



The innate story code

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ABSTRACT

Code biology reveals a great many codes beyond the genetic code as integral to biological functioning. Recent scholars have linked the growing field of code biology to analytical psychology, confirming that the encoded information inherited by the human organism is indeed massive and capable of great sophistication. In this discussion, I will expand on this project by showing how developments in embodied cognition reveal a code that links the world of universal emotional responses to common experiences to the world of embodied visuospatial narratives—i.e., the “archetypes” of analytical psychology. Viewed in this manner, archetypes become spontaneous symbolic narratives that symbolize universal emotional responses to typical human environments. Such symbolic narratives aim toward adaptation, and use a universal code that maps such situations to visuospatial narratives, with the adaptor being the human body itself.

Mr. A, a male patient in his thirties with depression and anxiety symptoms, dreamt the night before beginning psychotherapy:

I am in a tall, vertical apartment on the top floor, where I am to celebrate the birthday of “the great grandmother”, a very large and jovial woman. Then I find myself downstairs in bed with a small person with both male and female features, whom I am supposed to “date”. They send me alone into a desert in the night where I wander for long in the darkness, past dry, crumbled buildings, until I come upon a great dune. Crossing the dune, day comes, and I see hundreds of people playing on an ocean of extremely vivid, almost glowing blue. It is unfathomably deep and rich. I don’t merely guess, but KNOW that this ocean is “God”, and it is alive. She is our great mother. I wake up in tears because it is so beautiful.

This essay will explore a code previously unrecognized in code biology: a code of innate psychological story symbols. Early psychoanalyst Carl Jung speculated that dreams and spontaneous fantasies sometimes drew their contents not from one’s personal experience, but from a deeper, innate “layer” of the mind he termed the “collective unconscious” (Jung 1959; Goodwyn 2022; Stevens 2002). Some dreams, he argued, have the tendency to emerge when we face important species-typical psychosocial situations. If true, such a response would by necessity be generated by the genome and inherited epigenome. Previous scholars in code biology (Major 2021; Vedor 2023; Prinz 2023) have noticed that modern genetics and neuroscience show broad agreement with Jung’s early speculations, but thus far, this knowledge has not been applied systematically to concrete clinical material such as the above

dream. Such application is the subject of the present work.

1. “Archetypal” narratives

For our purposes, an archetypal narrative or image would be a spontaneously emergent image or series of images that is triggered by bio-psycho-social conditions in a *path independent* manner. More detail on this definition follows below. For now, the terminology of *path independence* is adopted to avoid empty nature-vs.-nurture dichotomies that are rendered obsolete by modern epigenetics. Rather than waste time debating whether or not such-and-such responses to a given environmental stimulus are “learned” or “innate”, we will honor the ubiquitous blending of gene and environment to ask whether or not a given response can be shown to be *path dependent* or *path independent*, the dependence being on specific, culturally learned or mimicked events in one’s personal history. Those that are path dependent will require some kind of didactic instruction or observational cultural experience before it is possible to observe—for example, the ability to perform multivariable calculus *in response* to a given situation requires observation and didactic learning before it is possible.

By contrast, *path independent* responses *do not* require any such didactic learning or cultural observation. They are independent of such personal trajectories and can simply arise regardless of the details of one’s own personal history and life trajectory. One physiological example of this is the cold response. When faced with cold temperatures, a cascade of responses occurs that shifts physiology to one of heat conservation. This response is path independent, since it does not

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require any specific didactic instruction or cultural observation. Indeed, one could live their entire lives without knowing this response was dormant on their genome.

To explore the Jungian idea of an *archetypal narrative* response to a given situation, however, we will need to examine environmental triggers and responses more complex than the cold response. We will need to explore responses of a *bio-psycho-social* nature. One such example is the so-called conserved transcriptional response to adversity (CTRA) (Cole 2019). Briefly, the CTRA is psycho-neuro-immunological response to grief, social separation, and social rejection that is associated with well described changes in the transcription of genes responsible for immune function in peripheral blood cells. Here, grief, rejection, or trauma generate a pro-inflammatory state in multiple organ systems (Cole 2019). Tellingly, the CTRA has been shown to be reversible with psychosocial interventions. That is, psychotherapy, pro-social acts, and mindfulness reverse the CTRA. The CTRA is a *path independent* response and can occur in any human (and has been observed across other mammals). It does not require observational learning or didactic instruction. Numerous other examples exist in the literature of psychosocial conditions triggering a cascade of short, medium, and long term epigenetic changes leading to neural reorganization (Idaghour et al., 2008; Grezenko et al., 2023; Kumsta 2019; Mehl et al., 2017; O'Donnell and Meaney 2020; Rossi, 2002; Slavich et al., 2019; 2023; Weaver 2014; Zhang and Meaney 2010). Any of these could easily be path-independent just like the CTRA or cold response, though it is still plausible that specific events can *modify* path independent responses, even if they do not *create* them.

The CTRA demonstrates a path independent physiological response to psychosocial triggers, but this is not the same as an archetypal narrative, though it is similar. That is, we have yet to argue that spontaneous *symbolic narratives* can be path independent responses. Jung's speculation was that certain species-typical bio-psycho-social conditions can trigger a path independent response in the form of a dream or vision that has a recognizable and universal form. Such stories come from "An inherited tendency of the human mind to form representations of mythological motifs – representations that vary a great deal without losing their basic pattern." (Jung 1977, para. 523). Is the above dream of Mr. A., for example, one of these "archetypal" dreams, responding to the psychosocial trigger of "going into psychotherapy", which can be quite stressful? If so, then because it is path independent, its source is an innate inherited potential and there may be a neural code that we can use based on universal physiology that can help us discern the *meaning* of the dream. To truly explore this possibility, we need to broaden the discussion to examine what we know about how the mind typically forms *spontaneously emergent* stories in general (path dependent or not), including but not limited to dreaming.

2. Spontaneous thought: a brief overview

The above dream is an example of *spontaneous thought*. Spontaneous thought (ST) is a behavior that all humans have that simply refers to those mental contents which emerge unbidden by the will of the subject. This can refer to contents that emerge during dreams, altered states of consciousness, or even everyday consciousness. Its characteristic feature is merely that it is spontaneously emergent into awareness and unwilling by the subject.

Over a decade of empirical investigation into this phenomenon has yielded some interesting features of ST (reviewed in Fox and Christoff 2018). Rather than being mere wish-fulfillments or chimerical, random fantasies, ST has been found to be *purposeful, functional, and self organizing*. Not only that, ST is largely imagistic and metaphorical as well. Decades of dream science—one form of ST—tell us that dream content, like other forms of ST, focuses heavily on personal, emotional concerns, and is organized into meaningful *narratives* (Roesler 2023). Early psychoanalysts such as Freud, Jung, Kohut, and Bion, of course, speculated that this was the case. Now, however, much more empirical research is

available to inform and clarify how this process works. As such, it is evident that ST generally reflects the mind sorting through emotional, social conflicts and stage-of-life challenges.

As mentioned, the language that the mind uses to craft these narratives is essentially metaphorical in nature—this is recognized by the fact that thought in general tends to be metaphorical (see below), and spontaneous thought, if anything, leans more heavily into this tendency. This is likely because images and metaphors are "broad bandwidth" signals that can encapsulate a lot of information into a single set of dynamic images. Thinking in images is likely common in many animals, and is a pre-verbal type of thought far older than language.

But what *kind* of metaphors are utilized in ST? Metaphors of what? This is where cognitive linguistics is of help, in particular with respect to the way we use metaphors to describe emotions. In cognitive linguistics, the main finding is that much of thought utilizes a number of *embodied metaphors* that can themselves be broken down into *primary metaphors* (reviewed in Lakoff 2012, see also Lakoff and Johnson 1999; Khatin-Zadeh et al., 2023). Primary metaphors form a set that can be used in a combinatorial fashion to construct a nearly infinite variety of complex metaphors. Moreover, many if not most primary metaphors are *embodied*, which means they are tied to concrete physical sensory experiences. George Lakoff describes primary metaphors as:

frame-to-frame mappings across conceptual domains ... linguistic metaphors are surface reflections of those conceptual mappings ... from correlations between co-occurring embodied experiences; for example, Happy Is Up, Sad Is Down; More Is Up, Less Is Down; Affection Is Warmth. (Lakoff 2012: 776).

For example, basic level categories and spatial relations across many languages require universal primitives that reference the human body (Langacker 2008). These metaphors map abstract or difficult to describe/comprehend domains onto embodied visuospatial domains that are easy to comprehend, like the iconic LOVE IS A JOURNEY mapping (Lakoff and Johnson 1999, capitalization by convention). Embodied metaphors derive from physical correlates of human emotion, and are hence ubiquitous cross-culturally, like when anger is described as heat ("boiling over with anger", "letting off steam", etc.). In other words, some primary metaphors are reliably and cross-culturally emergent, simply due to universalities in human physiology.

Modern cognitive linguists argue that "conceptual knowledge is embodied, that is, it is mapped within our sensory-motor system [which] characterises the semantic content of concepts in terms of the way that we function with our bodies in the world ... Abstract reasoning in general exploits the sensory-motor system." (Gallese and Lakoff 2005: 456–473). There is significant empirical support for embodied metaphor theory, coming from action-sentence compatibility studies, eye-tracking studies, hand-prime studies, gesture-in-learning studies, and neuro-imaging studies on sensorimotor activation during metaphor processing and mental imagery processing (reviewed in Khatin-Zadeh et al., 2023). As mentioned, this literature supports the idea that even abstract, complex metaphors are *compositions* of simpler metaphors. These simpler metaphors are mappings of ideas onto embodied visuo-spatial and kinesthetic body-movements. Take the ANGER IS HEAT metaphor, for example. The source of this concept is the human body itself and its path-independent physiological responses to the emotion of anger (Khatin-Zadeh et al., 2023, p. 8, see also Panksepp 2004). Other primary metaphors also use kinesthetic sense (UNDERSTANDING IS GRASPING, i.e., "I can't grasp this subject", or CONTROLLING IS GRASPING "you need to get a grip on this situation"), which is naturally embodied. Such a metaphor would make no sense to a whale or a rhinoceros, but makes perfect sense for a handy primate like *Homo sapiens*.

Hence, primary metaphor acquisitions qualify as *path independent* responses to normal development. More examples of these kind of primary metaphors are.

UNDERSTANDING IS SEEING: “I can’t see his point of view”, “that argument is murky”, “his thought is very clear”.
 HAPPY IS UP: “flying high with good feelings”, “on cloud nine”
 SAD IS DOWN: “feeling down in the dumps”, “I’m *depressed* today”
 CONCEPTUAL HARMONY IS PHYSICAL BALANCE: “These ideas don’t work because they are unbalanced”
 ATTACHMENT LOSS IS COLD: “he gave me the cold shoulder”, “she left me out in the cold”

3. The symbolic dimension of embodied cognition

An important feature of conceptual embodied metaphor theory is the recognition that all metaphors have an *ineffable core of meaning* which cannot be expressed except via other metaphors (Lakoff and Johnson 1999; Minervino et al., 2018; Kövecses 2016). This finding is precisely *why* metaphors are useful, in that they are able to depict and signify that which is difficult to verbalize. This applies not just to fancy expressions of deep mystery (such as poetry, religious imagery or interpretive dance) but also to more prosaic ones like DANGER IS DARKNESS as is seen in the evocative imagery of “the dark forest” found in so many fairy tales. “Danger”, after all, cannot ever literally be “darkness”, and yet the metaphor is powerful and viscerally resonant for poor humans with lousy night vision.

One consequence of this feature of metaphors is that *spontaneous* metaphors will have this quality to them as well—i.e., it will be difficult to verbalize their meaning without the use of other metaphors. This feature, however, is not due to any necessarily mysterious, unknowable characteristic of unconscious cognition, but rather in the *metaphorical* manner in which it is often expressed. In any case, metaphors are a common element of ST because metaphors are an effective and compact way to consolidate information into an easily digestible form to guide cognition and behavior.

4. The innate story code

At this point we are now ready to examine the primary question of how code biology may inform the interpretation of Mr. A’s dream. Given that spontaneous thought consists of complex metaphors capable of being broken down into combinations of primary metaphors, it is likely that some primary metaphors will be path independent (like ANGER IS HEAT) while others are path dependent (VALUE IS CASH, “that was a *costly* decision”, “show me the money!”, all of which depend upon a culturally-acquired understanding of currency, which is not universal among human cultures). The present essay is concerned with *path independent* primary metaphors. That is, the primary metaphors that arise in the developing mind regardless of one’s idiosyncratic personal history, culture or didactic instruction, and are more the result of one’s *species* history.

I therefore define the subset of primary metaphors that are path independent as *innate mappings*. Innate mappings do not need to be observed or acquired via didactic learning. They are derived solely from our embodiedness as human beings-in-the-world. Some specific examples of innate mappings include (borrowing and elaborating from Lakoff and Johnson 1999):

KNOWLEDGE/SAFETY/HAPPINESS IS LIGHT (which also implies UNMANIFEST/DANGER/SADNESS IS DARKNESS)
 POWER/HAPPINESS IS UP (which implies WEAKNESS/SADNESS IS DOWN)
 CONCEPTUAL HARMONY IS SYMMETRY/BALANCE
 AFFECTION/ENJOYMENT/LIFE IS WARMTH
 ANGER/PASSION/LUST IS HEAT/HOT LIQUID
 COMPLEX PROCESS IS A CONSCIOUS BEING (i.e. personification)
 EMOTIONS ARE FACIAL EXPRESSIONS
 COMPREHENSION IS GRASPING
 WILLING IS MANIPULATING WITH THE HANDS

EMOTIONAL SEPARATION IS COLD

The justification for saying these are innate is that both source and target domains of these mappings are universal human experiences that do not depend on any key cultural observation or instruction from elders. They are self-evident and self-organizing in any normally developing *Homo sapiens*. I provide more proposed innate mappings below.

In any case, let’s summarize what we have uncovered so far:

1. The normal human brain continually produces ST.
2. ST content is usually adaptive and focused on the key homeostatic functions of emotional regulation, planning, and identity consolidation within complex psychosocial groups (due to our intensely social nature as communal primates).
3. ST is often metaphorical in nature.
4. These metaphors can be broken down into primary metaphors.
5. While some primary metaphors (like VALUE IS CURRENCY/MONEY) will arise from cultural observation, other primary metaphors are path independent, arising in all intact humans in a universally emergent manner.
6. This subset of primary metaphors I label the *innate story code*, and is composed of all the innate mappings. Note the term “story” and “narrative” are being used interchangeably to denote a discrete series of sensory images that have a coherent thematic unity.
7. The innate story code itself may comprise a true biological code that can be used to interpret spontaneous clinical material such as Mr. A’s dream.

To see exactly how this code works, it will be necessary to explore its precise mechanisms in some detail.

5. The innate story code: mechanisms

The biosystems involved in generating such a code will naturally be extraordinarily complex, but we can sketch out a hypothetical framework given what we already know about psychobiological codes and epigenetics:

1. The sensory system will pick up species-typical internal and external environmental cues. These events will cause a cascade of signal transduction events in the genomes of the neurons of various processing centers of the brain. Species-typical situations will be ones identified by evolutionary psychology and psychobiology and include such situations as social rejection, mating cues, physical danger vs. propitiousness, cues of one’s good or bad sociocultural position, caregiver cues, etc (e.g. The CTRA uses these). There will be scores of selected-for and evolved structural, regulatory and transduction codes in place that will act in concert to trigger responses to these situations that have generated reproductive success over deep time. Thus, such sensations will be encoded that we can denote as

$S \rightarrow M(s)$ *species typical sensory cues transduced into molecules*

Where S is the set of sensory cues or events, and M(s) is the set of molecules transduced by the adaptors of the above transduction codes.

2. Specifically, M(s) will consist of the products of structural and epigenetic codes which will themselves trigger changes in neural and glial architecture and behavior in key brain regions (e.g., the default mode network), endocrine, immune and/or other organ systems. The end result will be M(s) generating a suite of highly coordinated, species-typical, higher-order structural and functional behavioral organ *responses* we can call R(s), giving us

$S \rightarrow M(s) \leftrightarrow R(s)$ *Molecules trigger higher order behavioral (structural and functional) organ responses*

Where the responses of R(s) would be the set of behaviors of those systems altered by M(s). Examples would be changes in the coordinated behaviors of basic emotional brain/body systems such as RAGE, CARE, or PANIC (c.f. Panksepp 2004), kinesthetic sense, facial recognition responses, theory of mind (mirror-neuron) responses, temperature regulation behavior, light/dark orientation, etc. Note that R(s) can recursively trigger further changes in M(s).

3. The coordinated behaviors of R(s) will themselves become encoded via *neural codes* into mental artifacts. Neural codes transduce brain/body states into qualia of one's subjective conscious and unconscious emotional world. This code crosses the mind-body divide (Barbieri 2020), providing us with subjective mental artifacts via the neural structure's participation in consciousness (Goodwyn, 2021). Thus R(s) will be transduced again into the world of mental artifacts MA(s) as

$S \rightarrow M(s) \leftrightarrow R(s) \leftrightarrow MA(s)$ R(s) correlate with emergent mental artifacts MA(s)

MA(s) denotes the set of subjective mental artifacts in the subject's mental world, mediated by the continuous processing of sensory data as it impinges upon the intrinsically self-generated activity of the brain M(s) \leftrightarrow R(s). Note that, per ST literature, mental artifacts are not produced in a simple, one-to-one, sensory stimulus-mental response process. Rather, a single stimulus can trigger multiple waves of recursive processing to settle upon one or more mental artifacts. Examples of MA(s) might be emotional inklings, intuitions, moods, sensory impressions, and other qualia.

4. Through this continuous integrative processing of ST in time, the brain will eventually produce mental artifacts that connect past, present and anticipated future experiences in the form of primary *metaphorical mappings* PM(s)

$S \rightarrow M(s) \leftrightarrow R(s) \leftrightarrow MA(s) \rightarrow$ recursive ST processing and reprocessing \rightarrow PM(s) Generation of primary metaphorical mappings

Where PM(s) will be *metaphorical mappings* made from the simpler mental artifacts of MA(s), based on associations derived from experience. PM(s) will be "this is like that" statements which, through ST, can be further processed into gradually more complex images or strings of images (i.e., narratives). Such narratives will be presented to consciousness as representative "big picture" symbols of one's current life situation in time. These will be composite symbols made of many primary mappings as discussed in the embodied metaphor theory reviewed above.

5. Finally, such images will have the capability of acting as new S impressions in the sensory networks, continuing the recursive and self-organizing activity of ST,

$S \rightarrow M(s) \leftrightarrow R(s) \leftrightarrow MA(s) \rightarrow$ recursive ST processing and reprocessing \rightarrow PM(a \rightarrow b) \rightarrow Complex images \rightarrow S

As an example of primary metaphor construction, one such image might take a mental impression of "safety"—call it MA(1)—and map it to another mental artifact which represents the qualia of "light", call it MA(2). This connection will naturally arise during development due to universal physical and biological constraints bringing them together. ST will combine MA(1) and MA(2) to produce a metaphorical mapping PM(1 \rightarrow 2), itself a mental artifact, which will manifest as the SAFETY IS LIGHT mapping. This primary metaphor will be available to any human for use in the construction of complex metaphors throughout life.

Note that this process does *not* require language per se. The mapping simply gives an intuitive feel of "this subjective experience *is like* that subjective experience". Language is itself a culturally acquired code that maps word-sound mental artifacts to other mental artifacts and vice-

versa. Language gives us the ability to *communicate* the mappings, but it does not create them.

In any case, some primary mappings will be self-generating and spontaneously emergent and hence *path independent*, meaning they develop in all humans by virtue of being a member of *Homo Sapiens* and not dependent upon any specific cultural observations or didactic learning from caregivers. Once development proceeds long enough to produce spontaneous metaphorical thought (about age 5–6), every human brain will have generated a large suite of primary metaphorical mappings, both path-dependent and path-independent. Both of these elements within PM(s) can then be used combinatorially to generate the *complex compositions* found in ST. If the majority of primary mappings used to create one of these compositions are path-independent ones, then such compositions will potentially exist in all humans—which brings us to Jung's archetypes.

6. The innate story code is a true code

The innate story code is itself, of course, a code. This code maps abstract, diffuse, or difficult-to-define elements of MA(s) onto concrete visuospatial elements of MA(s) to generate elements of PM(a \rightarrow b). In order for the innate story code to be considered a *true* code, however, three criteria need to be met (Farias et al., 2020; Barbieri 2014, 2015, 2018, 2020):

1. The code must map between two independent worlds
2. A set of adaptors must exist that create these mappings between them
3. The set of mappings must be *arbitrary* and contain no intrinsic causal links between worlds—i.e., the mappings must be made via extrinsic, artifactual means.

The innate story code consists of those elements of PM(a \rightarrow b) that map vague or difficult to define but universal ideas, impressions, and emotions of MA(a) into equally universal concrete (mostly) visuospatial perceptions within MA(b). Thus it connects two independent worlds—experiential expressions of the environment on one hand, and visuospatial images or strings of images (narratives), on the other, resulting in a primary metaphor (i.e., an element of PM(a \rightarrow b)). The adaptor for this process is the human body itself and all of its sense organs and universal physiology. Finally, the mappings qualify as *arbitrary* because there is nothing intrinsically connecting the two worlds without the adaptor. That is, there is nothing intrinsic to the concepts of sadness to "down", anger to hot liquid, or knowledge to light. The human body *as an adaptor* is the extrinsic force that makes these artifactual links. Another animal would not make these particular links. Thus, the innate story code meets all three criteria defined by Barbieri, and qualifies as a true code. Other innate mappings include:

Temperature.

AFFECTION/ENJOYMENT/LIFE IS WARMTH
 ANGER/PASSION/LUST IS HEAT/HOT LIQUID
 EMOTIONAL AFFECTION/SEPARATION IS WARM/COLD

Light/Vision.

KNOWLEDGE/SAFETY/HAPPINESS IS LIGHT (which also implies UNMANIFEST/DANGER/SADNESS IS DARKNESS)

Body Orientation.

CONCEPTUAL HARMONY IS SYMMETRY/BALANCE
 AFFECTION IS CLOSENESS
 CORRECTNESS IS RIGHTNESS
 EVIL IS LEFTNESS

Personification.

COMPLEX PROCESS IS A CONSCIOUS BEING (i.e. personification)
EMOTIONS ARE FACIAL EXPRESSIONS

Hands.

UNDERSTANDING IS GRASPING
WILLING IS MANIPULATING WITH THE HANDS

Body Integrity.

EMOTIONAL TRAUMAS ARE PHYSICAL INJURIES
EMOTIONS ARE LIQUIDS

Viusospatial

POWER/HAPPINESS IS UP (which implies WEAKNESS/SADNESS IS DOWN)
THE “MOST IMPORTANT” IS THE CENTER
HARMONIOUS INTEGRATION IS PHYSICAL SYMMETRY
BEAUTY IS PHYSICAL SYMMETRY
IMPORTANCE IS SIZE

Many more such innate mappings could be hypothesized.

7. Empirical testing of the innate story code

There are many ways this model could be tested empirically, some more specific than others. The above five steps through which sensory impressions are hypothesized to become organized into ST via various known codes and processes are well-validated in a general sense. Hence it would not be fruitful to test, say, whether or not sensory events lead to ST. We already know that they do. What we don't know are the precise details and variables involved. Are there regularities in the ST generated by, say, the subjective impression of social rejection or pro-sociality in others, and if so, what are they? Do subjects known to be expressing the CTRA have corresponding measurable changes in ST, and if so, what are they?

More specifically, the innate story code itself could be tested. Each element of the code is a primary metaphor that should be potentially available in every normally developing human mind. That is a falsifiable hypothesis. For example, the mapping ANGER IS HEAT is an element of the innate story code, as it maps a subjective universal impression onto another universal sensory experience in a way that is determined not by the concepts themselves, but by the dictates of the adaptor—our universal human physiology.

To test this, we would need to examine whether or not this mapping exists cross-culturally in multiple unrelated languages. In this particular case, linguist Zoltán Kövecses has collected precisely such cross-cultural data. In his review, he notes that ANGER IS HEAT can be found in English, Chinese, Japanese, Hungarian, Tahitian, Chickasaw, and Wolof (Kövecses, 2007). Such data confirms that ANGER IS HEAT is an element of the innate story code. This finding is consistent with the above proposal that it exists cross-culturally because of our universal physiology.

What Jung seemed to be intuiting, then, is the fact that some products of ST will be complex metaphors constructed predominantly via *innate mappings* (see Minervino et al., 2018). And given their ease of comprehension and language independence, it also makes sense that stories passed down orally for thousands of years would likely be pruned down to almost entirely innate mappings. Doing this would facilitate cultural transmission, as such stories would be easily understandable by anyone, regardless of culture. Such a theory would moreover explain why folktales reflect universal emotional intrapsychic dynamics, as Jung intuited, since over many retellings, those that came to resemble commonly encountered ST depicting universally encountered inner dynamics would resonate strongly with listeners and be emotionally satisfying, encouraging retelling and resisting further changes.

Moreover, such ST derived stories will have a discernible *meaning* which can be worked out once we understand the innate story code.

8. Interpreting ST with the innate story code

To decipher dreams and other spontaneous narratives using the innate story code, we must recognize that the innate story code is a *signal transduction* code (Brette 2019; Prinz 2023) that the normal, continuous process of ST uses to map internal and external environmental impressions onto visuospatial images. The brain does this for ease of narrativization, integration, and organization of personality, identity, and planning. The code is then used as a way to encode situations as visuospatial and sensory narratives, used by the normal ST mechanisms for its goals, which are to generate meaning, identity, and context for one's current life situation.

One can therefore use the innate story code to decipher the concepts that are embodied by the dream introduced at the beginning of this essay. Given that ST focuses on emotional and self-oriented impressions and meanings, those typically encountered and timeless human psychosocial situations will generate archetypal narratives via ST. Examples would be encounters with mother and father, transitioning into adulthood, sexual relations, family and community identity/belonging, etc. These universal situations will trigger very similar ST worldwide. When ST uses predominantly innate mappings to construct such products, then, it will be a story that could easily emerge in *anyone* regardless of upbringing or culture, provided the proper conditions obtain. Such a narrative will therefore strongly fit the category Jung proposed as an “archetypal” narrative. Since such stories are composed mainly of innate mappings put together in a *similar but still creative* manner, they will share many structural parallels across all cultures and times, even when they are not identical, as Jung intuited. Clinical experience suggests major social and phase-of-life transitions are usual triggers for such narratives, and represent not individual spontaneous stories but spontaneous *species* stories, told in this code.

9. Using the innate story code to decipher Mr. A's dream

One common aspect of ST is that subjects will encounter personifications of different aspects of one's lived experience (Barrett 2015). This is itself an innate mapping already discussed. Hence, Mr. A's pending “date” with a character seems to imply an upcoming “blending” or “bringing together” of a pluripotent figure with the dreamer's conscious egoic self, at the behest of a large (and hence important) ancestral “great grandmother”. So far we can see in use the following innate mappings:

The great grandmother character combines.

COMPLEX PROCESS IS A CONSCIOUS BEING
IMPORTANT IS BIG (great grandmother)
ORIGINATING PRINCIPLE IS A PARENT/ANCESTOR (great grandmother)

And the trip downstairs to meet the dreamer's date combines:

FUNDAMENTAL PRINCIPLES ARE DOWNWARD/FEET (going to the bottom floor)
COMPLEX PROCESS IS A CONSCIOUS BEING
CONCEPTUAL INTEGRATION IS A JOINING OF MALE AND FEMALE (used in two ways, in the character themselves, and the implied joining of the dreamer and this character)
CONCEPTUAL SIMILARITY IS CLOSENESS - here viewed more dynamically as “bringing together”

Next we see the dreamer engage in an emotional series of events—that goes from darkness to light (i.e. “enlightenment”), and from dry, barren, abandoned, and desolate to a lush, deep ocean, overabundant with life. Here many playful characters convey positive social engagement upon

the ocean which the dreamer perceives as a divine, tangible, vivid, unifying god of limitless depth. This acquainting (or perhaps reacquainting) of the dreamer with this divine power brings about tears of joyful meaning.

Thus we see:

EMOTIONAL EVENTS ARE PHYSICAL TRAJECTORIES
 KNOWLEDGE/SAFETY/HAPPINESS IS LIGHT
 UNKNOWN/UNMANIFEST/DANGER/SADNESS IS DARK
 DEATH/DISENGAGEMENT IS DESSICATION

Used in the journey:

CONCEPTUAL/SOCIAL TRANSITIONS ARE BOUNDARY
 CROSSINGS

The ocean itself is a memorable “character” that combines:

COMPLEX PROCESS IS A CONSCIOUS BEING (“God”)
 SENSORY INTENSITY IS VIVIDNESS (IN TERMS OF COLOR)
 EMOTIONS ARE LIQUIDS
 AFFECTION/ENJOYMENT/LIFE IS WARMTH
 VITALITY/VIVACIOUSNESS IS WATER
 CONCEPTUAL PROFUNDITY IS DEPTH

Subsequent clinical material bore out an intense craving for meaning that struggled against a reductive and rigid egoic thinking style that relaxed considerably with therapy. Note how the abundant use of innate mappings, moreover, makes this dream understandable in a language-transcendent manner. Since it is loaded with innate mappings, this dream could have been dreamt by anyone belonging to species *Homo sapiens* since the symbolism is derived from universal physiological invariants, given the right inner and outer environmental conditions. The path-dependent, culture-specific details such as apartments, clothing on the characters, and ruined buildings do not seem important to the overall symbolic expression, as they could easily be changed to other structures, clothing, or ruins, and the overall meaning of the narrative would be identical.

10. Clinical relevance

What is the significance of being able to identify Mr. A’s dream using the innate story code? Only the recognition that not every clinical utterance is rooted in one’s personal development, but that some psychic contents are organized in a way that reflects our *species* history rather than our individual history, arising like a genetically guided story containing a kind of universal wisdom. Such contents should not be glossed over in therapy, since it represents universally *human* elements of one’s experience and the “genomic response” to their situation. In any case, the existence of the innate story code means that some psychic contents are not simply reflections of the personal past, but are natural *species* responses and attempts at adaptation to changing circumstances. These would be properly labeled archetypal narratives.

Historically, psychology has tended to think of ST narratives as entirely deriving from cultural imitation or instruction. What the foregoing demonstrates, however, is that we should not rule out the likelihood that our history as extremely social primates have woven some responses into our genomes when facing frequently encountered *psycho-social* challenges. Situations such as loneliness and isolation likely triggered not only path independent responses like the CTRA, but universal archetypal narrative forms to aid in adaptation. This is plausible because for *Homo sapiens* and other ancestral hominins, poor social adaptation would be lethal in the paleolithic environment. Therefore, strong selection pressures could plausibly have generated a genomic tendency to produce such responses in the form of specific kinds of ST. ST in general aims toward meaning, planning, memory, and identity consolidation,

and represents one way in which the array of human innate responses could address such psychosocial problems through their effects on emotional regulation, social identity, and future planning (in addition to psycho-neuro-immune/endocrine responses). Innate mappings, moreover, are ideal to generate powerful, viscerally moving narratives that metaphorically reflect commonly encountered, survival (and hence in our case *socially oriented*) situations. Such narratives would come with a built-in understandability that crosses all cultural barriers, because the adaptor of the storytelling code is the human body itself. All you need to be able to understand the code is to be in possession of a human body.

From the foregoing, then, we can hypothesize that when certain important conditions obtain (regardless of prior exposure to them), the genome and inherited epigenome may actively provide a response by using the normally continuously active identity, memory, planning, and meaning consolidation processes already at work in ST. As mentioned, the mechanisms of psychosocial situations triggering cascading shifts of genetic expression in body and brain have been reviewed in great detail elsewhere (Grezenko et al., 2023; Kumsta 2019; O’Donnell and Meaney 2020; Rossi, 2002; Weaver, 2014; Xie et al., 2023; Zhang and Meaney 2010).

A corollary to this model is that the more emotionally evocative the situation, the more likely ST will generate images and narratives that use the ‘inherited alphabet’ of the innate story code. Such a narrative will qualify as archetypal in this case. Here, Mr. A.’s psyche took his learned experiences of apartments, oceans, and desert ruins, and reorganized them into a powerful spiritual narrative of unity, community, and interconnectedness. Such a narrative likely depicted a deep need the dreamer had and provided a genetically anticipated adaptive solution to it, as if to say “my current situation is *like this*” –precisely what ST does in general. Like the cold response and the CTRA, this response is likely an attempt at adaptation that focuses on our *social and intra-psychic regulation* rather than temperature regulation.

When we recognize that not everything that emerges spontaneously within the psyche is a reflection of early individual experiences, we realize that it is possible for the psyche to respond in a way that is based on *ancestral* rather than only local/individual determinants. This simple distinction necessitates the existence of *both* culturally learned/observed components as well as embodied, genomic or “archetypal” sources of spontaneous thought construction. With the above model and code, we have a way to discern and more accurately interpret ancestral-vs. individual-derived material, and recognize that, as many kinds of depth psychology teach, our unconscious symbolic making capacities are often a valuable resource to access in therapy. The innate story code tells us how to interpret them.

CRedit authorship contribution statement

Erik Goodwyn: Writing – review & editing, Writing – original draft, Conceptualization.

Declaration of competing interest

I do not have any conflicting interests with respect to the present submission.

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