

Compromise in Multi-Agent Blends

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Abstract: A blend is typically conceived as a systematic integration of conceptual spaces by a single cognitive agent for a particular pragmatic purpose. We consider here an interesting class of ‘macro’ blends that involve multiple cognitive agents, each of which contribute different spaces to the integration. Mythology is one such ‘macro’ type of blend, since rich mythic pantheons such as that of Hellenic Greece arise not as a product of individual design but from a complex cultural blend of different peoples with differing values and deities. Such multi-agent blends observe all the optimality principles of integration, but additionally exhibit pragmatic compromises that reflect the interactions of the social parties to the blend. In effect, a multi-agent conceptual blend is a conceptual by-product of a ‘physical blend’ of different cultural agents with different social goals. Taking classical mythology as our context, we identify a number of projection and composition strategies that operate within a multi-agent blend when those agents have different, often adversarial, preservation goals for the conceptual spaces they contribute.

1. Introduction

Blend theory is an intriguing model of conceptual integration that is perhaps capable of revealing as much about human culture as human cognition. This should not surprise since blend theory has proven itself to have wide-ranging applicability to the representation of both linguistic and non-linguistic aspects of cognition (e.g., see Fauconnier and Turner, 1998), and culture is, in large part, a product of social cognition. In this paper we consider the cultural forces external to cognition that shape the process of conceptual integration in a multi-agent setting. Most work on integration considers blends as the product of single agents, and considers multiple agents only to the extent

that a blend is created by one agent for the comprehension of others. In contrast cultural blends are the result of a community process in which many voices interact over time, and we contend that this interaction imposes a variety of unique pragmatic forces on the development of a blend.

We choose as the vehicle of our research the process of blend creation in polytheistic mythologies, and use the Greek myths as a paradigmatic source. Classical Greek, or Hellenic, mythology primarily differs from the major monotheistic religions in its diverse cast of deities, each of which personifies some universal of human experience within an overall family structure. It is tempting to accept this diversity at face value as a complex creation of a single culture, but it is in fact the result of many successive blendings of the individual belief systems of different peoples, each of which contributes a new character or story to the overall blend. The external forces that motivate and shape the blends are the familiar ones of war, conquest, religious suppression and cultural assimilation. These grand themes allow mythology to serve as a magnifying glass through which the microscopic workings of conceptual blending can be seen in macroscopic terms. The narrative form of mythology is an ideal subject for blend-theoretic analysis, since blending theory has been successfully applied to the understanding of narrative structure by a number of authors (e.g., Oakley, 1998; Veale, 1997). Indeed, we argue that scholars of myth have long used their own equivalent of blending theory's optimality principles of 'web', 'unpacking' and 'good reason' to deconstruct the social purposes and history behind myths (e.g., see Graves, 1955).

A mythic blend may sometimes originate with a single agent, such as a mythographer, but its survival depends on acceptance by a whole population of agents, where each agent may have different cultural purposes for the blend. These purposes sometimes conspire, sometimes oppose, to shape the blend. Opposition can cause the optimality principles of blending to be overridden by a more pragmatic set of 'optimality compromises', and by understanding these compromises, we can better understand the forces that shape all multi-agent blends, whether purely linguistic or conceptual.

2. Historical Context: Hellenic and pre-Hellenic Greece

The Hellenes were a patriarchal collection of peoples who settled Greece in waves during the first two millennia BCE, first during the Aeolian and Ionian migrations, and later during the more aggressive Achaean and Dorian migrations. They brought with them a king-based social system and male-centered mythology to a land that worshipped a female deity, the Great Goddess, in a variety of guises, and whose priestesses were the root source of social power (see Frazer, 1922; Graves, 1947; Harrison, 1991). Pre-Hellenic society had kings too, of course, but these were ceremonial or ‘sacred’ positions chosen on the basis of competition and limited to a fixed term of office, a ‘Great Year’, after which the king was ritually sacrificed. The earlier Hellenic migrations altered Greek culture from the inside, peaceably settling the land and adopting both local customs and the worship of different divine aspects of the Great Goddess. The later invasions were more aggressive and altogether more destructive of the local culture. The end result of the Hellenic migrations and invasions was a patriarchal society that was ruled by a king and which worshipped the now familiar Olympian system of gods and goddesses. In this system the pre-Hellenic female deities still played a significant role but in a diminished position of power relative to the dominant male gods, such as Zeus, Poseidon and Hades, that the Hellenes imported with them.

Though ruled by male kings, the Pre-Hellenic peoples of central Greece and the Peloponnese were a matriarchal culture in two important senses: first, many were matrilineal, in that men and women traced family names through their mothers rather than their fathers; second, and more importantly, the major religious rituals were controlled by priestesses rather than priests (Graves, 1955). Because natural processes involving the weather, the land and the sea were understood in terms of supernatural influences, these priestesses thus wielded significant social and political power, by shaping the rules governing the catching of fish, the sowing and harvesting of crops, and the herding of animals. They also governed the rites in which the sacred king was chosen and later sacrificed after a reign of one ‘great year’. The godhead worshipped by these peoples was a female deity known as the Great Goddess, and her priestesses served as protectors of her divine mysteries (see Harrison, 1991). This role required them to practice elaborate, and often bloody, rituals in which garish masks were worn to frighten

off the uninitiated. In accentuating the mysteries of the divine, these peoples considered the dimly-lit moon a more potent celestial symbol of the Goddess than the brightly luminous sun, and many pre-Hellenes worshipped the deity in her guise as Moon-Goddess. Since the moon and sun are implicated in the changing of the seasons and the variation of weather and tidal patterns, the Great Goddess was also strongly identified with the Earth, and with its natural personification as a Mother Earth. As a representative of all three celestial bodies, the Goddess assumed a tripartite representation that led to her identification as a Triple Goddess of the sun, moon and Earth.

Tripartite symbolism is present at different levels in the Triple Goddess, since each celestial aspect is also associated with three seasonal changes or phases; for the moon, these phases are new, full, and old, and metaphorically allow the Goddess to represent the three phases of womanhood – maiden (pre-sexual being), nubile woman (sexual being) or nymph, and crone (post-sexual being); for the sun and earth, these phases are Spring, Summer and Winter, again metaphoric of maiden, nymph and crone.

Different regional cults in this pre-Hellenic society worshipped different aspects of the Triple Goddess, often under different names. It is this essential polymorphism of the Goddess, combined with the variety of gods of the Hellenes, that leads to the eventual richness of the Olympian system through a process of successive conceptual blending. For example, the Goddess was worshipped as Hera in the city of Argos, which was the center of the pre-Hellenic Mycenaean culture; in Athens she was worshipped as Athene, the goddess of Wisdom who is attributed with the first domestication of horses and cultivation of the olive tree; and in Delphi she was worshipped as Gaia, or Mother Earth, and had a temple there whose priestesses were famed for their powers of prophecy. This temple was later overrun by Hellenes and claimed for their male god Apollo, in an action that typified the changes wrought on pre-Hellenic society by successive migrations.

3. Blends and Myths

Myths are stories that develop to explain social, political, or religious aspects of a culture, and the conceptual integration we observe in these myths is often a faithful mirror of the social integration of the underlying culture. Indeed, myths exhibit blending at different

levels. At one level, a myth is a blend of the physical and the metaphysical, an expression of belief in supernatural forces and eternal mysteries couched in the concepts of everyday life. The gods of mythology represent eternal themes such as love and hate, motherhood and fatherhood, good and evil, chaos and order, yet do so by personifying these themes as people with extraordinary powers and very ordinary desires and foibles. At another level, a myth can blend these supernatural deities with contemporary political and social events to illustrate the inevitability of certain outcomes or to capture some universal qualities of normal life. The word ‘blend’ comes naturally to mind when describing these uses, but if we are to employ the cognitive machinery associated with conceptual integration theory it is important to identify this blending as true conceptual integration, and not a simple jumble of concepts. So to analyze mythology in terms of conceptual integration, we need to observe the following signature characteristics of blending in myths: selective projection of conceptual structure from multiple input spaces; an internally-consistent logic that frequently differs from that of the contributing spaces; emergent structure that derives from none of the input spaces; conceptual relations from the input spaces to the blend, allowing an agent to trace the course of an idea from its origins to its realization in the blend; and conceptual relations from the blend space back to the inputs that contributed it, allowing an agent to trace the development of a concept in the blend back to its origins.

Political cartoons and creative advertising are paradigmatic examples of the type of blend that most overtly exhibit these characteristics, and both types have been studied extensively (e.g., Veale 1999, Turner 1999). Political cartoons, for instance, combine a space of contemporary political events with a space of highly visual and iconic representations, to produce a new conceptual space – the blend space of the cartoon – that has a satirical logic of its own. The cartoon invites us to make inferences in this new space, in fact the humor of the image often depends on this inference making, yet though the emergent inferences follow naturally within the blend space of the cartoon, they can seem absurd if projected back into the original input space of politics. Nonetheless, political cartoons do allow the observer to traverse a web of relations from the blend space back to the input spaces, and again, the meaning of the cartoon relies vitally on this ability. It is vital, for instance, that the observer recognizes a sickly representation of

Uncle Sam, lying in a hospital bed with a downward-pointing graph of the NASDAQ as his hospital chart, as an allusion to the ailing American economy. Without this recognition, the cartoon communicates no political meaning. The identification of images and references allows the emergent inferences drawn in the cartoon to be projected back to the political input-space, not in a literal form (which may appear absurd there), but in an unpacked form where they can be interpreted in purely political terms. The unpacking of this example may lead to an inference in the political input-space that the American economy needs the economic equivalent of hospitalization if it is to recover.

The central myths of classical Greek mythology also exhibit these characteristics. Myths occupy a blend space into which are projected contemporary political and religious events, and within which new logical inferences can emerge. These inferences lead to the participating deities assuming distinct lives and personalities of their own. For example, Athene bursts whole-formed into the world from Zeus's forehead, and because the head is the center of the intellect, she becomes identified as the goddess of wisdom, and because of the parthogenetic nature of her birth, she also becomes identified as a goddess of chastity. In this way, deities become associated with specific symbols, realms of power and geographic regions, and these associations comprise a network of relationships that allow elements of a blend to be unpacked into their original forms. Thus, since Poseidon is considered master of the seas, any myth involving him can generally be interpreted in terms of the governance of the rites and economics of the fishing industry, such as it was in Hellenic times, while a feud between he and Athene can be unpacked as a power-struggle for Athens between worshippers of the Goddess and maritime Aeolian settlers. Likewise, specific female deities can be unpacked into different aspects of the Goddess, thus linking specific pre-Hellenic cults to the blend. Certain code-words also facilitate the unpacking process: the 'seduction' of nymphs and the marriages of goddesses are frequent euphemisms for acts of aggression toward the priestesses of a particular cult of the Great Goddess. The identity of the godly aggressor can guide the unpacking process even more, to reveal a historic event of aggression by a specific Hellenic people against a specific pre-Hellenic cult, and sometimes, even a specific temple of the cult can be implicated.

4. Historical versus Psychological Interpretation

This perspective on the role of blends in mythology assumes that many myths have a strong grounding in historical fact, and that this grounding can be revealed via the unpacking process. This ‘historical perspective’ is advocated by Graves (1955), a scholar of antiquity who claims “*A large part of Greek myth is politico-religious history. [...] Greek mythology was no more mysterious in content [to contemporary peoples] than modern election cartoons*”. But there is another perspective, one we can dub the ‘psychological perspective’, that explains myths as the expression of universal facets of human psychology, or spontaneous products of the collective unconscious. This latter hypothesis suggests that myths are fundamental statements about the human psyche rather than about human history, thus explaining the universality of many mythological themes (e.g., Campbell, 1968, is a major exponent of this view). However, it is the least scientific theory of the two since it is not falsifiable, while the historical perspective is at least falsifiable to the extent that it relies on archeological evidence for corroboration.

Nonetheless, these perspectives need not be considered antithetical. Consider that a myth can be analysed at two levels: the inner level is that of the plot-unit, a conceptual structure that encodes some abstracted sense of cause and effect within a narrative, while the outer level is that of a visual representation which gives the myth its visceral imagery. We suggest that the historical and psychological perspectives correspond to these two levels of representation. Consider again the myth of Athene, who burst forth fully-formed from Zeus’s forehead. Zeus had previously swallowed the goddess Metis while she was pregnant with Athene, but the young goddess was not as easy to contain as her mother. Her eruption from Zeus’s forehead was facilitated by the titan Prometheus, who had to strike open the god’s head with an ax to relieve him of a terrible headache. The outer level comprises the image of one god eating and consuming another, with the subsequent regurgitation of the consumed deity. This is a popular theme in different mythologies – indeed, Zeus’s own father had also eaten his children to prevent them rising against him. The inner level comprises a causal chain of the form *Suppression* → *Resistance* → *Uprising* → *Compromise* and corresponds to the historical events surrounding an attempted suppression of a cult of the Goddess; when the suppression failed and the

Goddess continued to be worshipped, she was instead incorporated into the Olympian system as a dutiful daughter of Zeus. The outer level communicates this causality using the corresponding chain of metaphoric imagery *Swallowing* → *Headache* → *Regurgitation* → *Dutiful daughter*.

5. The Interaction of Culture and Mythology

It is vital that we distinguish the different levels of a cultural blend if we are to avoid category errors. At one level we can distinguish the actual blend of cultures (BoC) that emerges when two or more cultures come together and interact. For instance, the culture that arose as the result of the Aeolian migration into pre-Hellenic Greece is an actual blend of people, customs and social norms. At a conceptual level, we can distinguish the blend of myths (BoM) that arises to explain or justify the social changes – such as a shift from matrilinearity to patrilinearity – that occur within the blend of cultures. For instance, the marriage of Hera to Zeus belongs to this category of blend. Both categories of blend are causally related, with the blend of myths arising out of the logically-prior blend of cultures, and this causality carries across to the component spaces of each blend category. Thus, the input and blend spaces of a BoM are related to the corresponding spaces of the underlying BoC. In cognitive terms, this relatedness is best thought of as a metaphoric correspondence, and is illustrated as such in Fig. 1.

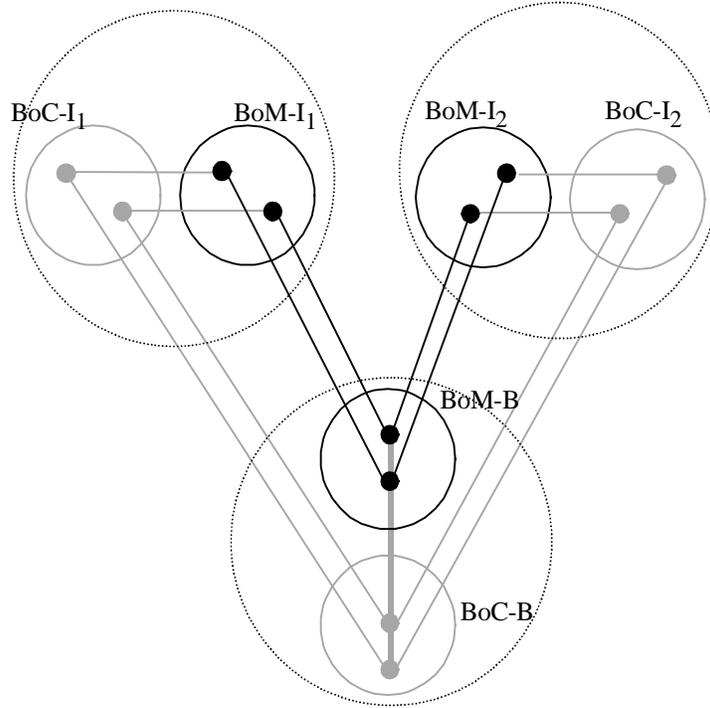


Fig 1: The relationship between a Blend of Cultures (BoC) and a Blend of Myths (BoM) when two cultures C_1 and C_2 merge, and give rise to a blended mythology BoM-B.

Fig. 1 presents this situation as nesting of blends, with the BoM constrained by an external BoC. In the outer blend the input spaces BoC-I₁ and BoC-I₂ represent a conceptualization of the salient elements of the cultures C_1 and C_2 , which for some socio-political reasons are about to be blended, while in the inner blend BoM-I₁ and BoM-I₂ represent the corresponding mythic structures of these cultures. BoC-I₁ is metaphorically and metonymically related to BoM-I₁ — this relationship might, for instance, metaphorize the patrilineage of the culture C_1 as a dominant male god in BoM-I₁. The relationship between BoC-I₂ and BoM-I₂ is similarly metaphoric, e.g., metaphorizing the matrilineage of the culture C_2 as a dominant female god in BoM-I₂. The space BoC-B represents the physical society that arises from a blend of C_1 and C_2 (e.g., a patriarchal society with some vestiges of matriarchy), while BoM-B contains the myths that describe this blended culture (e.g., a mythology in which the dominant female goddess is subservient in marriage to the dominant male god).

Note that in most cases, the spaces BoC-I₁, BoC-I₂, BoM-I₁ and BoM-I₂ will themselves correspond to the blend spaces of earlier cultural and mythological blends, since rich mythologies like the Olympian system do not emerge fully-formed from a single blend. Note that the space pairings BoC-I₁ & BoM-I₁, BoC-I₂ & BoM-I₂ and BoC-B & BoM-B can each be considered as logical units in themselves, each comprising a blend of cultural and mythic elements not unlike the blend of political and iconic elements that is used to create political cartoons. This allows the schematic structure of Fig. 1 to be interpreted both as a *blend-constrains-blend* construction as well as a *blend-of-blends* construction. Each perspective offers its own advantages and advantages, but both are fundamentally yield the same conceptual results.

The term BoC can refer both to the actual blend of peoples, customs and norms arising from cultural assimilation, and to the conceptual model of this assimilation. Note that the former is a physical and social construct, while the latter is a conceptual construct. This places limits on the interpretation of the BoC as a conceptual blend, since its conceptual structure is a representation of the beliefs and practices of a whole population of cognitive agents rather than those of a single individual. As such, the BoC need not exhibit the conceptual coherence of a true conceptual blend, and thus may not observe the optimality principles that are characteristic of conceptual integrations. For instance, the web and unpacking principles may not apply, since there is no general imperative that a culture maintain a coherent network of relations back to the sources of its customs and laws. In fact, some cultures make deliberate efforts to obfuscate these sources by undermining or destroying the artifacts and rituals that perpetuate this network of relations, and to some extent this is precisely what the more aggressive Hellenic migrations attempted to do in ancient Greece.

Nonetheless, the BoM exists as a purely conceptual construct and can be analysed as a true conceptual blend. The constraints placed by the BoC-B upon the BoM-B thus allow the BoC to *borrow* the network of inter-space relations of the BoM, allowing a scholar to effectively exploit the optimality principles applying to the BoM within the context of the BoC. That is, to unpack some aspects of a blended culture BoC-B, one should first map those aspects into the corresponding blend space of the mythological

blend BoM-B, and work with the optimality principles in the context of the BoM network. Any unpacking insights from this network can then be applied back to the cultural context, by once again negotiating the mappings from the BoM to the BoC, this time in reverse. The reliability of this process is largely determined by the richness and transparency of the mappings linking the spaces of the BoC and the BoM. For this reason, cultural analysis via mythology is a process heavily grounded in metaphor and fraught with the possibility of misreading. As noted by Graves (1955), it is a process that is most reliably conducted in the falsifiable context of specific archeological evidence.

Consider as an example a scholar in Periclean Athens, hundreds of years after the Hellenic migrations into Greece. Though Athens is dedicated to its patron deity, the female goddess Athene, it is nonetheless a patriarchal society in which women cannot vote and where descent is patrilineal. Such a scholar may look to the myths of the culture to determine the roots of the city's patriarchal system, either to prove a hypothesis or to bolster a theory grounded on other evidence. By considering the myths of Athenian culture, the scholar traverses the first link from BoC-B to BoM-B (see Fig. 2).

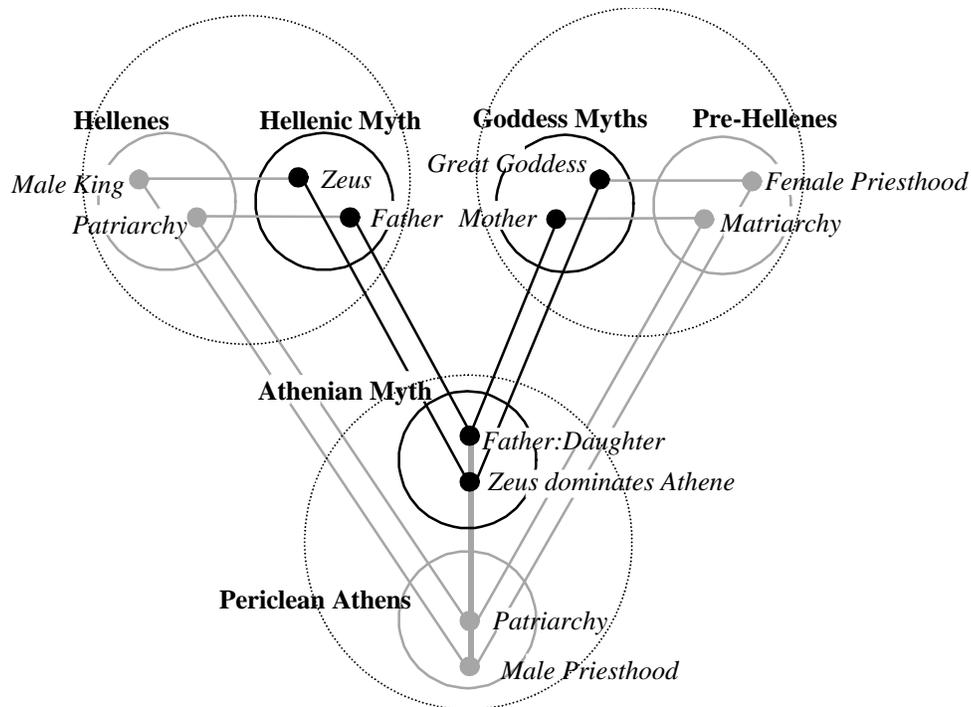


Fig 2: Periclean Athens understood as a blend of Hellenic and pre-Hellenic cultures.

In BoM-B, the scholar notes the central myths pertaining to Athene, and the most central of these is that concerning her parentage by Zeus. Greek myth tells us that Athene sprung wholly-formed and armored from the forehead of Zeus, after Zeus had swallowed her troublesome and pregnant mother, Metis. Unsuccessful attempts to digest Metis fully lead to a dreadful headache for Zeus, which was only relieved once Prometheus split open his head to allow Athene to spring out. This myth has several key implications: Zeus attempted to suppress Metis, and indirectly, Athene; Zeus was successful in suppressing Metis, but not Athene; the rebirth of Athene from Zeus attributes her parentage to Zeus; as her parent, Zeus is superordinate to Athene; by springing from Zeus's forehead, Athene becomes associated with wisdom, strategy and forethought; the forceful nature of her birth suggests some antagonism between father and daughter; and finally, the virginal nature of her birth allows her to represent an ideal of maidenhood.

Exploiting the optimality principles of web and unpacking within BoM-B, the scholar traces Zeus back to BoM-I₁, the myth-space of the Hellenes, where Zeus is considered the father god, and traces Athene back to BoM-I₂, the myth space of pre-Hellenic moon-worshipping culture of the Goddess, where Athene is the maiden form of the Goddess herself. From BoM-I₁, the scholar exploits established metaphors to trace Zeus back to the concepts King and Father in BoC-I₁, and from BoM-I₁ traces Athene to the concepts Priestess and Mother in BoC-I₁. From and , the scholar can project forward to BoC-B, and see that the patriarchal system derives from BoC-I₁ rather than BoC-I₂.

Another example from Graves (1955), concerns the Hellenic practice of cementing a cultural blend via the marriage of Hellenic chieftains to local priestesses. On this subject Graves (1955) notes the following: “*All early myths about the gods’ seduction of nymphs refer apparently to marriages between Hellenic chieftains and local Moon-priestesses; bitterly opposed by Hera, which means by conservative religious feeling*”. Here we see an inference path that begins in a BoM and moves outward to the enclosing BoC. The fact that Hera opposes the godly seduction of nymphs is mapped, via the metaphoric relationships linking the BoM and BoC, back to the cultural level, via the mappings *Hera* → *Pre-Hellenic Religion, Seduction* → *Forced-Marriage* and *Nymph* → *Pre-Hellenic Priestess* (these are frequent mappings in Greek mythology and are used throughout

Graves' analysis). Hera's negative disposition toward the seductions suggests that they occurred despite the established religious practices of those who worshipped the Goddess.

6. Strategies of Compromise

When a compromise is made, it is the party with the greatest ability to dictate terms that usually concedes the least ground. In cultural blends where one party clearly dominates, its beliefs, values, deities and myths will likewise tend to dominate the structure of the resulting blend. But short of completely and utterly suppressing the minor cultural parties in the integration, concessions will be made to these parties, by allowing elements of their mythologies to survive. These elements may hint at a social system that no longer exists, as long as they do not seriously undermine the social system of the dominant faction. Graves (1955) describes classic Greek mythology as the result of precisely this kind of accommodation:

“Achaean invasions of the thirteenth century BC seriously weakened the matrilinear tradition. ...The familiar Olympian system was then agreed upon as a compromise between Hellenic and pre-Hellenic views: A divine family of six gods and six goddesses, headed by the co-sovereigns Zeus and Hera and forming a Council of Gods in Babylonian style.” (Graves, 1995).

Graves' choice of language here suggests that the compromise was an immediate accommodation of perspectives, rather like an executive business decision, and that the Olympian system was the product of a master design rather than a cultural evolution. The truth of the matter is, of course, that the system developed over many years (as Graves notes in great detail), and what we conveniently think of as a conscious agreement was actually the result of cultural harmonization, in which new myths gradually developed to explain why a certain mix of deities were still worshipped, why certain rituals were still performed, and why certain social responsibilities and powers had shifted hands.

It would thus stretch the point to consider the role of compromise in myth formation as strategic in any deliberate sense. Though some ancient authorities have exerted more influence than others in the course of mythological interpretation, in most cases no single

controlling influence is exerted by a specific cognitive agent with particular goals. Nonetheless, one can still evaluate the post-hoc success of the compromises that have produced the most dominant myths, and derive from this evaluation a set of deliberate strategies that a future agent might find profitable to consider in an environment where ‘mind-share’ is competitively sought. When one looks to Greek mythology with an eye for the most strategic compromises, the following conceptual operations seem to be the most productive.

6.1. Fragmentation

This strategy causes a deity to be split into several distinct sub-deities, so that the unifying relationship amongst them is obfuscated in the blend, or simply not projected at all. This can be seen as a ‘divide and conquer’ strategy on the part of the dominant culture. For instance, the fragmentation of the Great Goddess occurred along the relatively sharp conceptual boundaries that defined her various aspects of divinity, creating distinct deities that were more dissimilar than they were similar.

6.2. Renaming

This strategy compounds the work of fragmentation, by assigning new names to the fragmented entities of the blend, to further obfuscate the relation of these splinter entities to the original deity of the input. For example, the pre-Hellenic Goddess has many names in classical mythology (e.g., *Athene = Maiden/Youth*, *Hera = Motherhood*, *Persephone = Fertility*, *Athene = Wisdom*, *Aphrodite = Sex*). These splinter entities then become associated with individual characteristics of the original deity (such as Wisdom or Love), to the extent that they can more readily serve as universal ciphers or proxies for those characteristics (e.g., Aphrodite becomes the embodiment of beauty and love). Used in combination, fragmentation and renaming yield a powerful means of stripping a deity of its inherent complexity and making it more malleable (or reusable) for mythic purposes.

6.3. Identification and Amalgamation

This strategy causes a deity to be identified with another deity from another input space. The extent of the compromise is determined by the semantic fit of each deity to the other, as well as the relative social status of each deity within their respective belief systems. For instance, in the Medusa myth the mortal Perseus is an amalgam of a archetypal Greek hero and the Hellenic god Hermes in his destroyer (or ‘Pterseus’) aspect (see Graves, 1955). This accounts for his use of the winged sandals that are emblematic of Hermes as a messenger of the gods. Similarly, another aspect of Hermes as a keeper of alchemical secrets (and the sense from which the words ‘hermetic’ and ‘hermeneutic’ are derived), known as ‘Hermes Trismegistus’ or ‘Hermes Thrice Greatest’, seems to be an amalgam of the Greek messenger god and Thoth, the Egyptian god of Intelligence.

6.4. Demotion

A deity is placed into a *master:servant* relationship with another deity from another space. This relationship might be that of *parent:child* or *husband:wife*. For example, the goddess Athene is demoted by virtue of becoming Zeus’s loyal daughter. Another example is that of Hera, a name that probably means ‘lady’ and which also referred to the pre-Hellenic Great Goddess. Hera represents a matriarchal culture in which the priestesses of the Goddess wield social power and resist marriage to avoid having this power usurped. However, Hera becomes part of the Olympian system when Hellenes begin to force marriage upon priestesses of various cults in order to gain control over the rituals and offices in which social power is vested. From these forced marriages develops the myth that Hera herself is both Zeus’s wife and sister (since incestuous marriage is allowed between these early *proto*-gods). Similarly, there is good reason to believe that that Medusa is simply a monstrous demotion of the pre-Hellenic Great Goddess, who priestesses wore Gorgon masks to frighten off the uninitiated.

6.5. Semantic Shift

This strategy causes a deity to be projected into the blend space with a different set of associated powers, symbols or background myths, in order to great a better fit with the

dominant mythology. For example, once Hera has been assimilated as the wife of Zeus, she becomes seen as a champion of marriage and a defender of marital fidelity. Since her own marriage is for the most part a forced one to the philandering and deceptive Zeus, this is an unusual conceptual position for her to occupy. Semantic shift is here used to accommodate Hera to her newly demoted position as Zeus's wife.

6.6. Reversal or Subversion

Reversal is a subversive strategy that causes the role structure of a mythic narrative to be inverted, so that the antagonist becomes the protagonist, and vice versa. For example, classical Greek mythology is replete with seduction stories of deities (frequently Zeus in animal guise) aggressively chasing down nymphs, but Graves (1955) suggests that this classical account is in fact a subversion of the pre-Hellenic ritual in which the priestesses of the Moon Goddess pursued the 'sacred king' in the murderous ritual that marked the end of his reign. In earliest times the king was actually killed in this ritual, but the act became increasingly symbolic over time as society became more patriarchal, first through the use of sacrificial surrogates, and later through the use of ritual metaphors, eventually culminating in the reversal of the roles of priestess and king as these rituals became myth.

7. Conclusions: The Agent Perspective

Myths provide an excellent basis for studying the dynamics of competition and compromise in multi-agent blends. Different societies and peoples combine their belief systems, rituals and social practices in a competitive (if not always overtly aggressive or militaristic) clash of cultures that shapes both the resulting blended culture and the associated blended belief space of this new culture. Each party makes compromises in their attempt to preserve their core values and beliefs. The effect of these compromises is as one might predict from conceptual integration theory: the emergence of a new, blended mythology with an internal logic of its own, a conceptual system whose roots can be traced back to the cultural and mythological elements that combined to create it, but one that is free to grow in its own way.

We believe that the analysis of mythology is worthwhile not only for its own sake, but as a means of understanding how two agents with differing cultures and world-views can reach an accommodation over time. This understanding is of direct relevance to the domain of software agents, for as software agents grow in complexity and ambition, they increasingly rely on evermore sophisticated models of the external world (see Veale, 1999). The richness of these models, combined with the inherent metaphoricity of different domains of knowledge, can mean that different agents construe the world in dissimilar, and often incompatible, ways. This is problematic precisely because the promise of agent systems lies in the possibility of autonomous inter-agent interaction for negotiation and task-sharing. Conceptual integration offers a computationally tractable framework in which to explore this promise (see Veale and O'Donoghue, 2000 for a discussion of tractability in the context of blending). Before software agents can interact effectively, their world views must be consistently integrated in a way that recognizes and resolves the inherent tensions between each. For without this integration, agents can have no mutual agreement about how resources of common interest should be valued. Conceptual integration theory provides a powerful framework in which to recognize and resolve these tensions, while an understanding of the integrative basis of mythology reveals how this resolution can effectively occur when entire populations or societies of agents are involved.

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