu fixieren als andere Objekte. Auch können Säuglinge in den ersten Wochen relativ schnell unterscheiden, ob ein sich bewegendes Objekt von außen bewegt wurde oder sich von selbst bewegt, also ein lebendes Wesen sein muss. Die Kompatibilität der neueren Säuglingsforschung mit den schon lange bestehenden Aussagen der Analytischen Psychologie hat Schulz-Klein (2000) zusammenfassend dargestellt.

All diese angeborenen Fähigkeiten haben gemeinsam, dass sie Neugeborene vor allem auf die Interaktion mit anderen Menschen hin orientieren bzw. Interaktion (vor allem mit der Pflegeperson) erleichtern, initiieren oder fördern. An dieser Stelle lässt sich zumindest festhalten, dass Jung gegenüber dem zu seiner Zeit vorherrschenden und erst heute langsam an Einfluss verlierenden Paradigma des Behaviorismus zumindest einen Sieg davon getragen hat: Die Psyche des Neugeborenen ist keine Tabula rasa, es gibt angeborene psychische Strukturen. Dies wird zunehmend auch in der wissenschaftlichen Psychologie anerkannt. So basiert beispielsweise die sog. Neuropsychotherapie Klaus Grawes, der hier einmal als „geläuterter Behaviorist" bezeichnet wird, auf einem Modell angeborener, universeller Grundbedürfnisse, wozu beispielsweise auch Bindungsbedürfnisse zählen. Die Bindungsforschung liefert überhaupt einen deutlichen Beleg für angeborene Verhaltensmuster beim Menschen. Daher verbindet Stevens (2003) sein biologisches Archetypenkonzept mit der Bindungstheorie und argumentiert, Archetypen seien angeborene Bedürfnisse wie zum Beispiel das Bedürfnis nach Bindung. Archetypen lägen begründet in der Gleichartigkeit der menschlichen Grunderfahrungen, zum Beispiel der Hilflosigkeit und Abhängigkeit des Säuglings von der Mutter, die zu bestimmten gleichartigen Niederschlägen im Gehirn führen. Ein Beleg dafür wäre die universelle Gültigkeit der Bindungstypen. Es konnte in kulturübergreifender entwicklungspsychologischer Forschung nachgewiesen werden, dass es überall auf der Welt vier gleichartige Muster gibt, wie Kinder sich an ihre Bezugspersonen binden.

Kulturwissenschaftliche Forschung

Ethnologische Untersuchungen haben als erste systematische Theoriebildung und Forschung zu dem Konzept Archetypen geliefert, und zwar historisch schon vor Jung. In der Völkerkunde war nämlich schon länger die hochgradige Übereinstimmung in den Erzählmotiven weit voneinander entfernt lebender Ethnien aufgefallen und hatte etwa ab 1880 eine noch Jahrzehnte anhaltende Debatte darüber in Gang gesetzt, wie man diese Übereinstimmungen in den Märchen und Mythen erklären könne. Hier nur einige Belege zur Illustration: In einer vergleichenden Untersuchung über 50 zufällig ausgewählte Kulturen zeigte sich in der Mythologie von 39 Kulturen das Inzestmotiv (Kluckhohn 1960); die Mehrzahl der auf der Welt bekannten Volksmärchen ließen sich zu einer Typologie mit einer zweistelligen Zahl an Typen ordnen, und zu jedem Typus finden sich Exemplare aus völlig unterschiedlichen Erdteilen (Aarne und Thompson 1964); zu den praktisch bei allen Völkern übereinstimmend vorkommenden mythologischen Motiven gehören: das uranfängliche Chaos, die Trennung von Himmel und Erde, eine verheerende Flut als Strafe für die Menschen, der Inzest der uranfänglichen göttlichen Geschwister, der Raub des Feuers von den Göttern und anderes mehr. In der Ethnologie stritten um 1900 herum vor allem zwei Erklärungsmodelle: Die Diffusions- oder Übertragungstheorie ging davon aus, dass die Ursache der Übereinstimmung in tatsächlichem physischem Kontakt zwischen den Völkern bzw. Wanderungsbewegungen liege; es wurde sogar argumentiert, alle Völker stammten von einer „Kultursippe“ ab. Die Gegenthese war die Theorie der Elementargedanken (Bastian 1881), die aussagte, dass die mythologischen Übereinstimmungen Ausdruck der psychologischen Gleichartigkeit aller Menschen sei. Genau diesen Gedanken, der um 1900 in der Wissenschaft außerordentlich populär war, nahm Jung mit seiner Theorie der Archetypen für die Psychologie auf. Infolge dieses Theorienstreits wurde in der Ethnologie intensiv geforscht, und tatsächlich wurden Erkenntnisse über Wanderungsbewegungen und kulturellen Austausch gewonnen. Ohne Zweifel haben sich Kulturen gegenseitig beeinflusst, und dies hat Niederschläge in linguistischer und mythologischer Hinsicht hinterlassen. Trotzdem gilt in der Ethnologie die Wanderungshypothese als widerlegt. Es ließen sich nicht zwischen allen Ethnien mit übereinstimmenden Mythen physische Kontakte nachweisen, bei manchen sogar explizit ausschließen (Bischoff 1997). Darüber hinaus haben Humanethologen in kulturvergleichenden Studien ein Set von Universalien menschlichen Verhaltens identifiziert: „Universalien des Sozialverhaltens wurde in folgenden Bereichen beobachtet: bei der Mutter-Kind-Beziehung, bei der Paarfindung, beim Ausformen der Rangordnung, bei Territorialverhalten, bei Objektbesitz und -tausch, bei innerartlichem Feindverhalten sowie bei Neugierverhalten bzw. explorativer Aggression“ (Obrist 1990). Dies ist nun zwar einer der überzeugendsten Belege für die Existenz von Archetypen, zugleich kann man diese Universalien aber auch ohne Rückgriff auf die Behauptung, sie seien genetisch vererbt, erklären. Levi-Strauss hat in seiner Konzeption einer strukturalen Anthropologie eine ganz andere Erklärung gefunden: Die interkulturelle Gleichartigkeit zum Beispiel in Heirats- und Initiationsriten kommt dadurch zustande, dass menschliche Gemeinschaften zu allen Zeiten und überall auf der Welt mit denselben strukturellen Problemen konfrontiert sind (zum Beispiel der Ablösung aus den starken emotionalen Bindungen an

die Ursprungsfamilie und der Öffnung für neue Bindungen, die eine gesunde Fortpflanzung ermöglichen, das heißt, nicht Inzest darstellen und so den Fortbestand der Gemeinschaft sichern) und dafür dann auch ähnliche Lösungen finden.

Veränderte Bewusstseinszustände

Der amerikanische Jungianer Haule (2010) hat kürzlich in einem umfangreichen zweibändigen Werk ausführlich zu Jungs Archetypenkonzept Stellung genommen und eine Fülle an theoretischem und empirischem Datenmaterial zusammengetragen. Seine generelle Argumentation ist die, dass mittlerweile in den Naturwissenschaften genügend Belege für die Existenz archetypischer Strukturen vorhanden sind, wie zum Beispiel beim schon erwähnten Spracherwerb. Ein weiteres Beispiel wäre der „kausale Operator", das heißt die menschliche Eigenart, Kausalverbindungen herzustellen, in der Haule sogar die Grundlage der modernen Wissenschaften erkennt. Sehr interessant sind Haules Thesen zur neuropsychologischen Fundierung bestimmter Rituale und ritueller Körperhaltungen, wie wir sie überall auf der Welt finden und welche damit eine universelle menschliche Verhaltensform darstellen. Haule stützt sich dabei auf die Befunde der Anthropologin Felicitas Goodman, die vergleichende Ritualforschung betrieben hat. Aus diesen Vergleichen extrahierte sie bestimmte universell verbreitete Körperhaltungen, wie sie bei verschiedenen Völkern zur Erlangung von Trancezuständen Verwendung finden. Diese Körperhaltungen wurden dann in experimentellen Studien von Versuchsteilnehmern eingenommen, und es zeigte sich, dass sie vergleichsweise zuverlässig zu voneinander unterscheidbaren Trancezuständen führen. Besonders interessant ist dabei, dass diese Körperhaltungen sich schon als Darstellungen in jungsteinzeitlichen Höhenmalereien finden. Haule nimmt an, dass Menschen schon früh diese Haltungen als effektiv tranceinduzierend entdeckt haben, weil sie bestimmte universelle Gegebenheiten des menschlichen neuronalen Systems nutzen. Dass diese Haltungen zum einen weltweit verbreitet sind und sie zum anderen auch bei heutigen Menschen Trancezustände auslösen, spricht dafür, dass wir es hier tatsächlich mit archetypischen Mustern im Sinne Jungs zu tun haben. Die körperliche Verankerung dieser archetypischen Muster lässt sich ebenfalls nachweisen. In einer Untersuchung konnte Rittner (2006) die durch die Trancehaltungen ausgelösten Bewusstseinszustände im Elektroenzephalogramm (EEG) abbilden: Hier zeigte sich ein charakteristisches Phänomen, nämlich eine Erhöhung der kortikalen Negativierung (was für eine überwache Hochspannung spricht) mit einer gleichzeitigen Zunahme langsamer θ-Wellen, die mit Tiefenentspannung verbunden sind; es handelt sich also um einen paradoxen und weit außerhalb der Alltagserfahrung liegenden Zustand des Gehirns. Interessant aus jungianischer Sicht ist auch, dass sich hier Jungs Unterscheidung zwischen dem letztlich unerfahrbaren, inhaltsleeren „Archetyp an sich" sowie dem konkreten archetypischen Bild, das erfahrbar ist, bestätigt: Die rituellen Körperhaltungen sind bei allen Völkern gleich und lösen übereinstimmend Trancen aus, die Inhalte der „Geistreisen" sind dann aber jeweils kulturell bedingt – der Inuit begegnet dem Robbengeist, der Pygmäe den Geisttieren des afrikanischen Urwaldes.

Archetypen als spezi□sche psychophysische Zust□nde

Haule (2010, S. 259) argumentiert vor diesem Hintergrund, dass Archetypen als „typische emotionale Körperzustände" verstanden werden müssen, evolutionär bedingte spezifische Kombinationen von Zuständen des neuronalen Systems, insbesondere des autonomen Nervensystems, von Ausschüttung von Hormonen und Neuromodulatoren, Körperhaltungen, Gesichtsausdrücken etc. Schon frühe menschliche Gruppen hätten diese Zustände unterscheiden gelernt und vor allem Rituale und Mythen entwickelt, mit denen diese Zustände zielsicher herbeigeführt werden konnten.

Dass es ganz offenbar Einflüsse archetypischer Muster auf Körperzustände gibt, belegt auch die folgende Studie. In einer schmerzmedizinischen Studie brachten Kut et al. (2007) Probanden dazu, sich mit bestimmten archetypischen Rollenvorbildern (im Original so bezeichnet) zu identifizieren, und bestimmten dann das Ausmaß des Schmerzempfindens. Es zeigte sich, dass für diejenigen, die sich mit dem Bild des Helden identifizierten, das subjektive Schmerzempfinden signifikant niedriger ausfiel als für Probanden mit einer Identifizierung mit dem Bild eines Feiglings, was nun in der Behandlung chronischer Schmerzsyndrome genutzt werden soll.

Lysergsäurediethylamidstudien

In den 1960er und 1970er Jahren wurde als Beleg für die Richtigkeit der Archetypentheorie die Forschung zu veränderten Bewusstseinszuständen angeführt: Masters und Houston (1966) dokumentierten über einen Zeitraum von 15 Jahren in 206 Sitzungen die Fantasien von Probanden unter Lysergsäurediethylamid(LSD)- und Meskalineinfluss im Rahmen experimenteller Bedingungen. Sie berichten zum einen eine hochgradige Regelmäßigkeit in den Mustern der geschilderten Fantasien. Die Versuchsleiter wurden häufig in sehr ähnlicher Weise verzerrt wahrgenommen, nämlich als Götter, Priester oder Personifikationen von Weisheit, Wahrheit oder Schönheit, das heißt als numinos aufgeladen, was der Definition von Archetypen entspricht. Zum anderen entsprachen die berichteten Fantasien in hohem Grade mythologischen Themen (Mythos des Kind-Heros, der Schöpfung, der ewigen Wiederkehr, des Paradieses und Sündenfalls, von Inzest und Strafe, Polaritäten (Licht und Dunkelheit, Ordnung und Chaos, Mythos der Gralsuche), und die auftretenden Figuren waren in 96 % der Fälle religiösen Ursprungs. Vergleichbares wurde von Grof (1978) aus seinen LSD-Experimenten berichtet. Es wurde hier argumentiert, das Halluzinogen versetze das Nervensystem der Probanden in einen interindividuell vergleichbaren Zustand und aktiviere die phylogenetisch gleichartigen neuronalen Strukturen, eben die Archetypen. Die erlebten Fantasien seien Ausformungen archetypischer Grundmuster. Auch wenn dies einen hohen Grad an Interpretation beinhaltet, ist doch die Ähnlichkeit der berichteten Fantasien bemerkenswert.

Zusammenfassend lässt sich so weit festhalten, dass es zahlreiche Belege aus unterschiedlichen Bereichen für die Existenz psychologischer Archetypen gibt. Allerdings ist die Frage, ob für alle diese Strukturen eine genetische Weitergabe angenommen werden muss. Gerade in den LSD-Studien waren natürlich alle Probanden Erwachsene und hatten somit einen Sozialisationsprozess durchlaufen, sodass man auch sagen könnte, die Gleichartigkeit der Vorstellungen liege in der Gleichartigkeit der

kulturellen Einflusse begründet. Es wurde schon deutlich, dass sich die entscheidende Frage beim Archetypenkonzept um den Punkt dreht, wie die Universalität der archetypischen Muster zustandekommt. Jung argumentiert, sie seien eben angeboren und würden auf genetischem Wege weitergegeben. Daher soll im Folgenden diese Frage vor dem Hintergrund des aktuellen Wissensstands in der Humangenetik beleuchtet werden.

Genetik

Wir haben schon gesehen, dass man unterscheiden muss, was mit Archetyp genau gemeint sein soll. Es macht einen enormen Unterschied, ob behauptet wird, das Muster, wie beispielsweise der Webervogel sein Nest baut, sei genetisch angelegt, oder ob eine komplexe mythologische Vorstellung, ein kognitiver Inhalt, genetisch codiert sein soll. Das Zweite ist schlichtweg nicht möglich. Seit der vollständigen Kartierung des menschlichen Genoms im Rahmen des Human Genome Project weiß man, dass das menschliche Erbgut auf ca. 24.000 Gene begrenzt und der Großteil davon mit dem Bau der Organe belegt ist. Zudem encodieren Gene nur den Bau bestimmter Eiweiße, was wiederum bestimmte biochemische Vorgänge nach sich zieht. Würde „die Natur" tatsächlich versuchen, mit diesem Code eine komplexe symbolische Information wie zum Beispiel eine mythologische Vorstellung zu codieren, würde dafür ungeheuer viel „Speicherplatz" benötigt – ganz abgesehen von der Frage, ob so etwas überhaupt möglich ist. Die vorhandenen Gene würden zur Codierung dessen, was in Jungs Theorie als Archetypen konzipiert ist, niemals ausreichen. Die Humangenetiker sind sehr klar in ihrer Aussage, dass Gene nicht als Träger komplexer symbolischer Information dienen können. Genetisch gesteuert entstehen in der frühen menschlichen Entwicklung fast nur subkortikale Strukturen. Symbolische Information braucht aber Vernetzungen im Neokortex, die erst im Laufe der Entwicklung entstehen (deutlich jenseits des ersten Lebensjahres; Knox 2003). Das heißt zunächst einmal, dass Archetypen im Sinne komplexerer symbolischer Strukturen, also zum Beispiel Mythologeme wie der Heldenmythos, grundsätzlich nicht genetisch codiert sein können.

Ist die Debatte Anlage vs. Umwelt noch aktuell?

Einerseits existieren also tatsächlich angeborene mentale Fähigkeiten, andererseits sind diese Strukturen so rudimentär bzw. nur auf Wahrnehmungssteuerung ausgerichtet, dass sie meilenweit von komplexeren symbolischen Mustern entfernt sind. Jungs Behauptung einer genetischen Anlage der komplexen Archetypen basierte auf den zu seiner Zeit noch bruchstückhaften Kenntnissen über Genetik. Die tatsächliche Funktionsweise von Genen, wie man sie heute kennt, unterscheidet sich deutlich von der Vorstellung, die offenbar Jung noch zugrunde legte, welche man als „Blaupausenmodell" bezeichnen könnte: Der genetische Code ist gleichbedeutend mit einem Bauplan, in dem der gesamte Aufbau des Menschen und auch seines Gehirns schon von vorneherein festgelegt ist, und dieser Bauplan wird in der Entwicklung nur noch abgelesen und umgesetzt.

Tatsächlich hat man gerade in den letzten Jahren herausgefunden, dass es verschiedene Mechanismen gibt, durch welche die Gene in hohem Maße mit ihrer Umwelt interagieren, und dass es sogar durch soziale und psychische Einflüsse in der Entwicklung zu einer Veränderung genetischer und anderer biologischer Strukturen kommen kann, was als Epigenetik bezeichnet wird. Kurz gesagt wird ein Gen nicht einfach wie ein Bauplan ausgeführt, sondern es wird in Abhängigkeit von Umgebungsbedingungen an- und abgeschaltet (Genschalter sind verpackt und müssen ausgepackt werden), was als Genexpression bezeichnet wird. Das höchst Interessante an diesen neuen Erkenntnissen ist nun, dass diese „Verpackung" durch frühe Erfahrungen (intrauterin und in den ersten Lebensmonaten) veränderbar ist. Ein Beispiel wäre die Modifikation der Stressreaktion (Meaney 2010): Mütterliche Zuwendung in den ersten Lebensmonaten führt über verschiedene neurobiochemische Zwischenschritte zur Entfernung der Methylgruppen vom Genschalter des Glukokortikoidrezeptorgens, was darin resultiert, dass das Gen dauerhaft stärker abgelesen wird. Dies bewirkt einen dauerhaft höheren Pegel des Antistresshormons und stellt somit einen bleibenden Puffer gegen Stress dar. Collins, Leiter des Humane Genome Project, fasst die heutigen Erkenntnisse über die Wechselwirkung von Anlagen und Umwelt zusammen, indem er schreibt, „dass die Gene die Basis bilden, auf die dann die Umwelt einwirkt. Gene sind weder Puppenspieler noch Blaupausen. Und sie sind nicht einfach nur Erbfaktoren. Sie sind während des Lebens aktiv, sie schalten sich gegenseitig ein und aus, sie reagieren auf die Umgebung … Sie sind sowohl die Ursache als auch das Ergebnis unserer Aktivitäten. Manchmal sind die Anhänger der ‚Umweltseite' vor der Stärke und der Zwangsläufigkeit der Gene so sehr erschrocken, dass sie die wichtigste Botschaft übersehen: Die Gene sind auf ihrer Seite" (Collins 2011, S. 231).

Die genetische Forschung hat mittlerweile verschiedene Genvarianten identifiziert, die mit psychischen Merkmalen einhergehen, allerdings auch wieder mit Umwelteinflüssen interagieren. So existiert beispielsweise offenbar ein „Depressionsgen" *(5-HTTLPR)*, dessen kurze Variante das Risiko zu Depressionen erhöht – allerdings nur, wenn auch belastende Erlebnisse in der Kindheit vorliegen – es gibt also so etwas wie eine unterschiedliche Empfänglichkeit. Das Konzept der Endophänotypen, typische Kombinationen von genetischer Anlage und Umwelterfahrungen, die sich zu charakteristischen Syndromen ausprägen, zum Beispiel dem Störungsbild Aufmerksamkeitsdefizit- und Hyperaktivitätssyndrom (ADHS), sei hier nur erwähnt.

Zusammengenommen bedeuten diese Ergebnisse vor allem eines: Auch wenn der Mensch zweifellos mit genetischer Information ausgestattet ist, so spielen doch Erfahrungen, und zwar in der frühen Entwicklung vor allem Erfahrungen in Beziehungen mit Pflegepersonen, eine ganz wesentliche Rolle dabei, welche genetische Information überhaupt und wie und wann abgelesen wird. Erfahrungen bewirken also letztlich eine sehr unterschiedliche Ausformung derselben genetischen Anlage, bzw. bestimmte Gene können nur auf bestimmte Erfahrungen hin überhaupt aktiviert werden. Das Schlüsselwort der modernen biologischen Entwicklungstheorie („developmental systems theory") heißt also nicht mehr Bauplan, sondern Interaktion. Die Debatte Anlage vs. Umwelt ist damit obsolet geworden. Merchant (2006) hat die Implikationen dieser Erkenntnisse für die Archetypentheorie hervorragend zusammengefasst ebenso wie den aktuellen Stand der Debatte zwischen Befürwortern einer

rein biologischen Verankerung von Archetypen (vor allem Stevens 2003) vs. Anhängern einer interaktionistischen Sichtweise (Knox 2003; Hogenson 2004). Interessanterweise kommt Merchant (2009) in einer neueren Arbeit bei der Überprüfung von Jungs eigenen Fallbeispielen, mit denen er die genetische Anlage von Archetypen zu beweisen suchte, zu der Erkenntnis, dass alle diese klassischen Fallbeispiele auch ohne die zwingende Annahme biologisch vererbter Archetypen erklärbar seien. Er nimmt in der Folge eine Position ein, die als Emergenz bezeichnet und die im Abschn. „Archetypen als emergente Strukturen" ausgeführt wird. Eine besonders wichtige Implikation betrifft die Universalität von Archetypen. Jung meinte, die Archetypen müssten bei allen Menschen gleichermaßen vorliegen, und dies sei nur dann gewährleistet, wenn sie genetisch verankert wären. Die aktuelle Genetik stellt genau dies infrage: selbst, wenn etwas genetisch angelegt ist, heißt das keineswegs, dass es dann auch bei allen Genträgern zur selben Ausprägung führt. Wie gezeigt, hängt dies in so hohem Grade von Umwelteinflüssen ab, zum Beispiel ob das Gen überhaupt gelesen wird, dass die Aussage, es liege bei mehreren Personen das gleiche Gen vor, zunächst einmal kaum etwas besagt. Das heißt auch, die Argumentation, Archetypen entsprängen der gleichartigen Bauweise des menschlichen Gehirns, wird obsolet, weil diese Gleichartigkeit keineswegs gegeben ist. Hinzu kommt die Erkenntnis der hohen Kontextsensitivität von biologischer Entwicklung: Schon kleinste Einflüsse können im Laufe der Entwicklungen massive Veränderungen auslösen, sodass selbst bei optimaler Kontrolle von Gen- und Umweltbedingungen praktisch keine Vorhersage über Merkmalsausprägungen möglich ist (Merchant 2006).

Bezüglich des entscheidenden Merkmals Universalität von Archetypen stehen wir also vor einem Dilemma: Ein genetischer Übertragungsweg quasi als Sicherung der universellen Verbreitung der archetypischen Information fällt angesichts dieser neuen Erkenntnisse aus; wie können wir dann einen Weg der Weitergabe universeller psychischer Archetypen theoretisch konzeptualisieren?

Archetypen als emergente Strukturen

Neuere jungianische Autoren sehen eine Lösung des beschriebenen Dilemmas vor allem in dem neueren wissenschaftlichen Konzept der Emergenz (Knox 2003; Hogenson 2004). In emergenten Prozessen führen Verbindungen von elementaren Bausteinen bzw. das Zusammenwirken von Systemelementen zu qualitativen Sprüngen auf eine ganz neue Ebene, auf der völlig neue Gesetzmäßigkeiten gelten, die sich nicht aus den Eigenschaften der einzelnen Bestandteile vorhersagen lassen. Es wird nun argumentiert, dass Archetypen keine Lokalisation, zum Beispiel in Genen, hätten, sondern gänzlich emergente Phänomene der Entwicklungsdynamik von Gehirn, Umwelt und Narrativ (Hogenson 2004) seien. Merchant (2009, S. 342) fasst diese Argumentation folgendermaßen zusammen: „ … the possibility that there are no such things as pre-existent, innate archetypal structures which direct psychological life and which are at the core of complex development. Rather there would be developmentally produced mind/brain structures (image schemas) underpinning a later scaffolding through various processes of emergence and self-organization. It is the latter which has the capacity to generate symbolic imagery. The crucial point is that such

imagery would be arising out of mind brain structures which are themselves derived from early preverbal developmental experience and not from innate archetypes. The ramifications are substantial, for the very existence of archetypes as Jung conceived them is called into question".

Hier setzt die Theorie der basalen Schemata von Knox (2003) an, die als herausragende Vertreterin der Emergenzposition betrachtet werden kann. Gene kann man auf der Grundlage des aktuellen Kenntnisstandes so sehen, dass sie weniger spezifische Information enthalten, als vielmehr Prädispositionen für Entwicklung darstellen, die dann zum Zuge kommt, wenn sie auf entsprechende Umweltstimuli trifft. Was die mentale Entwicklung betrifft, so dienen die hierfür zuständigen Gene offenbar vor allem dazu, die Aufmerksamkeit auf bestimmte Reize zu lenken, sodass dadurch weitere neuronale Stimulation und kortikale Entwicklung ermöglicht werden. Wie schon erwähnt, existiert ein genetisch fixiertes Verhaltensmuster, das menschliche Neugeborene dazu bringt, solche Strukturen, die dem menschlichen Gesicht entsprechen, länger zu fixieren als andere Objekte. Dies wird bei der Bezugsperson in der Regel dazu führen, dass sie das Blicken des Säuglings als Kommunikation interpretiert und darauf wiederum mit Kommunikation antwortet, sodass hieraus eine Interaktionsbeziehung entsteht, die dem Säugling als Entwicklungsumwelt dient und seine weitere kognitive Reifung fördert. Das Gen sichert also mit nur einem minimalen Aufwand an Information ein basales Verhaltensschema, das jedoch das Vorhandensein von Qualitäten in der Umwelt voraussetzt, sodass aus der Wechselwirkung zwischen Schema und Umwelt differenziertere Strukturen in einem Prozess der Emergenz entstehen können. „Innate mechanisms focus the infant's attention onto features in the environment which are crucial to the infant's survival; these mechanisms are biologically based and have arisen by the process of natural selection because they improve chances of survival. Innate mechanisms are activated by environmental cues, interacting with them and organizing them, leading to the formation of primitive spatial and conceptual representations (image schemas or archetypes). These form the foundation on which later, more complex representations can be built" (Knox 2003, S. 631). Diese „primitiven Schemata oder Archetypen" seien mehr oder weniger universell, weil die Grundbedingungen der Umwelt auf dieser Ebene, auf die die Aufmerksamkeit von Säuglingen gelenkt wird, überall auf der Welt dieselben seien, und daher die Archetypen als „image schemas" „reliably repeated early developmental achievements" (Knox 2003, S. 9).

Diese Rekonzeptualisierung von Archetypen als Bilderschemata wurde in verschiedenen empirischen Studien überprüft.

Experimentelle Studien zum Archetypenkonzept

Studien zum archetypischen Gedächtnis

Interessanterweise hat Jung, wie Rosen et al. (1991) aufzeigen, in seinen Assoziationsexperimenten nie Symbole eingesetzt. Als Instrument zum Studium des archetypischen Gedächtnisses mittels Symbolen entwickeln die genannten Autoren das Archetypal Symbol Inventory (ASI), das aus 40 archetypischen Symbolen und 40

damit verbundenen Wörtern besteht, welche die archetypische Bedeutung dieser Symbole angeben. Außerdem entwickelten Rosen und Smith eine Reihe von Experimenten, um die Hypothese des kollektiven unbewussten Gedächtnisses zu prüfen. Die erste Studie von Rosen et al. (1991) unterstützte, ebenso wie weitere Studien von Huston et al. (1999), das Bestehen eines archetypischen, kollektiven unbewussten Gedächtnisses auf empirische Weise. Dabei stützen sich die Studien auf das Konzept des Bilderschemas, dessen Bezug zum Archetypenkonzept oben in dem emergenztheoretischen Ansatz von Knox ausgeführt wurde.

Exkurs

Bilderschemata wurden unter anderem von Johnson (2007) als eines der grundlegenden Konzepte in der kognitiven Semantik begründet. Man nimmt an, dass sie die ersten Formen von Darstellungen sind, welche im kindlichen Gehirn geformt werden, indem sie die angeborene Fähigkeit des Gehirns als eines komplexen adaptiven Systems zur Selbstorganisation nutzen. Johnson definiert ein Bilderschema als „dynamisches, wiederkehrendes Muster von Interaktionen des Organismus mit der Umwelt" (Johnson 2007, S. 136). Sie sind „Strukturen sensomotorischer Erfahrungen, welche für die abstrakte Konzeptualisierung und das logische Denken herangezogen werden können" (Johnson 2007, S. 141). Sie sind „prä-verbal und meist unbewusst" (Johnson 2007, S. 144), und stellen eine Form einer „heranwachsenden Sinnebene" dar. (Johnson 2007, S. 144). Bilderschemata codieren die wahrnehmbare Erfahrung und sind die Grundlage konzeptuellen Denkens und abstrakter Konzepte, dank Mechanismen wie dem Bildergedächtnis und der metaphorischen Extension. Wie Archetypen als solche sind Bilderschemata Gestalten, welche nie als explizite mentale Darstellungen codiert werden. Wenn Archetypen in Begriffen der kognitiven Semantik als Bilderschemata beschrieben werden können, liegen sie auch der Sprache und dem Denken zugrunde und werden über einen Prozess der verkörperten Erfahrungssimulation für das sprachliche Verständnis genutzt. Darüber hinaus können sie als Anziehungspunkte im Selbstorganisationssystem, eine Form der Stabilität innerhalb der kognitiven Systeme, verstanden werden; sie verknüpfen verkörperlichte Erfahrungen, Gedanken und Sprache, womit sie Simulationen von Ereignissen und/oder Erfahrungen im Körper als Grundlage des sprachlichen Verständnisses erleichtern.

In ihrer ersten Studie untersuchten Rosen et al. (1991) den Lerneffekt und die Abrufbarkeit von 40 archetypischen Symbolen aus dem ASI und ihrer Bedeutung. In den Experimenten benutzten die Autoren ein kognitionspsychologisches Vorgehen, um die Hypothese des kollektiven Unbewussten (Gedächtnis) zu prüfen. Rosen und sein Team stellten die Hypothese auf, dass ein bereits bestehendes kollektives unbewusstes Gedächtnis Qualitäten haben müsste, die dem semantischen Gedächtnis der kognitiven Psychologie ähnlich sind. Die Autoren benutzten außerdem ein Vorgehen des Lernens nach Listen, um festzustellen, ob es eine bereits bestehende Kenntnis von archetypischen Symbolen gibt. Dabei erhalten die Teilnehmenden Listen mit Stimuli zum Lernen, danach wird ihre Erinnerung an die gelernten Stimuli geprüft. Es kann empirisch nachgewiesen werden, dass Wörter offenbar besser gelernt werden, wenn sie von einem semantisch verwandten Stichwort begleitet werden.

Der Aufbau der Studie von Rosen et al. bestand daraus, den Teilnehmenden 40 archetypische Symbole aus dem ASI zu zeigen, die zur Hälfte mit ihrer archetypischen Bedeutung, zur anderen Hälfte mit falschen Bedeutungen verbunden war. Später wurden den Teilnehmenden die Symbole gezeigt, und sie sollten sich an das Wort erinnern, das zuvor mit dem Symbol gezeigt worden war. Wie angenommen zeigte sich, dass jene Symbole, welche mit der korrekten archetypischen Bedeutung verbunden waren, besser abgerufen werden konnten als jene mit falscher Bedeutung. Daraus konnten die Autoren schließen, dass die archetypischen Symbole und ihre archetypische Bedeutung eng verbunden sind und dass es eine bereits bestehende Kenntnis der Symbole gibt, welche ausgelöst wird, wenn den Teilnehmenden die Symbole mit ihrer richtigen Bedeutung vorgelegt werden. Außerdem wurde in zwei vorgängigen Studien geprüft, wie weit die Teilnehmenden eine spontane bewusste Kenntnis der archetypischen Bedeutung der Symbole hatten, und es konnte empirisch nachgewiesen werden, dass es praktisch keine bewusste Kenntnis dieser Bedeutung gibt. Dies unterstreicht weiter die Hypothese, dass es eine bereits bestehende unbewusste Kenntnis der Bedeutung der Symbole gibt.

Um zu überprüfen, ob die von Rosen et al. gefundenen Resultate einen Effekt aufzeigen, der in allen Kulturen und sprachlichen Kontexten zu finden ist, übersetzten die Autoren das ASI ins Deutsche. Sie führten eine Replikation der Studie in der deutschsprachigen Schweiz mit 402 Teilnehmern (Anatomiestudenten der Universität Bern und Psychologiestudenten der Universität Basel) durch. Die Resultate belegten wie die amerikanische Studie, dass die Symbole, die in der Lernphase zusammen mit der richtigen Bedeutung gezeigt wurden, in der Abrufphase statistisch signifikant besser gelernt und abgerufen werden (Sotirova-Kohli et al., in review). Das ist ein weiterer Beweis dafür, dass das kollektive Unbewusste ein universelles Phänomen ist, unabhängig von Kultur, Sprache und familiärem Hintergrund.

Die hier untersuchte Annahme und die Anlage der Studie haben große Ähnlichkeit zu dem Konzept der „preparedness“ aus der Lerntheorie und den dazugehörigen Studien, die zeigten, dass sowohl bei Säugetieren als auch bei Menschen biologisch angelegte Bereitschaften für Lernen existieren; zum Beispiel entwickeln Menschen nur auf ganz bestimmte Reize Phobien, wie Spinnen oder Schlangen, nicht aber auf Tauben oder Hasen. Dies wurde ebenfalls als evolutionär bedingt und biologisch angelegt interpretiert.

In einer anderen, ebenfalls experimentellen Studie von Maloney wurde dieselbe Erklärungshypothese, dass nämlich Bilder mit archetypischem Inhalt bei Erwachsenen eine spezifische Präferenzstruktur für diese Bilder auslösen, in anderer Weise getestet. Folgende aus der Archetypentheorie abgeleitete Annahmen wurden zugrunde gelegt: „First, innate structure must affect subjects' emotional responses. Second, archetypal effects must be sufficiently discrete to be detected as separate processes. Third, archetypal structure must affect adult perception. Fourth, visual images presented must be related to archetypal themes. And finally, questions presented to subjects must be evocative of the underlying archetypal structure“ (1999, S. 103). Den 151 Probanden wurden Bilder zu den zwei archetypischen Themen „Mutter“ und „Held“ vorgelegt, in jeweils drei Versionen: positiv, negativ und nonanthropomorph (in nichtmenschlicher Form). Die Probanden mussten ein Q-Sort legen, das heißt, die Bilder in einer Präferenzreihe zu bestimmten Fragestellungen anordnen, zum Bei-

spiel zur Frage „Ich empfinde dieses Bild als … (sehr unangenehm bis sehr angenehm)“. Die zu jeder Frage entstandenen Kombinationen wurden über den Bartletts Sphärizitätstest daraufhin überprüft, ob sie signifikant von einer Zufallsanordnung abweichen, wobei der Signifikanztest mit $p<0{,}005$ sehr streng angesetzt war. In diesem Test erwies sich nur eine einzige Frage (Q3) signifikant, allerdings hochgradig und konsistent in allen drei Versionen: „Wenn ich dieses Bild immer mit mir tragen müsste, wäre das für mich … (sehr unangenehm bis sehr angenehm)“. Die Autoren interpretieren dies so, dass offenbar nur diese Fragestellung eine entsprechend starke affektive Reaktion auf die Bilder hervorruft, sodass dann eine archetypische Struktur zum Tragen kommt. Die Kombinationen auf Frage Q3 wurden dann einer Faktorenanalyse unterzogen, die in allen drei Versionen jeweils die gleiche Faktorenstruktur ergab. Der Autor interpretiert dies als konsistent mit der Archetypentheorie und Beleg für ihre Gültigkeit.

Chinesische Schriftzeichen als archetypische Bilder

Sotirova-Kohli et al. (2011) führten eine auf den oben erwähnten Studien zum archetypischen Gedächtnis aufbauende Untersuchung durch, die als Bilder chinesische Schriftzeichen, die ins Japanische übernommen wurden (Kanji), verwendete. Die Besonderheit dieser Kanji ist, dass sie als ein von der Sprache unabhängiges semiotisches System entstanden sind und als solches Teil religiöser Praktiken und Rituale des frühen Yin-Königtums waren. Die Untersuchung geht von der Annahme aus, dass angesichts der Umstände ihres Ursprungs und auch der Besonderheit ihrer kognitiven Verarbeitung als Teil des Systems der japanischen Sprache die Kanji symbolische archetypische Bilder (Bilderschemata) darstellen. Chinesische Zeichen in der japanischen Sprache funktionieren nicht phonetisch, haben aber ihren denotativen Wert als Bilder beibehalten, die im Sprachsystem eine unbewusste/implizite Kenntnis von Bedeutungen auslösen, ähnlich wie bei archetypischen Symbolen (Sotirova 1997).

Die Autoren setzten eine Reihe von 40 Kanji ein und führten hiermit die gleiche Serie von drei Experimenten wie Rosen et al. (1991) durch. Es wurden zunächst zwei Pilotstudien durchgeführt, um zu prüfen, ob Teilnehmende, welche keine asiatische Sprache mit chinesischen Zeichen gelernt hatten, die Bedeutung der Zeichen erkennen konnten, indem sie auf kryptomnestisches Wissen zurückgriffen. Beide Vorstudien zeigten wenig bis gar kein Vorwissen über die Bedeutung der Zeichen. Im Hauptteil der Studie gingen Sotirova-Kohli et al. von der Hypothese aus, dass, wenn Kanji-Zeichen wie archetypische Bilder (Rosen et al. 1991) mit ihrer richtigen Bedeutung verbunden werden, diese richtigen Paare eine bessere Lern- und Abrufrate aufweisen würden als bei einer Verbindung mit einer unrichtigen Bedeutung.

Die Hauptstudie ($N=170$) betraf das Lernen von Bild-Wort-Paaren („paired associate learning task“). Es wurde die gleiche Reihe von 40 Kanji benutzt wie in den Pilotstudien. Sie waren in zwei Unterreihen unterteilt, jede davon mit 20 Zeichen. Jeder Untergruppe wurden die zwei Reihen gezeigt. In jeder Untergruppe wurde eine der Reihen mit der richtigen Bedeutung des Zeichens verbunden, während die andere Verbindung falsch war. Die richtig und die falsch verbundenen Zeichen in der ersten Gruppe wurden in der zweiten Gruppe vertauscht. Die Studierenden bekamen zuerst

die Zeichen-Wort-Paare zu sehen; nach einer Pause wurden ihnen die Zeichen allein gezeigt. Darauf sollten sie sich erinnern und das Wort aufschreiben, das sie in den zuvor gezeigten Paaren sahen.

Die Resultate zeigten, dass bei richtigen Paaren signifikant mehr richtige Bedeutungen abgerufen wurden als bei Falschen. Der Haupteffekt von richtiger Paarung („main effect of matching") war signifikant [$F(1, 168) = 12{,}986$, $p < 0{,}001$]. Die Verbindung von Kanji mit ihrer richtigen Bedeutung während der Studie erleichterte das Lernen und anschließende Abrufen. Dieses Resultat entspricht dem von Rosen et al. (1991) und bestätigt die Annahme eines archetypischen Gedächtnisses. Solches, bereits vorhandenes Wissen macht es einfacher, Paarverbindungen zu lernen und abzurufen, als wenn Paarverbindungen nicht ihrer richtigen Bedeutung entsprachen. Angesichts der Resultate der Pilotstudien kann angenommen werden, dass vorhandene Kenntnisse der Bedeutung der Symbole unbewusst sind.

Die Resultate der Hauptstudie bestätigen die Hypothese, dass eine unbewusste Kenntnis von chinesischen Zeichen und ihrer Bedeutung existiert, die durch ein „priming" ausgelöst wird, wenn man den Teilnehmenden Paare von Zeichen mit ihrer richtigen Bedeutung vorlegt. Kanji scheinen auf einer kognitiven Ebene ähnlich wie archetypische Symbole im Sinne von Bilderschemata zu funktionieren. Die Resultate dieser Studie bestätigen die früheren Studien über das kollektive unbewusste (archetypische) Gedächtnis (Rosen et al. 1991; Huston et al. 1999) und bekräftigen die vorgeschlagene Verbindung zwischen Archetypen und ihrer kognitiv-semantischen Natur als Bilderschema (Knox 2003). Insbesondere die Konvergenz der unterschiedlichen Studien spricht für die Existenz eines kollektiv-unbewussten, archetypischen Wissens.

Die Frage der Transmission

Zusätzlich zu den schon oben referierten Belegen für archetypische Strukturen sind nun auch experimentelle Belege für das Vorhandensein eines archetypischen Gedächtnisses vorhanden. Andererseits aber bleibt der Weg der generationenübergreifenden Weitergabe dieser Information angesichts der Erkenntnisse der Genetik weiterhin rätselhaft. Wenn Bilderschemata als zwar sehr früh erworben, aber dennoch nicht genetisch festgelegt betrachtet werden, scheint die Argumentation von Knox (2003) fragwürdig: Wie kann man sicher sein, dass die Umweltbedingungen von Säuglingen überall dieselben sind, sodass hier zuverlässig dieselben Schemata entstehen? Zumindest muss von den Emergenztheoretikern konzediert werden, dass das beschriebene System störanfällig ist, nämlich dann, wenn die Bezugsperson nicht dem normalerweise zu erwartenden Handlungsmuster entspricht, weil sie zum Beispiel depressiv ist und die angelegte Interaktionsinitiative im Blick des Säuglings nicht registriert. Dann führt das basale Schema nicht zur Entwicklung einer fördernden Umwelt und damit nicht zur Entwicklung emergenter Strukturen. Das heißt wiederum, auch wenn das basale Muster angeboren ist, kann man nicht bei allen Individuen mit dem Vorhandensein der emergenten Strukturen rechnen. Damit wären sie nicht mehr universell.

Spiegelneurone und der „intersubjektiv geteilte Raum“

Möglicherweise existieren auch subliminale Wege, auf denen Erfahrungswissen von Generation zu Generation weitergegeben wird, ohne dass dies einer üblichen sozialisatorischen Interaktion entspräche. Belege für eine solche Weitergabe liefern die Neurowissenschaften in der Entdeckung der sog. Spiegelneurone (Gallese 2003). Es konnte in neurobiologischen Studien gezeigt werden, dass auch für die Wahrnehmung von Emotionen spezifische Spiegelneuronensysteme vorhanden sind, dass wir also eine beobachtete Emotion bei einem anderen Menschen nachempfinden, ja sogar davon „angesteckt“ werden können. „Das System der Spiegelneurone dürfte eine besonders bedeutsame Funktion für die Entwicklung des Menschen und seiner Kulturen gehabt haben: eine sowohl innerhalb der gleichen Art als auch eine über die Generationen hinweg mögliche Konservierung und Weitergabe von Wissensbeständen … Die Spiegelsysteme sind eine Art Gedächtnis der Menschheit: In den Hunderttausenden von Jahren vor der Erfindung von Schrift, Buch und Internet waren diese Wissensbestände gleichsam lebende Bibliotheken, die über Resonanz und Lernen am Modell von einer Generation an die nächste weitergegeben werden konnten. Eine solche Weitergabe war bereits zu einer Zeit möglich, als es noch keine Sprache gab, denn der im Spiegelsystem verankerte Resonanzmechanismus funktioniert vorsprachlich, … da Sprache Vorstellungen über Abläufe und Sequenzen beschreibt, die im System der Spiegelneurone als Programme gespeichert sind“ (Bauer 2006, S. 168, 169). Das liest sich wie eine neurobiologische Beschreibung für das kollektive Unbewusste.

Werden Archetypen kulturell vermittelt?

Ist angesichts dieser theoretischen Probleme auch vorstellbar, dass kulturelle Variablen eine Rolle bei der Vermittlung archetypischer Strukturen spielen? Möglicherweise werden der biologische Anteil bei der Weitergabe bestimmter psychischer Merkmale überschätzt und kulturelle Einflüsse systematisch unterschätzt.

Geschlechterunterschiede

Nicht einmal die Unterschiede in psychologischen Merkmalen zwischen den Geschlechtern sind offenbar auf biologische Ursachen zurückzuführen, sondern wohl in erster Linie erlernt und beruhen daher vor allem auf kulturellen und sozialisatorischen Einflüssen. Fine (2010) hat in einer Reihe ausgeklügelter Experimente diese Einflussfaktoren deutlich gemacht. So schneiden Frauen beispielsweise in Mathematiktests dann gleich gut ab wie Männer, wenn ihnen vorher verdeutlicht wird, dass es keine Unterschiede zwischen Männern und Frauen in solchen Tests gäbe. Sagt man den Frauen aber vorher, dass „es nun mal so ist, dass Männer in Mathematiktests besser sind“, dann schneiden die Frauen auch signifikant schlechter ab. Noch drastischer wird der Einfluss von Erwartungen, hier Rollenstereotypen, wenn man Frauen diese Tests in Badeanzüge gekleidet absolvieren lässt, dann schneiden sie nämlich deutlich schlechter ab als in normaler Kleidung. Also sind die ja tatsächlich empirisch

vorfindbaren Geschlechterunterschiede eher durch kulturell geprägte Erwartungen bedingt als durch biologische Faktoren.

Kinderbetreuung

Ein weiteres Feld, in dem man immer universelle Übereinstimmungen vermutet hat, ist das der Kinderbetreuung. Ahnert (2010), die herausragende deutsche Forscherin im Bereich Frühpädagogik, hat in einer kulturvergleichenden Studie nachgewiesen, dass es keinen Universaltyp einer ursprünglichen Form von Kinderbetreuung gibt. Stattdessen findet man zwischen Kulturen mehr Unterschiede als Gemeinsamkeiten. Gerade auch bei traditionellen Völkern scheint dies der Fall zu sein, von denen Jung ja immer annahm, sie seien näher an den Archetypen. Die einzige universelle Gemeinsamkeit liegt im Bereich der Bindungsorganisation; hier scheint es sich tatsächlich um biologisch angelegte Abläufe zu handeln.

Vor diesem Hintergrund hat Roesler (2009, 2010, 2012) eine Reformulierung des Archetypenkonzeptes vorgeschlagen und dabei die Hypothese, er sei angeboren und daher universell, aufgegeben. Vielmehr lässt sich eine Entwicklungslinie beschreiben: Es gibt angeborene basale Strukturen (zum Beispiel CONSPEC), und diese sind so angelegt, dass sie bestimmte Umweltbedingungen voraussetzen. Wenn diese Umweltbedingungen gegeben sind, werden die basalen Strukturen zu Kristallisationskernen für komplexere psychische Schemata. Diese sind zunächst vorsprachliche Repräsentationen von Beziehungserfahrungen. Nun erlaubt die Entdeckung der Spiegelneurone die Aussage, dass diese vorsprachlichen Repräsentationen nicht nur aus der individuellen Erfahrung stammen, sondern sich im zwischenmenschlichen Austausch von Person zu Person unbewusst vermitteln. Die Person verfügt also nicht nur über eigene Erfahrungen, sondern auch über implizit übernommene Handlungsschemata vieler Menschen, was aber Interaktion und Beziehung voraussetzt. Im weiteren Verlauf der Sozialisation können sich diese zunächst innerpsychischen und vorbegrifflichen Erfahrungskomplexe verbinden mit Geschichtenmustern aus dem kulturellen Kanon, in denen die Individuen ihre inneren Repräsentationen wieder erkennen, denn da die Erfahrung viele Menschen betrifft, wird jede Kultur hierfür Geschichtenmuster zur Verfügung stellen, in denen die Erfahrung narrativ abgebildet wird. Auf diese Weise sind die komplexeren Archetypen entstanden: als narrative Abbildung typischer menschlicher Erfahrungen und Handlungsmuster. Dass etwas archetypisch genannt wird, bedeutet in dieser Reformulierung also, dass viele Menschen von derselben Erfahrung betroffen sind bzw. sie ihnen vermittelt wurde, dass es eine typische Menschheitserfahrung abbildet. Der entscheidende Punkt in dieser Reformulierung der Archetypentheorie ist, dass die Archetypen hier explizit nicht mehr als genetisch vermittelt betrachtet werden, sondern als kulturell-sozialisatorische Produkte. Der Mensch wird nicht mit einem kollektiven Unbewussten geboren, sondern er wächst erst im Laufe der Sozialisation da hinein, und insofern ist das kollektive Unbewusste ein kulturelles Unbewusstes.

Fazit

Zusammenfassend muss man feststellen, dass es mittlerweile eine Vielzahl überzeugender Belege dafür gibt, dass so etwas wie psychologische Archetypen existieren. Es wird jedoch deutlich, dass Archetypen nicht, wie Jung sich das dachte, biologisch-genetisch fundiert sein können. Andererseits hat sich das Konzept als klinisch sehr erfolgreich erwiesen, insofern als archetypische Elemente zum Beispiel aus Träumen oder Lieblingsmärchen erheblich zu therapeutischen Heilungsprozessen beitragen. Die Debatte über eine befriedigende wissenschaftliche Konzeption der Weitergabe archetypischer Information, die aktuelle Erkenntnisse aus Neurowissenschaften, Humangenetik, Entwicklungspsychologie und so weiter integrieren würde, hält an, wobei mittlerweile Konsens besteht, dass diese Weitergabe auch wesentlich kulturell bedingt ist. Daraus ergibt sich die Frage, ob Archetypen weiterhin als universell konzipiert werden können. Auch bedarf es einer theoretischen Klärung, was überhaupt mit dem Konzept Archetyp gemeint ist. Es war die Absicht dieses Beitrags, einer breiteren Leserschaft einen Überblick über die rege aktuelle Diskussion in der Analytischen Psychologie zum zentralen Konzept des Archetyps zu liefern. Für Details wird auf die zitierte Literatur und das zentrale theoretische Diskussionsforum im *Journal of Analytical Psychology* verwiesen.

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