

EMPIRICAL STUDY OF ASSOCIATIONS BETWEEN SYMBOLS AND THEIR MEANINGS: EVIDENCE OF COLLECTIVE UNCONSCIOUS (ARCHETYPAL) MEMORY

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INTRODUCTION

JUNG POSTULATED the existence of a collective unconscious that is common to all members of the human family (Jung 8, par. 3), and he makes a distinction between the personal unconscious 'and an *impersonal* or *transpersonal* . . . *collective unconscious* because it is detached from anything personal [and is entirely universal]' (Jung 4, par. 103).

Jung further posited that the collective unconscious contained archetypes: ancient motifs and predispositions to patterns of behaviour that manifest symbolically as archetypal images in dreams, art, or other cultural forms (Jung 10). Harry Prochaska writes:

An archetypal symbol rises from the deepest layers of the unconscious. . . . The archetypal quality in those instances where it occurs is recognized by the sense that the expression transcends specificities of time and space and 'speaks' to common human experiences. . . . Cultural expressions must transcend the boundaries of their own cultures to become genuine archetypal symbols which are recognizable as such in other times and in other places (Prochaska 17).

We can infer that associated with the collective unconscious is a collective or archetypal memory that has its basis in biology, a result of the psychic evolution which parallels physical evolution.

Jung defined archetypes as 'pre-existent form[s]' (Jung 6, par. 89), and he further described them as 'true and genuine symbols that cannot be exhaustively interpreted, either as signs or as allegories' (Jung 8, par. 80). Although Jung was certain about the existence of archetypes, he was somewhat uncertain about their origin. However, he did state, 'It seems to me that their origin can only be explained by assuming them to be deposits of the constantly repeated experiences of humanity. . . . The archetype is a kind of readiness to produce over and over again the same or similar mythical idea' (Jung 4, par. 109).

Jung sought to prove the existence of archetypes and the collective unconscious by three main methods. First, he used the Word Association Test to demonstrate extensively that various complexes had been constellated in the psyches of certain individuals. For example, a mother complex has at its core the 'mother' archetype. Numerous images or memories of personal experiences related to mother are held together by charged affects or feeling-tones, usually negative, because the individual's complex is based on some psychic or emotional trauma (Jung 3). Second, he documented the presence of archetypal symbols in unconscious mental activity manifested in the delusions, hallucinations, and dreams of those who had not been exposed to such symbols by either education or travel. A classic example that is frequently cited is the 1906 case of a male paranoid schizophrenic (Jung 6, par. 105). In this instance, the patient invited Jung to engage in a sort of ritual with him, which involved 'worshipping' of the sun. The patient also purported to see a short tube hanging down from the sun, and said 'that is where the wind comes from' (*Ibid.*). Four years later Jung came across a book written by Albrecht Dieterich describing a rare Mithraic text from the Alexandrian school of mysticism. This book contained a similar ritual as well as the description of a tube that extended from the sun that was 'the origin of the wind'. Jung knew that the patient had no conscious awareness of this archaic body of knowledge (*Ibid.*). Third, Jung cited the similarities of myths and symbols in disparate cultures that had developed without contact with each other. For example, the serpent or snake is such an ancient and widely known symbol. As Jung stated, 'The idea of transformation and renewal by means of the serpent is a well-substantiated archetype. It is [a] healing [symbol]' (Jung 7, par. 184). Henderson further identified serpents as a transcendent symbol of the depths, 'symbolic denizens of the collective unconscious' (Henderson 2, p. 154). The Greek god Hermes carried a caduceus, a staff with two entwined snakes in sexual union, and today this remains the symbol of the medical profession and is still associated with the idea of healing (*Ibid.*). The serpent also appeared as the symbol of Asklepios, the god of healing (Kerényi 11). In India, we find the symbol of the two entwined Naga serpents,

representing the rise of the *kundalini*, a spiritual, healing energy in the body. As Jung maintained, '[The] most significant development of serpent symbolism as regards renewal of personality is to be found in Kundalini yoga' (Jung 7, par. 184).

Jung stated, 'Although [the] reproach of mysticism has frequently been levelled at my concept [of the collective unconscious], I must emphasize yet again that the concept . . . is neither speculative nor philosophical but [it is] an empirical matter' (Jung 6, par. 92).

Empirically testing Jung's hypothesis of archetypes and collective memory has seemed difficult to investigate experimentally. However, as Mattoon has stated, 'Perhaps the next few decades will see developments in thought and research methods that will make possible the translation of some aspects of symbol into communicable experiences, which then can be studied empirically' (Mattoon 15, p. 139).

Just such a development in thought may have been made possible by the ground-breaking work of the British scientist Rupert Sheldrake. In 1981, Sheldrake published *A New Science of Life: The Hypothesis of Formative Causation* (19). In this book, Sheldrake proposes a theory that tends to support Jung's theory of archetypes, the collective unconscious, and collective (archetypal) memory. We are immediately struck by the similarities in their concepts.

From Jung:

There is nothing to prevent us from assuming that certain archetypes exist even in animals, that they are grounded in . . . direct expressions of life whose nature cannot be further explained. Not only are the archetypes, apparently, impressions of ever-repeated typical experiences, but, at the same time, they behave empirically like agents that tend towards the repetition of these same experiences (Jung 4, par. 109).

From Sheldrake:

Memory is inherent in nature. It suggests that natural systems . . . inherit collective memory from all previous things of their kind however far away they were and however long ago they existed. Because of this collective memory, through repetition the nature of things becomes increasingly habitual. Things are as they are because they are as they were . . . [A living thing] draws on and is shaped by the collective memory of its species (Sheldrake 20, p. xviii).

In *The Presence of the Past*, Sheldrake discusses Jung's theory of the collective unconscious, stating that it does not fit in with a mechanistic theory of life and 'consequently it is not taken seriously within the current scientific orthodoxy' (Sheldrake 20, p. 251). However, Jung's theory is supported and explained by Sheldrake's own theory of formative causation and morphic resonance. Morphic fields, as defined by Sheldrake are,

Non-material regions of influence extending in space and continuing in time. They

are localized within and around the systems they organize. When any particular organized system ceases to exist, as when an atom splits, a snowflake melts, an animal dies, its organizing field disappears from that place. But in another sense, morphic fields do not disappear . . . they contain within themselves a memory of their previous physical existences (Sheldrake 20, pp. xviii–xix).

Morphic resonance is how the past becomes the present within morphic fields. We could say that the past morphic fields influence or shape the present. It is important to note that memory within morphic fields is cumulative, which suggests why many things become increasingly habitual through repetition.

This theory has a direct impact on Jung's theory of the collective unconscious. Sheldrake states, 'By morphic resonance, structures of thought and experience that were common to many people in the past contribute to morphic fields' (Sheldrake 20, p. 251). These structures seem to be similar or identical to the archetypes as postulated by Jung.

Mahlberg conducted a study using the Morse Code to test Jung's and Sheldrake's hypotheses for evidence of a collective memory. Mahlberg cited two similarities between Jung's theory of the collective unconscious and Sheldrake's concept of the morphogenetic or morphic field. 'The first is that the collective unconscious is outside space and time and is, therefore, a dimension of the psyche that is transpersonal . . . the second point of similarity between these theories is that the forms of experience, thought, emotion, and behavior acquire strength through collective repetition' (Mahlberg 14, p. 24). Mahlberg proposed that since the Morse Code has been used by thousands of people for many years, the morphic resonance from all these people should make it easier to learn. The results of his study supported this hypothesis.

According to Mahlberg, 'It appears that Jung was correct that behaviors in universal situations become archetypal through the process of repetition throughout human history' (Mahlberg 14, p. 30). Mahlberg's study also illustrated two of the strengths of Sheldrake's theory: (1) its inherent testability, and (2) its explanatory power (Keutzer 12).

Mahlberg's study used a learning paradigm as does our study. However, our paradigm is borrowed from cognitive psychology specifically, from the area of human memory research.

We wished to test empirically the strength of the relationship between selected archetypal symbols and the meanings attributed to these symbols. An individual's knowledge of language, concepts, and relationships among ideas has been referred to as 'semantic memory' (Tulving 22). This abstract knowledge has been distinguished from memory of events personally experienced, termed 'episodic memory'. Knowledge of relationships between archetypal symbols and their meanings should be like the abstract semantic memories in that they

have few or no autobiographical referents. Although a variety of methods are currently used to examine abstract knowledge, we chose as simple and straightforward a method as we could, using classic list-learning procedures.

In list-learning studies, lists of stimuli are presented to subjects to be learned, and memory of the items that occurred on the list is later tested. With the cued recall method, for example, pairs of words are studied, and recall is later tested by giving the subject one member of the pair (i.e., the cue) and asking for recall of the other member (the target). Laboratory research in human learning and memory has shown that words are remembered better if they are cued by semantically related or associated words (like 'tree' and 'leaf'), rather than by unrelated cues (like 'dog' and 'telephone') (Thomson, Tulving 21). Thomson and Tulving tested recall of target words (e.g., 'black') from a list of word pairs that had been studied by subjects. On the study list and the test the cue word was either a strong associate (e.g., 'white') or a weak associate (e.g., 'train'). Words paired with strong associates were recalled 29 per cent better than words learned and cued with weak associates. This demonstrates that performance on a cued recall test is sensitive to subjects' pre-experimental knowledge of meanings.

In our main study (Experiment III) it was reasoned that pictures depicting archetypal symbols would be associated with their meanings, even though the associations may not seem as obvious as 'black' and 'white'. If our stimuli properly depicted correctly matched archetypal associations, then subjects with such unconscious pre-experimental knowledge should find it relatively easy to learn to recall the correct meaning from its related symbol on a cued recall test.

We also thought that this type of scientific study could lead to the development of an empirically based method of testing Jung's theory of the collective unconscious and archetypal memory. It is interesting to note that, although Jung worked extensively with the Word Association Test, he never used pictures of symbols in his association experiments (Jung 5). A 'Symbol Association Test' is a logical extension of Jung's work, and this study involved the construction of just such an instrument, the Archetypal Symbol Inventory (ASI) (see Appendix).

The ASI that we developed consists of forty symbols and forty associated words indicating the symbols' archetypal meanings. It was developed by three of the authors (Rosen, Smith, and Gonzalez) in consultation with the Director, Harry Prochaska, and his assistant, Katharine von Fischer, of the Archive for Research in Archetypal Symbolism (ARAS) in San Francisco. ARAS is a 'collection of [over] 14,000 photographs of works of art and other human artifacts collected for the archetypal references within the symbolic content of images' (Prochaska 16). The ASI was developed from an original pool of

80–100 items that were culled from three books of symbols (Cirlot 1; Jung 9; Lehner 13). This original group of symbols, along with several ‘meaning’ words for each item, were then reviewed by the three co-investigators listed above and one of the two consultants (Prochaska). They searched through the pool to find the forty symbols that they believed to be the least culturally biased and the most archetypal and universal. These forty symbols were then assigned the best (correct) meanings by a process of inter-rater agreement. Three out of four raters had to agree on a symbol’s one word meaning in order for it to be included as the best matched meaning. Some of the symbols are quite common and others are not. We retained a few culturally related symbols such as the bull (No. 23) (brand of malt liquor, stock brokerage firm), the apple (No. 15) (computer company, biblical references), and the heart (No. 5) (American Heart Association, Valentine’s Day) to see if these would be recalled more easily than non-culturally related symbols such as the uroboros (No. 8), the Egyptian birth symbol (No. 3), and spirit (No. 33) (see the Appendix to locate the symbols by number).

METHODS AND RESULTS

We carried out two symbol association tests in addition to conducting the main study (Experiment III). Experiment I was a free association symbol test. Experiment II was a forced association (or matching) test. These first two studies were undertaken to address the issue of conscious knowledge of the items, and therefore possible cultural bias in the ASI. Would some of the symbols be commonly recalled simply because they were culturally known? Or would they be recalled because they were archetypal? This is a complicated issue. It is useful to remember that the collective unconscious permeates our culture, and its artefacts and creative productions. As Sheldrake points out in his theory, this is not a mysterious or mystical process, but, rather, a natural one. Nevertheless, in the first two studies we sought to discover the degree to which the meanings of these symbols were consciously known, that is, readily apparent to the subjects. We assumed that subjects would recognize more frequently symbols which have meaning in our culture and they would tend not to know the meanings of symbols that are not part of our culture.

Experiment I

In the first study, using twenty-nine subjects (introductory psychology undergraduate students), we attempted to determine whether or not

the subjects had spontaneous conscious knowledge of the meanings of the symbols.

Subjects were shown slides of the forty symbols in the ASI and were given twenty seconds to write down one word that they felt best described the slides' 'symbolic meaning'. Responses were then placed in one of the three categories. First, a response could be specifically correct, meaning that the one-word response given by the subject exactly matched the meaning word listed next to the symbol on the ASI (see Appendix). For example, the picture of the symbol of an apple (No. 15) would have elicited the specifically correct response of 'knowledge'. Second, a response could be *similar* to the specific meaning listed in the ASI. For this method of scoring, we used *Roget's International Thesaurus* (18) as an objective guide to similarities in meaning, and gave credit for responses that were listed as close to the original response. For example, for the picture of the symbol of a tree (No. 12) which has as its meaning 'generativity', an acceptable similar response was 'growth' according to *Roget's Thesaurus*. Third, responses that did not fall into either of the first two categories were judged as incorrect.

Out of a possible 1160 possible correct responses (29 subjects \times 40 items), only twelve responses were specifically correct (1 per cent) (see Column A in Table 1). Of the forty ASI symbols, only six (15 per cent) received specifically one or more correct responses. The second system of scoring (see Column B in Table 1), judging responses that were similar in meaning to be correct, gave an additional forty-eight acceptable responses out of 1160 or 4.14 per cent. Specific and similar responses combined (see Column C in Table 1) gave a total of only sixty acceptable responses or 5.17 per cent. Out of the forty ASI symbols tested, only seventeen out of the forty items (42.5 per cent) generated responses that could be considered acceptable. It is important to note that one symbol, the heart (No. 5), accounted for twenty-three, 38.3 per cent, of the total number (60) of acceptable responses. And the heart (No. 5) had the highest percentage of correct responses among the subjects (79 per cent). It was clear that the subjects had little or no conscious knowledge of what the symbols meant.

Experiment II

In the second study, a new group of subjects was given a matching task to determine if they could correctly match the ASI symbols with their meanings. Twenty-nine different introductory psychology undergraduate students were given test forms on which the symbols were represented. They were also given a list of eighty words; forty words corresponded to the actual meanings of the pictures and forty words,

Table 1 Experiment I: Free association to ASI symbols

<i>Symbol</i>	<i>ASI No.</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
Charity	5	0	23	23	79
Ascent	1	2	4	6	21
Unconscious	36	0	6	6	21
Beauty	2	4	1	5	17
Knowledge	15	3	0	3	10
Power	23	1	2	3	10
Generativity	12	0	2	2	7
Protection	25	0	2	2	7
Unity	37	1	1	2	7
Birth	3	0	1	1	3
Eternity	8	0	1	1	3
Masculine	17	0	1	1	3
Progress	24	0	1	1	3
Purify	26	0	1	1	3
Salvation	29	1	0	1	3
Synthesis	34	0	1	1	3
Valour	38	0	1	1	3
Number of correct responses		12	48	60	
Percentage of total responses (1160)		1%	4%	5%	

A = Specific correct response

B = Similar correct response

C = Combined correct response (specific + similar)

D = Percentage correct of 29 subjects

though somewhat similar, did not correspond. The forty incorrect words, like the forty actual meanings, referred to general abstract concepts like 'mystery', 'space', and 'youth'. The subjects were asked to select the best symbolic meaning for each picture.

Out of 1160 (29 subjects \times 40 items) possible correct responses, there were only seventy-six correct responses, or 6.5 per cent. Out of the forty symbols, twenty-one (52.5 per cent) received at least one correct response. Only fourteen (35 per cent) ASI symbols received more than one correct response, while only three of the symbols—the stairs (No. 1), the lightning bolt (No. 40), and the ark (No. 29)—accounted for 35.5 per cent of the seventy-six correct responses. Of these three symbols, the stairs (No. 1) was correctly matched most often; 41 per cent of subjects correctly matched this symbol.

A simple Z-test was performed to determine whether or not the subjects' ability to match the symbols with their meanings was significantly more reliable than chance. In this case chance equalled .0125, meaning that each symbol had a one in eighty chance of being correctly

matched. Our results indicated that the subjects' actual ability to match the symbols with their correct meanings (.0625) was not significantly more reliable than chance (.0125): $Z(1160) = .014$.

Again, this supports the finding of Experiment I: the subjects did not have prior conscious knowledge of the symbols.

Table 2 Experiment II: Forced association to the ASI symbols

<i>Symbol</i>	<i>ASI No.</i>	<i>Correct matches</i>	<i>Percentage correct of 29 subjects</i>
Ascent	1	12	41
Wrath	40	8	28
Salvation	29	7	24
Centre	4	5	17
Fertility	11	5	17
Knowledge	15	5	17
Spirit	33	5	17
Beauty	2	4	14
Charity	5	4	14
Unity	37	4	14
Eternity	8	3	10
Valour	38	3	10
Feminine	10	2	7
Virility	39	2	7
Completion	6	1	3
Evil	9	1	3
Health	14	1	3
Life	16	1	3
Possibility	21	1	3
Progress	24	1	3
Rationality	28	1	3
Number of correct responses		76	
Percentage of total responses (1160)		6.5%	

Statistical test: The probability of matching ASI symbols with their correct meanings (.0625) did not exceed chance (.0125).

Interpretation: ASI symbols and their correct meanings could not be reliably matched.

Experiment III: the main study

Hypothesis

We hypothesized that collective unconscious (archetypal) memory, like semantic memory, would increase learning and recall of archetypal symbols correctly paired or matched with their meanings. The null

hypothesis, based upon the contention that archetypal associations are not part of one's knowledge, predicted that words would be recalled equally well whether cued by correctly paired archetypal symbols or by incorrectly paired symbols.

Method

The subjects were 235 introductory psychology undergraduate students at Texas A & M University who voluntarily participated in the study. None of these subjects participated in Experiments I or II.

This study used the Archetypal Symbol Inventory (ASI) (see Appendix). Symbols and meanings were transferred to separate sets of slides for the purposes of this study.

Subjects were divided into two groups, 108 subjects in Group I and 127 subjects in Group II. The forty pairs of symbol/words were presented to the subjects using two slide projectors: one for symbols and the other for words.

Each group received twenty matched and twenty mismatched symbol/word pairs. The matched pairs that Group I received were mismatched for Group II and vice versa as a counterbalance. Also for Group II, the symbols were presented in reverse order from the Group I presentation to eliminate any residual effects resulting from the order of presentation.

Each group received all forty symbol/word pairs in one session. Each symbol/word pair was shown to the subjects for five seconds. After a one-minute rest period, subjects were then shown only the symbols in the same order as originally presented. Subjects were asked to recall and write down the word they had previously seen paired with the symbol. During the recall task, each symbol was presented for eight seconds.

Results

Percentages of matched versus mismatched words were calculated for each group. Total number of correctly recalled matched words was divided by the total possible number of correct responses, and the same procedure was followed for correctly recalled mismatched words.

For Group I, the percentage of correctly recalled matched words was 53.5 per cent. For Group II, the percentage of correctly recalled matched words was 54 per cent. The percentage of correctly recalled mismatched words was 43.1 per cent for Group I, and 49 per cent for Group II.

Total percentages were calculated for Group I plus Group II. Percentage of matched pairs recalled for all subjects was 53.8 per cent. Percentage of mismatched pairs recalled for all subjects was 46.1 per cent.

Table 3 Experiment III: Percentage recalled as a function of matched vs. mismatched pairs of archetypal associates

	<i>Matched</i>	<i>Mismatched</i>
Group I (N=108)	53.5	43.1
Group II (N=127)	54.0	49.0
All subjects (N=235)	53.8	46.1

Statistical test: One-way analysis of variance using one within-subjects variable; matched vs. mismatched.

$$F(1,234) = 67.91, p < .0001$$

Interpretation: Matched was significantly better than mismatched. Chance of error = less than 1 in 10,000.

For both groups, and for all subjects, the percentage of matched pairs correctly recalled was greater than the percentage of mismatched pairs correctly recalled. A one-way analysis of variance using one independent variable, matched versus mismatched, was performed on the data. The matched pairs of archetypal associates were recalled better than the mismatched pairs, $F(1,234) = 67.91$ $p < .0001$. This difference is highly significant.

Item analysis

Some items, based on our analysis, proved to be more useful than other items. The symbols were analysed: first, to determine the percentage of correct responses when they were correctly matched; second, to determine the percentage of correct responses when they were incorrectly matched by symbol; and third, to determine the percentage of correct responses when the item was incorrectly matched by word. For example, when the symbol of the butterfly (No. 32) and its meaning, 'soul', were correctly matched the correct recall rate was 70 per cent. When the symbol of the butterfly was incorrectly paired with an incorrect word, 'paradox', the correct recall rate was only 25 per cent. When its meaning word 'soul' was incorrectly paired with an incorrect symbol, the cross (No. 19), the correct recall rate was only 40 per cent. This means that both the word *and* the symbol were recalled at a much higher rate when correctly paired. These three percentages were then used to determine the relative ranking of the ASI symbols (see Table 4).

Table 4 Summary of item analysis: rank-ordered Archetypal Symbol Inventory (ASI)

<i>Symbol</i>	<i>ASI No.</i>	<i>ASI Index</i>
Ascent	1	+54
Centre	4	+47
Unity	37	+46.5
Soul	32	+38
Power	23	+33
Transformation	35	+33
Virility	39	+33
Birth	3	+22
Protection	25	+20
Feminine	10	+19.5
Paradox	19	+19
Earth	7	+15
Masculine	17	+15
Valour	38	+14.5
Possibility	21	+14
Perfection	20	+14
Wrath	40	+12
Beauty	2	+11.5
Spirit	33	+11
Eternity	8	+10.5
Knowledge	15	+10
Sleep	31	+ 9.5
Health	14	+ 7.5
Life	16	+ 7.5
Evil	9	+ 1.5
Completion	6	0
Fertility	11	0
Progress	24	- 4
Salvation	29	- 4.5
Self	30	- 5
Harmony	13	- 8
Generativity	12	- 9
Unconscious	36	-11
Rationality	28	-11.5
Charity	5	-14.5
Origin	18	-15
Purify	26	-17.5
Potential	22	-24.5
Quest	27	-38
Synthesis	34	-39

For each item, the percentages of 'incorrectly matched by symbol' and 'incorrectly matched by word' were subtracted from the percentage of 'correctly matched by symbol and word'. These two differences were added together, and then divided by two to yield an ASI Index. This gave the butterfly (No. 32) an ASI Index of +38 and placed it in the top third of the ASI.

Items that were recalled better when correctly paired than in either of the other two conditions were ranked the highest, utilising the ASI Index. Items that were recalled better when incorrectly paired in one condition (incorrectly matched either by symbol or by word) settled in the middle third of the ASI. Items that were recalled better when incorrectly paired in both conditions fell to the bottom of the ASI.

DISCUSSION

It seems that the ASI, for the most part, is truly an inventory of archetypal (universal) symbols related to the collective unconscious. The first two experiments revealed that the correct meanings of these archetypal symbols are not consciously known. The markedly significant results of the main study lend support to the idea that unconscious associations may positively influence the recall of symbol/word paired associates. Inferentially, this supports Jung's theory of the collective unconscious and the idea that it contains ancient memory traces embedded in archetypes. It also suggests that Sheldrake's theory of morphic resonance may be a reasonable one. Since subjects did not consciously know the meanings of these words according to the results of our first two studies, possibly morphic resonance from the morphic fields of the archetypes facilitated their recall of correctly matched symbol/word pairs. Morphic resonance from the collective unconscious may also function similarly to semantic memory in aiding recall on simple list-learning tasks that utilise images (archetypal symbols) and meanings that are *also* from the collective unconscious.

For some of the symbols used in the scale, the symbol and word pair association seem fairly obvious. We intentionally included a few symbols that were culturally known to see how they would fare in these studies. Examples of these include the bull (No. 23) paired with 'power', the apple (No. 15) paired with 'knowledge', and a heart (No. 5) paired with 'charity'. In the main study, the association between the bull and the word 'power' was much higher for matched (82 per cent) than for mismatched (42 per cent) recall. With an ASI Index score of +33, the bull (No. 23) was in the top third and shared fifth place in the ranking with the fish (No. 35) and the arrow (No. 39). The apple (No. 15), surprisingly, was ranked near the middle with an ASI Index

score of +10. This is puzzling since the association seems very apparent; however, recall was equally high for some associations that were more obscure (e.g., the uroboros, No. 8, had an ASI Index of +10.5), and was quite low for some associations that seemed obvious (for example, the heart, No. 5, had an ASI Index of -14.5).

An example of the non-obvious but solid association is an archetypal symbol for the Egyptian rising sun (No. 3) paired with its meaning 'birth'. In the top third, this symbol was ranked eighth in the ASI Index with a score of +22. Recall was much better for this symbol when it was correctly matched (74 per cent) than when it was mismatched (52 per cent). As previously noted, the heart (No. 5) is an example of a seemingly more obvious symbol meaning ('charity'), but it was associated with poor recall. In Experiment I, this symbol was the most consciously known of all the forty symbols tested. In other words, twenty-three out of twenty-nine subjects gave an acceptable symbolic meaning in the free association test (see Table 1). In Experiment II, the heart shared eighth place with the flower (No. 2), and the number 'one' (No. 37), also receiving four out of twenty-nine possible correct responses in the matching task. However, in the main study (Experiment III), when the symbol for the heart was correctly matched it was recalled 49 per cent of the time, and it was remembered best (78 per cent of the time) when paired with the incorrect term which in this case happened to be 'evil'!

Our results indicate that empirical study of archetypal symbol associations is not only possible, but worthwhile. Experiments I and II reveal that subjects do not have conscious knowledge of most of the symbols in the ASI. Experiment III (the main study) demonstrates that collective (archetypal) unconscious associations show up in a simple cognitive memory task, which seems to suggest the existence of a collective (archetypal) memory.

Our research project involved the development of the Archetypal Symbol Inventory (ASI) for testing archetypal associations. The ASI may have possible clinical implications. We plan future studies, 'Symbol Association Tests' using the ASI (symbols only) to evaluate complexes, employing a methodology similar to Jung's in his experimental work with Word Association Tests (Jung 3).

Carrying out cross-cultural studies with the ASI would also seem to be very important. We have recently arranged for such a study in India. If we are tapping into collective (archetypal) memory our results ought to be corroborated in disparate cultural groups. Research with the ASI also needs to be undertaken with younger (for example, high school students) and older (for example, adults and elderly citizens) populations to see if our results are corroborated. Lastly, studies of

various religious groups could yield interesting findings. We are planning further studies here with such mixed subject groups.

To conclude, we cite Sheldrake again, since this research project's results lend support to his statement, 'Jung's notion of an inherited collective unconscious containing archetypal forms could be interpreted as a kind of collective memory' (Sheldrake 19, p. 28).

SUMMARY

The Archetypal Symbol Inventory (ASI) is an instrument composed of forty archetypal symbols and their meanings. In this three-part research project, we used the ASI to examine and empirically test Jung's theory of the collective unconscious and archetypal memory. We also drew on Sheldrake's theory of morphic resonance to amplify Jung's theories.

Two hundred and ninety-three subjects were tested, using the ASI, in three different experiments. Experiment I was a free association test (N=29). Experiment II was a forced association, or matching, test (N=29). Experiment III, the main study (N=235), utilized a simple list-learning task borrowed from human memory research.

In Experiments I and II we assessed conscious knowledge of and possible cultural bias in the items of the ASI. We found that subjects had little or no conscious knowledge of the symbols that make up the ASI. In Experiment III, the main study, we hypothesized that collective unconscious (archetypal) memory would increase learning and recall of archetypal symbols correctly matched with their meanings in a list-learning task. Our study results support our hypothesis, as well as Jung's theory of the collective unconscious and of archetypal memory. The ASI was shown to be a useful research instrument.

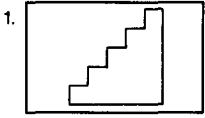
APPENDIX

See pages 226-227

REFERENCES

1. Cirlot, J. E. (1971). *A Dictionary of Symbols*. New York: Philosophical Library.
2. Henderson, J. (1964). 'Ancient myths and modern man', in C. G. Jung (Ed.) *Man and His Symbols*. Garden City, NY: Doubleday.
3. Jung, C. G. (1911). 'On the doctrine of complexes', *Coll. Wks*, 2.
4. — (1917). 'The personal and the collective (or transpersonal) unconscious.' *Coll. Wks*, 7.

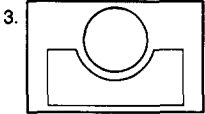
Archetypal Symbol Inventory (ASI)



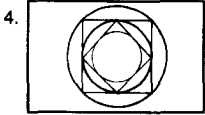
Ascent



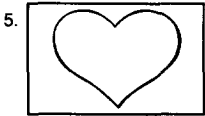
Beauty



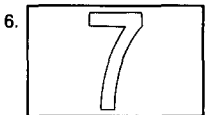
Birth



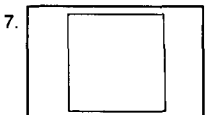
Center



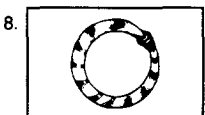
Charity



Completion



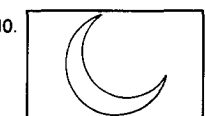
Earth



Eternity



Evil



Feminine



Fertility



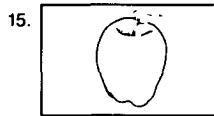
Generativity



Harmony



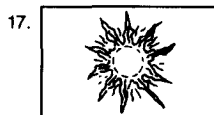
Health



Knowledge



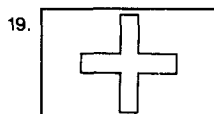
Life



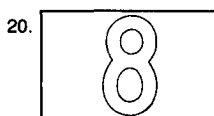
Masculine



Origin








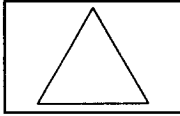




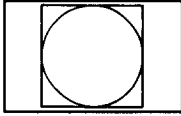
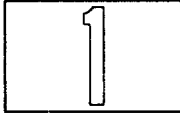



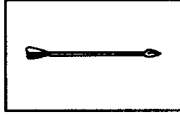

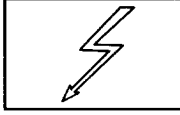


Paradox



Perfection

ASI (continued)

- | | | | | | |
|-----|---|-------------|-----|---|----------------|
| 21. |  | Possibility | 31. |  | Sleep |
| 22. |  | Potential | 32. |  | Soul |
| 23. |  | Power | 33. |  | Spirit |
| 24. |  | Progress | 34. |  | Synthesis |
| 25. |  | Protection | 35. |  | Transformation |
| 26. |  | Purify | 36. |  | Unconscious |
| 27. |  | Quest | 37. |  | Unity |
| 28. |  | Rationality | 38. |  | Valor |
| 29. |  | Salvation | 39. |  | Virility |
| 30. |  | Self | 40. |  | Wrath |

5. — (1918). Experimental Researches. *Coll. Wks*, 2.
6. — (1936–7). 'The concept of the collective unconscious'. *Coll. Wks*, 9(i).
7. — (1944). *Psychology and Alchemy*. *Coll. Wks*, 12.
8. — (1954). 'Archetypes of the collective unconscious'. *Coll. Wks*, 9(i).
9. — (1964). (Ed.) *Man and His Symbols*. Garden City, NY: Doubleday.
10. — (1964). 'Approaching the unconscious', in C. G. Jung (Ed.) *Man and His Symbols*. Garden City, NY: Doubleday.
11. Kerényi, C. (1959). *Asklepios: Archetypal Image of the Physician's Existence*. New York: Pantheon.
12. Keutzer, C. S. (1982). 'Archetypes, synchronicity and the theory of formative causation'. *Journal of Analytical Psychology* 27, 3.
13. Lehner, E. (1956). *The Picture Book of Symbols*. New York: William Penn.
14. Mahlberg, A. (1987). 'Evidence of collective memory: a test of Sheldrake's theory'. *Journal of Analytical Psychology* 32, pp. 23–34.
15. Mattoon, M. A. (1981). *Jungian Psychology in Perspective*. New York: The Free Press.
16. Prochaska, H. (1984). 'A.R.A.S. and amplification'. *Journal of Analytical Psychology* 29, 2.
17. — (1987). 'Archetypal symbol'. Personal communication to David H. Rosen.
18. *Roget's International Thesaurus* (1942). New York: Thomas Y. Crowell.
19. Sheldrake, R. (1981). *A New Science of Life: The Hypothesis of Formative Causation*. Los Angeles: J. P. Tarcher.
20. — (1988). *The Presence of the Past: Morphic Resonance and the Habits of Nature*. Los Angeles: J. P. Tarcher.
21. Thomson, D., Tulving, E. (1970). 'Associative encoding and retrieval: weak and strong cues'. *Journal of Experimental Psychology* 86, pp. 255–262.
22. Tulving, E. (1972). 'Episodic and semantic memory', in E. Tulving, W. Donaldson (Eds) *Organization of Memory*. New York: Academic Press.

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