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With many similar parables Jesus spoke the word to them, as much as they could understand. He did not say anything to them without using a parable.

Mark 4:33-34

Interdomain instructional analogies are powerful tools for teaching and learning. An interdomain instructional analogy juxtaposes two knowledge domains that bear little or no surface similarity but share a common relational structure. For example, an instructional analogy frequently used in science teaching compares the structures and processes of cells to the structures and processes of factories. At first glance, a microscopic plant or animal cell looks very different from a factory—surface dissimilarity. However, both cells and factories possess component parts that are functionally and structurally related to each other in very similar ways—relational similarity. Learners who have some prior knowledge of how factories work may be able to construct a more meaningful understanding of cells by transferring (or mapping) their relational knowledge of the factory domain to their emerging relational knowledge of the cell domain.

Numerous research studies have demonstrated the instructional effectiveness of interdomain analogies in promoting learning, understanding, and conceptual change (see Dagher, 1995; Mayer, 1989; Zook, 1991). However, teaching and learning by analogy is not without its risks, for research findings also clearly indicate that analogies place increased cognitive processing demands on learners and can encourage them to form misconceptions and faulty mental models when they transfer (or map) the wrong ideas from one domain to another—that is, when they attempt to extend the analogy too far (Brown & Clement, 1989; Gentner & Gentner,

1983; Zook, 1993; Zook & Di Vesta, 1991; Zook & Maier, 1994). Ironically, an interdomain instructional analogy can at once facilitate meaningful learning and promote confusion and misunderstanding. By all accounts, analogies appear to function as double-edged instructional swords.

This double-edged instructional sword is the very strategy that Jesus employed repeatedly to reveal principles of the Gospel to people of his time and future generations:

> Two things are generally known about Jesus of Nazareth that are beyond historical doubt, and they are known around the world by Christians and non-Christians alike. The one is that Jesus was crucified in the first century of the Common Era. The other is that he taught in parables. Other items are associated with him (his resurrection, his miracles, the Sermon on the Mount as an oration on a single occasion, and that the Christian church proceeds from his ministry in some way), but they are matters of dispute or affirmations of faith. But there can be no doubt that Jesus was crucified and that he spoke parables. (Hultgren, 2000, p. 1)

Jesus taught in parables, and parables are fundamentally instructional analogies. The Gospel parables encourage nonliteral, relational comparisons between ordinary, familiar aspects of first-century Jewish life and critical features of the less familiar, difficult to comprehend—even radical—"Kingdom of God." Jesus offers prodigal sons, good Samaritans, lost sheep, unmerciful servants, wedding banquets, and mustard seeds as analogical models to help his listeners grasp difficult, nearly incomprehensible features of God's Kingdom: grace, mercy, forgiveness, compassion for the lost, and the high costs of discipleship.

Parable appears to be the primary instructional vehicle that Jesus employed to teach truths and principles concerning the Kingdom of God (Ball, 2000; Buttrick, 2000; Hultgren, 2000). By some accounts, approximately sixty parables appear in the Synoptic Gospels of Matthew, Mark, and Luke, accounting for about one third of all his recorded teachings (Ball, 2000; Young, 1998). Not surprisingly given this volume, the analogical parables of Jesus have

aroused the interest and curiosity of theologians and literary scholars for centuries, resulting in extensive analysis—both historical and ongoing—from a number of varied perspectives (see Snodgrass, 2000).

Strikingly absent from these analyses, however, is a psychological perspective that considers the effects of Jesus' parables on the analogical learning processes of his original hearers—and subsequent readers—of the Gospels. Any potentially valid interpretation of Jesus' parables must begin with an understanding of their purpose. Although the parables now recorded in the Synoptic Gospels are literary artifacts reflecting the purposes and perspectives of each of the evangelists who recorded them, their original purpose was not literary but instructional. Jesus spoke in parables for the primary purpose of teaching. Any approach to understanding Jesus' parables will be incomplete if it ignores their instructional purpose and their functional effects on the internal learning processes of his hearers.

Although Biblical scholars have readily acknowledged the teaching function of Jesus' parables (Hultgren, 2000; Zuck, 1995), their analyses have routinely ignored this instructional perspective—most likely due to the lack of an adequate theoretical framework to account for the internal cognitive processes facilitated by instructional analogies. Fortunately, recent progress in psychological research and theory has significantly advanced our understanding of analogical thinking and learning processes. The "cognitive revolution" (DiVesta, 1987; Wittrock, 1979) that has dominated the field of psychology for the past thirty years has yielded new models of human thinking, problem solving, and learning that have, in turn, revolutionized our thinking in the related fields of education, instructional design, child development, counseling, and others. The goal of this paper is to demonstrate how our emerging psychological perspectives on

analogical learning processes can illuminate our theological perspectives on the Gospel message that Jesus taught by parable.

To achieve this goal, we will analyze Jesus' use of parable by applying structure-mapping theory (Gentner, 1980, 1983, 1986; Gentner, Bowdle, Woff, & Boronat, 2001), a specific psychological perspective on analogical thinking and learning processes. We will then extend the assumptions of structure-mapping theory to an analysis of Jesus' parables as instructional analogies. The framework for our exploration will be Zook and Maier's (1994) systematic six-variable model for analyzing the effects of instructional analogies on learning and the formation of misconceptions. According to the model, both learner variables (analogical reasoning ability, prior knowledge, processing goals) and instructional variables (analogy complexity, analogy content, mapping support) interact in complex ways to influence analogical learning. We will analyze Jesus' use of analogically based parables by examining the learner variables and instructional variables identified in the Zook and Maier framework. Before turning our attention to these psychological issues, we will first establish the parameters for our analyses by constructing a working definition of "parable," identifying the occurrence of parables in the Synoptic Gospels, and briefly reviewing some of the historical difficulties in parable interpretation.

Parables in the Synoptic Gospels

The word "parable" is derived from the Greek word "parabole" (Hultgren, 2000; Zuck, 1995). This word is comprised of two roots, "para," which means "beside or alongside," and "ballein," which means "to throw." Thus the Greek word "parabole" literally means "to throw beside or alongside" (Zuck, 1995), and the word "parable" refers to placing two ideas alongside each other for the purpose of comparison. At a basic level, then, a parable is a form of speech in

which two ideas are compared. The comparison usually is made between a familiar object or event and a less familiar idea, truth, or principle.

The Greek "parabole" appears fifty times in the New Testament—all in the Synoptic Gospels, except for two appearances in the book of Hebrews. The actual use of the term in the Gospels of Matthew (17 occurrences), Mark (13 occurrences), and Luke (18 occurrences) suggests that the writers of these books were fully aware that the teachings they heard and recorded were presented to them in nonliteral, parabolic form, and they often made this point explicitly in their writing, as exemplified by the following statement: "And He was teaching them many things in parables . . ." (Mark 4:2).

Parable: The Difficulty of Definition

Studying the parables of Jesus is challenging because it is difficult to identify the instances of his teaching that qualify as parables. Although the etymology of the word "parable" is clear, Biblical scholars are not at all in agreement in their working definitions of the term. The number of parables in the Synoptic Gospels is as few as thirty-six and more than sixty, depending on the particular definition used to identify them. For example, according to Hultgren (2000), "A parable is a figure of speech in which a comparison is made between God's kingdom, actions or expectations and something in this world, real or imagined" (p. 3). Based on his definition, Hultgren identifies thirty-eight parables that include both narratives (31 occurrences) and similitudes (7 occurrences). Narrative parables are those that present a comparison in the context of a story (e.g., the parable of the Prodigal Son, the parable of the Sower). In contrast, the similitudes are brief comparisons made without a storyline, usually using the words, "is like" or "is as if." The following "parables of the kingdom" are examples of similitudes: "The kingdom of God is like a man who casts seed upon the soil" (Mark 4:26), "The kingdom of

heaven is like leaven, which a woman took, and hid in three pecks of meal, until it was all leavened" (Matthew 13:33), and "What is the kingdom of God like, and to what shall I compare it? It is like a mustard seed, which a man took and threw into his own garden; and it grew and became a tree; and the birds of the air nested in its branches" (Luke 13:18-19).

As is apparent from the last example, Hultgren's distinction between narrative parables and similitudes breaks down when many of Jesus' similitudes begin as simple comparisons and then take on story-like, or narrative, qualities. For example, the similitude in Luke 13:18-19 begins with a simple comparison between the kingdom of God and a mustard seed. However, Jesus then places the mustard seed into the context of a series of events: a man throws the seed into his garden, the seed grows into a tree, birds nest in the branches of the tree.

Some scholars suggest additional categories for classifying Jesus' parables. Jones (1999), for example, classifies the parables as (a) parabolic sayings, (b) simple parables, (c) narrative parables, and (d) exemplary stories. Parabolic sayings are simple metaphors that require the comparison of some aspects of human experience to illuminate a spiritual truth. Examples of Jesus' parabolic sayings include "You are the salt of the earth" (Matthew 5:13), "You cannot serve two masters" (Matthew 6:24), and "Do not throw pearls before swine" (Matthew 7:6). Some scholars include these sayings in their study of the parables, whereas others (including Jones) do not.

Simple parables are sayings that describe a familiar situation, are usually introduced by some type of comparative statement, and elaborated into a simple story. The simple parables are those that are classified by Hultgren (2000) and others as similitudes. Examples of simple parables include the paired parables of the Treasure and the Pearl:

> The kingdom of heaven is like a treasure hidden in the field, which a man found and hid; and from joy over it he goes and sells all that he has, and buys that field. Again, the kingdom of heaven is like a merchant seeking fine pearls, and upon finding one pearl of great value, he went and sold all that he had, and bought it. (Matthew 13:44-45)

Narrative parables are stories that present a series of events describing a specific situation. For example, the parable of the Prodigal Son is a narrative parable because it tells the story of a specific father, son, and family situation. In contrast to the common, frequent situations described by the simple parables (buying a field, sowing seed, buying pearls), the narrative parables describe events that are somewhat unique and case-specific.

Exemplary stories are those that include characters whose actions should be imitated or avoided. These stories present realistic situations and model characters to illustrate gospel principles. The Good Samaritan (Luke 10:30-37) would be classified as an exemplary story because the Samaritan provides a positive model of how to treat others in distress, whereas the first two passers-by provide negative models. Jesus told the story to illustrate the Gospel principle of neighborliness. Through their actions, the characters in the story actually illustrate concrete examples and nonexamples of neighborliness, without a figurative comparison. Therefore, these types of stories often are not considered parables.

As a final example of the disparity among Biblical scholars, Zuck's (1995) approach to defining parables is relatively simple: "A parable is a story that places one truth beside another to clarify or emphasize a point. An unknown, unclear, or abstract idea is explained by being placed verbally along with something already known, clear, or concrete" (p. 307). Zuck then applies his definition to the short stories that possess a clear plot or storyline, yielding thirty-nine parables. Interestingly, Zuck's list of thirty-nine parables includes examples from all four of Jones' (1999) categories. Zuck, for example, considers the Good Samaritan (Luke 10:30-37) and

the Rich Fool (Luke 12:16-21)—both classified by Jones as exemplary stories and generally lacking the figurative comparison feature—as parables.

The purpose of the preceding section is not to present an exhaustive review of the definitions and classifications of Jesus' parables, but simply to recognize that different perspectives do exist. Defining and classifying the parables is difficult because Jesus did not tell these stories for the purpose of fitting them into human literary categories. He crafted each story in a specific time and place, for a specific audience, and—most importantly—for a specific instructional purpose. We should not be surprised, therefore, that it is difficult to induce a firm definition that captures all of their features.

Despite differences in scholarly definitions and classification categories, all parables possess the fundamental feature of analogy: nonliteral relational comparison. Although Jesus' parables contain a variety of rhetorical devices (e.g., questioning, story-telling, proverbs), they all represent one form of thought—analogical thought. Despite superficial differences in Jesus' parables, they are all the same in that the main point of each can be represented as an analogy (Sider, 1995). According to Sider (1995), "Understanding that all parables are analogies will dispel theoretical difficulties that have plagued scholars for a hundred years" (p. 19).

Historical Perspectives on Parable Interpretation

The most pervasive theoretical difficulty that has plagued parable interpretation is the degree of significance to ascribe to the details (Snodgrass, 2000). The relatively recent view of parables as analogies is significant because it severely constrains the interpretive creativity of theologians and literary scholars who have used parable details to promote a variety of theological and ideological purposes. For example, until the late 1800's, the primary approach to parable interpretation was allegorical, the tendency to assign each superficial feature some sort of

meaning consistent with church theology. Perhaps the most well-known example of parable allegorizing is Augustine's interpretation of the parable of the Good Samaritan. Augustine claims that the beaten man is Adam, Jerusalem is the heavenly city, and Jericho is the moon, which represents our mortality. The robbers are the devil and his angels, the good Samaritan is Christ, and the donkey represents the incarnation. The inn where the beaten man regains his health represents the church, and the innkeeper is the apostle Paul.

Although interesting, none of these purported symbolic meanings contributes to Jesus' purpose in telling the story. Recall that Jesus tells this particular parable in response to a question: Who is my neighbor? (see Luke 10:29). Augustine's creative symbolism justifies the firm critique by Snodgrass (2000): " . . . allegorizing is no legitimate means of interpretation. It obfuscates the message of Jesus and replaces it with the teaching of the church. Such an interpretive procedure assumes that one knows the truth before reading a text, and then finds that truth paralleled by the text being read—even if the text is about another subject" (p. 5). Allegorical interpretations seem to be particularly appealing to those who believe they have some special "inside knowledge" of theological truth (Jones, 1999).

Parable allegorizing ended during the late 1800's and early 1900's through the work of Adolf Julicher, C. H. Dodd, and Joachim Jeremias, all noted parable scholars who asserted that each parabolic comparison illustrated a single essential principle or idea, constrained by the original cultural settings within which Jesus taught (Sider, 1995; Snodgrass, 2000). Although serious biblical scholars have abandoned allegorical parable interpretations, Snodgrass (2000) wryly notes that it "still occurs all too often in modern preaching" (p. 5).

In addition to allegorizing, several more recent approaches to parable interpretation have been identified (Snodgrass, 2000). Existentialist interpretation emphasizes the potential of the

parables to help Jesus' listeners participate in his existence. Artistic interpretation focuses on the parables as symbols of human experience. Literary interpretation is based on the multiple meanings created by the use of metaphors in the parables. Cultural interpretation emphasizes Palestinian culture and the Jewish parable tradition. The reduction to banality approach asserts that the parables can be distilled into common conventions or simplistic principles and that the Gospel writers simply embellished Jesus' parables with theological and kingdom ideas to advance their own individual rhetorical purposes. Finally, Snodgrass notes that we appear to be returning to a type of allegorizing, with recent emphasis on deriving more than one meaning represented by each parabolic comparison, an approach he refers to as polyvalence.

Snodgrass (2000) summarizes the present state of parable interpretation:

> We have come full circle. For if the patristic and medieval interpreters allegorized the parables by reading into them their own theologies, modern scholarship is no less guilty in reading into them its own agenda. We have gone from allegorizing to allegorizing—in some cases, straying today even further from hearing the voice of Jesus. In fact, if some of the assumptions of our contemporary, more radical interpreters are correct, the average person surely cannot read the parables and come to an understanding of them . . . We stand at a time when, for all our modern insights into how figurative speech works, we need to readdress the issues of method. Julicher was certainly correct to react to the theological allegorizing of the church. A similar reaction, however, is needed against the sociological and ideological allegorizing of today. (pp. 26-27)

The parables have been—and continue to be—"polyvalent modeling clay" (Snodgrass, 2000, p. 27) in the hands of interpreters with different perspectives and agendas. This state of affairs should not surprise us, for analogies are often misunderstood and interpreted incorrectly (Zook, 1991). By applying current psychological models of analogical learning processes, we can better understand how Jesus' parables have been a source of illumination as well as misconception.

Thinking and Learning by Analogy

The fundamental feature of analogical thinking and, therefore, parable interpretation, is relational comparison. Analogical similarity is " . . . a special kind of similarity which is the similarity of structure, the similarity of form, a similarity of constellation between two sets of structures, two sets of particulars, that are manifestly different but have structural parallels" (Oppenheimer, 1956, p. 129). When we think by analogy, we assert that two situations are similar because their underlying relationships are similar—not because their surface features are similar (Holyoak, Gentner & Kokinov, 2001). For example, in the analogy, hand:glove::head:hat, the relationship between hand and glove (the glove covers the hand and keeps it warm) is equivalent to the relationship between head and hat (the hat covers the head and keeps it warm). Although hands and heads are both body parts, they are dissimilar in size, shape, function, features, and so on. Although gloves and hats are both articles of clothing, they too are dissimilar in surface features such as appearance. Thus, to understand this particular analogy, the thinker needs to shift attention away from the surface features of each of the four terms and focus instead on the more abstract underlying relation that is common to both pairs of terms.

Proportional and Interdomain Analogies

The type of analogy we have been considering (hand:glove::head:hat) is commonly referred to as a "proportional analogy" because it expresses a proportional relationship (e.g., 2/3 = 4/6) between four specific terms. Proportional analogies take the generalized form of A:B::C:D (A is to B as C is to D), where A, B, C, and D are specific numerals, words, or objects. The basis for the comparison is the equivalent relationship that holds between AB and CD (A:B = C:D). To understand a proportional analogy, the thinker must induce the relationship between

A and B and then transfer, or map, that relationship to C and D (Pellegrino, 1985; Sternberg, 1977; Sternberg & Nigro, 1980).

According to Sider (1995), all of Jesus' parables can be reduced to proportional analogies. For example, in the parable of the Thief (Luke 39-40) Jesus places the relationship between the owner of a house and the coming of a thief equal to that of his disciples and his coming (house owner : coming of thief = disciples : coming of the Son of man). Jesus uses a familiar domain (also referred to as the "vehicle") of thieves breaking into houses to promote understanding of a less familiar domain (also referred to as the "tenor"), the coming of the Son of man. In both domains, the underlying point, or common relation, is readiness for the unexpected (Sider, 1995).

Instead of the literary terms, vehicle and tenor, cognitive psychologists usually refer to the familiar domain as the "base" and the less familiar domain as the "target." Thus, to understand Jesus' meaning in the parable of the Thief, the listener or reader needs to induce the base domain relation (the house owner should be ready for the unexpected breaking in of a thief) and map that relation to the target domain (the disciples should be ready for the unexpected coming of the Son of man). The thought processes involved in understanding proportional analogies is illustrated in Figure 1.

Although, as Sider (1995) asserts, Jesus' parables can be reduced to proportional analogies, they are presented in the Gospels in more complex form as interdomain instructional analogies. Whereas proportional analogies are comparisons between two pairs of objects with respect to a single common relation, interdomain analogies represent comparisons between superficially different content domains on the basis of a set of common relations (Holland, Holyoak, Nisbett & Thagard, 1986). Interdomain analogies are more complex than proportional

analogies because they present to the learner a greater number of objects and possible relations to map.

The primary difficulty learners experience when processing a teacher-generated interdomain instructional analogy is deciding which aspects of the base domain to map to the target domain (Zook, 1991). This is a nontrivial decision because the resulting understanding, or conceptualization, of the target domain can be enhanced or impeded depending on the specific information selected for mapping. For example, using a steaming tea kettle as an explanatory analogy for breath condensation in cold air can encourage learners to form the misconception that breath condensation and evaporation are equivalent processes that both require a heat source (Gentner, 1980).

Many of Jesus' parables would be appropriately classified as interdomain instructional analogies. Consider, for example, the parable of the Prodigal Son. Jesus does not present a simple analogy in proportional form: prodigal son:father::sinner who repents:God. Instead, he places the primary objects of the base domain (son, father) in an embellished context of additional objects (e.g., the son's employer, pigs, an envious older brother, a fattened calf, a robe, a ring, the father's servants). Although the embellishment adds interest and a rich narrative context, it also introduces a host of object features and relations that could be potentially mapped from base to target. For example, when the prodigal son repents, his father gives him concrete gifts (robe, ring). When sinners repent, does God bring concrete rewards such as money and material goods into their lives? The answer to that question depends upon whether or not "the giving of material gifts" is a base domain relation that is appropriate to map to the target domain.

Structure-Mapping Theory

What, then, are the mechanisms that determine if a relation induced in an analogy's base domain is, indeed, mappable to the target domain? Gentner (1980, 1983, 1986) developed structure-mapping theory to address this fundamental question. According to structure-mapping theory, complex interdomain analogies present three types of potential mappings (see Figure 2): object attributes, first-order relations, and higher-order systems of relations. Object attributes are the literal surface features of specific objects found in the base domain. For example, the solar system is often compared analogically to the structure of an atom. Literal features of the sun (e.g., sun is hot, sun looks yellow or orange, sun is a ball of gases) are object attributes. Object attributes are often the salient perceptual features that are most readily observable, without regard for any relation to another object within the domain.

First-order relations are relationships between objects. In the solar system/atomic structure analogy, the idea that planets revolve around the sun is a first-order relation because it expresses a simple relation between two objects in the domain, sun and planet. Higher-order systems of relations are sets of first-order relations that are held together, or constrained, by superordinate relations. For example, the complementary ideas that (a) the planets revolve around the sun because (b) the sun is larger than the planets represent a system of first-order relations that are constrained by a causal relationship (b causes a).

According to structure-mapping theory, learners are most likely to map higher-order systems of relations rather than isolated first-order relations or surface object attributes. Gentner refers to this human tendency as the "systematicity principle." As illustrated in Figure 2, the mapping of a relational system occurs in three general phases. First, correspondences between base and target domain objects are established. Second, relations that fit into a constrained systematic structure (the systematicity principle) are induced and transferred (or mapped) to the

objects of the target domain. As a relational system is mapped, isolated first-order base relations that are not constrained by the same superordinate relation are left behind. Finally, literal object attributes are disregarded.

Returning to the solar system/atomic structure analogy, the following relational system would be mapped from base to target: (a) planets revolve around sun, (b) sun is larger than planets. Thus, the learner's mapping of the system yields the understanding that electrons revolve around the nucleus of the atom and the nucleus is larger than the electrons. The isolated relational fact that the sun is hotter than the planets is not mapped to the nucleus and electrons because it is not constrained by the superordinate causal relationship. Furthermore, learners should not infer that the nucleus of an atom is yellow and hot because these are literal object attributes of the sun that are disregarded.

Structure-Mapping and Analogical Misconception

Gentner's structure-mapping theory provides a useful framework for understanding how learners (or the hearers of a parable) might transfer their knowledge of a familiar base domain to their emerging conceptualization of an unfamiliar target domain. However, the theory also suggests several sources of misconception (Zook, 1991). Although the theory asserts that learners tend to disregard surface object attributes and isolated relations, some learners may, in fact, select those inappropriate features for mapping—particularly when they are completely unfamiliar with the target domain. Furthermore, complex domains may actually suggest more than one system of relations, presenting the possibility that learners could map the relational system intended by the analogy as well as an alternative system that would not contribute to the analogy's instructional purpose.

When such features are mapped by learners, they encourage the construction of target domain misconceptions. Even when instructional analogies do not mention or emphasize base domain object attributes or isolated relations, learners may still draw from their own personal schemas, or prior knowledge, and select this information for mapping. Thus, interdomain instructional analogies can be dangerous because in addition to the intended relational system, learners can select additional information—any knowledge they may already possess concerning the base domain—to map to the target domain. Ironically, when analogies (or parables) are used for teaching, they open windows for understanding while simultaneously sowing the seeds of misunderstanding.

The potential for analogical misconceptions has been documented by a number of empirical research studies (e.g., Duit, Roth, Komorek & Wilbers, 2001; Mason, 1994; Zook & Di Vesta, 1991). For example, Zook and Di Vesta (1991) presented elementary-school-aged children with an interdomain instructional analogy to facilitate their understanding of the scientific concept of mutualism. They used a familiar base domain (farmers and their cows) but created a fictitious target domain with nonsense names to ensure that learners would be complete novices (i.e., possessing no prior knowledge). When asked to construct inferences about the target domain, learners consistently mapped base domain object attributes, isolated relations, and an alternative relational system that actually conflicted with the instructional purpose of the analogy (i.e., to help learners understand the concept of mutualism). These inappropriate mappings not only produced misconceptions about the target domain but also impeded learners' understanding of the target concept, mutualism. Of course, the children in the study simply used the knowledge that was available to them because, as already noted, they were complete novices with respect to the target. Thus, when learners are confronted by a completely unfamiliar target

domain, they may inappropriately map base features simply because they have no alternative source of information and rely solely on the model provided by the base domain.

The analogically based misconceptions documented by Zook and Di Vesta (1991) seem to emerge at the "point of need." In other words, it is unlikely (though possible) that an inappropriate mapping is attempted immediately when learners first encounter an instructional analogy. The research evidence suggests that the analogical model is stored in memory and becomes available for constructing inferences when the opportunity or need arises—that is, when the learner tries to use it to generate an inference (Anderson & Thompson, 1989; Donnelly & McDaniel, 1993; Mayer, 1989; Zook, 1993; Zook & Di Vesta, 1991; Zook & Maier, 1994) or solve a new problem (Gentner & Gentner, 1983). Thus, analogically based misconceptions can, in a sense, lie "dormant" until a precipitating problem or situation stimulates recall of the base domain and the learner attempts to "run" the mental model that it provides (Mayer, 1989; Newby, Ertmer & Stepich, 1995), resulting in inappropriate mappings and subsequent misconceptions.

Structure-Mapping Theory and the Parable of the Prodigal Son

If parables are, indeed, best considered interdomain instructional analogies, then we should be able to analyze their potential effects on understanding and misconception by applying the assumptions of structure-mapping theory. A structure-mapping analysis of all of Jesus' recorded parables is well beyond the scope of this paper. For the purpose of the present preliminary analysis, we will apply structure-mapping theory to one illustrative parable—the parable of the Prodigal Son, a fairly complex, narrative parable that clearly qualifies as an interdomain instructional analogy.

The story of the Prodigal Son is recorded in Luke 15:11-31 as the last parable in a set of three: the Lost Sheep, the Lost Coin, and the Lost Son. All three of these parables are used by Jesus to illustrate a single common principle. Jesus actually states this principle explicitly after he relays each of the first two parables: " . . . there will be more rejoicing in heaven over one sinner who repents than over ninety-nine righteous persons who do not need to repent" (Luke 15:7) and " . . . there is rejoicing in the presence of the angels of God over one sinner who repents" (Luke 15:10). He states the principle more implicitly at the end of the parable of the Prodigal Son: "But we had to celebrate and be glad, because this brother of yours was dead and is alive again; he was lost and is found" (Luke 15:32).

To understand the full meaning of these three similar statements, we need to examine the complete context for this set of parables. Jesus offers these particular analogies in response to a criticism levied at him by the Pharisees that "This man welcomes sinners and eats with them" (Luke 15:2). Thus, the central theme of all three parables should be clear from the context and Jesus' explicit statements: God delights in people who recognize their sinfulness and come to Him in repentance more than those who consider themselves righteous.

In the story of the Prodigal Son, Jesus illustrates this point by drawing an analogy between God's response to a repentant sinner and an earthly father's response to the return of a repentant, wayward son. With respect to structure-mapping theory, the analogy suggests the following object correspondences:

base domain	***target domain***
father =	God
son =	repentant sinner
brother =	the self-righteous

The relational system that Jesus intends to be mapped is comprised of several first-order relations that are constrained by the superordinate concepts of unconditional love (the father toward the son) and envy (the brother toward the son). Furthermore, each of the six relations identified below is consistent with—and supports—the central theme that Jesus states. Notice how each of the base domain relations can be expressed in the target domain simply by replacing the relevant base objects (in bold) with their corresponding target objects.

base domain	*target domain*
son leaves his **father's** care and expectations	**sinner** leaves **God's** care and expectations
son returns to **father** in repentence	**sinner** returns to **God** in repentence
father grants forgiveness to **son**	**God** grants forgiveness to **repentant sinner**
father celebrates **son's** return	**God** celebrates **repentant sinner's** return
brother obeys and works for **father**	**self-righteous** obey and work for **God**
brother resents **father's** acceptance of son	**self-righteous** resent **God's** acceptance of repentant sinner

As the relational system described above is mapped to the target, surface features of base domain objects should be ignored. In Jesus' telling of the story, for example, several attributes of the father are noted. He is wealthy, holds property, and employs men and servants. Although these details contribute to the narrative, they do not contribute to the relational system and, therefore, should not be mapped. It would be inappropriate, for example, to infer that God is wealthy (in an earthly sense) holds property, and employs men and servants. Just because two objects correspond analogically to each other, that does not mean that everything about them is equivalent. Their correspondence is established only on the basis of the relational system they share—not because they share any real or perceived surface characteristics.

Finally, the story also suggests additional first-order relations that are separate (or isolated) from the mappable relational system. For example, the envious brother is older than the wayward son. Although this valid relation is made explicit in the story, it is not constrained by

the relational system and, therefore, should not be mapped to the corresponding objects in the target domain. In other words, it would be inappropriate to infer that self-righteous folk are always older than repentant sinners because the envious brother is older than the wayward son.

As a final example of the potential for misconception, consider the fact that the father celebrates his son's return by telling his servants to "bring the best robe and put it on him. Put a ring on his finger and sandals on his feet" (Luke 15:22). Although this information expresses a relation between the father and son (father gives gifts of robe, ring, and sandals to repentant son), it is an instance-level relation that simply demonstrates the father's jubilation over his son's return. The specific relation does not comport with the relational system. In other words, there is no logical reason why gift giving (or kissing the son, or killing the fattened calf to hold a feast in the son's honor) is necessarily the way in which the father must respond to the son's return. These relational details are useful only to the extent that they help the learner understand the depth of the father's joy and his desire to celebrate his son's return. Nevertheless, it is not difficult to imagine, as structure-mapping theory would predict, the hermeneutical temptation to infer that God promises to bless (and perhaps reward) those who come to him in repentance with earthly riches, material wealth, and elevated social status. Although this interpretation would likely fall on many receptive ears, it would deviate markedly from the parable's instructional purpose and represent a striking variance from other Gospel teachings that describe the "rewards" of following Jesus in far less attractive terms (e.g., Matthew 10:17-23). As this example illustrates, doing theology by analogy can be risky business.

As our analysis of the parable of the Prodigal Son demonstrates, the assumptions of structure-mapping theory can provide a useful framework for considering both the learning intended by the story as well as the misunderstanding that might be generated from the story by

hearers, readers, and interpreters who would make inappropriate mapping decisions. As the early allegorical tradition of parable interpretation suggests, even learned philosophers and theologians can fall prey to the temptation to map inappropriate surface features and assert object correspondences based on attribute similarity rather than relational similarity. Although structure-mapping theory provides us with an analytical framework from which to hypothesize various types of potential analogical misconceptions from the Gospel parables, the theory alone does not help us predict the circumstances under which such inappropriate mappings might actually occur. To investigate this important question, we turn to Zook and Maier's (1994) six-variable model of analogical misconception formation.

Analogical Misconceptions: A Six-Variable Model

Zook and Maier (1994) developed and tested a six-variable model to account systematically for the formation of analogical misconceptions. According to the model, two major categories of variables interact during the mapping process (see Figure 3). Instructional variables are those that comprise features of the learning environment, and learner variables are those that represent the features of learners. The focus on these two variables is consistent with the relatively recent concern with internal learning processes, as opposed to focusing exclusively on the external learning environment. The model calls attention to both the internal and external conditions of learning (Gagne, 1985; Zook, 2001), a prevailing perspective in the fields of educational psychology, instructional psychology, and instructional design, and one that is strikingly absent from the field of parable analysis. Within each of the two major categories are three specific variables that also interact to influence the mapping process—what learners eventually might infer from an interdomain instructional analogy. Learner variables include (a) analogical reasoning ability, (b) domain-specific knowledge, and (c) processing goals.

Instructional variables include (a) analogy content, (b) analogy complexity, and (c) mapping support.

In two experimental studies involving middle school students, Zook and Maier tested the validity of the six-variable model by presenting a complex interdomain instructional analogy and then asking learners to respond to factual and inferential target-domain questions. Analyses of learner responses provided preliminary support for the model. In other words, the learner and instructional variables identified in the model did, indeed, influence learners' mapping decisions and their target domain inferences. In the remainder of this section, we will examine each of the model's six variables and briefly explore their potential implications for parable interpretation.

Learner Variables: Analogical Reasoning Ability

Analogical reasoning ability is a general variable that refers to how well learners can execute component analogical processes such as inducing relations between base objects and mapping those relations to corresponding target domain objects (Sternberg, 1977). From studies with proportional analogies, we know that individuals differ greatly in their abilities to perform these component processes and, hence, their abilities to learn from interdomain instructional analogies that share similar processing requirements (Holland et al., 1986; Pellegrino, 1985). Thinking analogically requires the ability to understand abstract word meanings and induce relationships between those meanings, a general cognitive capability often referred to as verbal aptitude.

Verbal aptitude appears to be strongly related to analogical learning and problem-solving processes. Zook (1993), for example, found that when the purpose of the analogy was not clear, low-verbal-aptitude learners made more mapping errors than high-verbal learners. Similarly, Zook and Maier (1994) found that low-verbal learners made more inappropriate object-attribute

inferences than high-verbal learners. In a study of analogical problem solving, Corkill and Fager (1995) found that high-verbal individuals performed significantly better than low-verbal individuals in solving new problems by applying analogical reasoning.

A second relevant learner variable related to analogical reasoning ability is learner age. Advances in analogical reasoning abilities with increasing age is a well-documented phenomenon. Children tend to demonstrate difficulties in understanding proportional analogies and solving problems analogically prior to adolescence (e.g., Bisanz, Bisanz, & LeFevre, 1984; Gentner & Toupin, 1986; Goldman, Pellegrino, Parseghian, & Sallis, 1982; Holyoak, Junn, & Billman, 1984; Sternberg & Rifkin, 1979). Young children typically base their interpretations of analogies on the salient surface features of base domain objects rather than abstract structural relationships. Eventually, children's interpretations of analogies change from this focus on literal features to a deeper relational comparison. Gentner (1988) documented this developmental change and referred to it as the "relational shift." Zook and Maier (1994) found that the relational shift has implications not only for proportional analogies and analogical problem solving, but also for learning from interdomain instructional analogies. Results of their study demonstrated that learners made fewer inappropriate object-attribute mappings when either their age or verbal aptitude increased.

These findings suggest that parable interpretation is susceptible to differences in the verbal aptitudes of specific interpreters. The interpreters of parables can range from well-educated scholars who possess, presumably, high degrees of verbal aptitude to less-educated individuals who read the parables in the Gospels and young children who hear parables in children's sermons and Sunday school lessons. The meanings of parables and the subsequent inferences that are constructed from them by learners who vary in age and verbal aptitude will

also vary accordingly. Furthermore, the historical and current temptation to propose allegorical parable interpretations that focus on literal object similarities may be a reflection of analogical reasoning difficulty rather than special theological insight.

Learner Variables: Domain-Specific Knowledge

The ability to manipulate word meanings is useless without word meanings to manipulate! Thus, another important source of variation in the mapping process is the differential quantity and quality of domain-specific knowledge that learners possess. When we teach by analogy, or parable, we assume that learners already possess a meaningful representation of the base domain of the analogy. Even though the analogy may be a "good" one in the sense that it suggests a deep relational comparison, learners will not be able to make use of it unless their representation of the base domain includes the critical features to be mapped. For example, Hardiman, Well and Pollatsek (1984) studied the effects of using a balance beam analogy to help learners understand concepts related to the arithmetic mean. They found that the analogy—although a "good" one—was not helpful to learners whose understanding of how balance beams operate was deficient.

Without pre-existing base-domain knowledge, it is impossible for learners to abstract a relational structure to be mapped. In the absence of a relational structure, or schema, learners may direct their attention more toward salient surface features that they associate with base objects. This type of associative thinking occurs when learners lack a relational schema for the base domain of the analogy. In a training study designed to develop learners' abilities to reason by analogy, Robins and Mayer (1993) found that analogical reasoning abilities improved when learners focused on the common relational structure of several examples, thus helping them induce an appropriate relational schema.

The domain-specific knowledge variable is particularly significant for parable interpretation. Jesus used base domain objects and events that should have been familiar and readily understandable to his first-century audience: mustard seeds, wineskins, sowing seed, forgiving fathers, and so on. As we move farther away in time and geographic context from the original cultural setting in which Jesus taught, these familiar, well-known objects become less familiar and—in some cases—completely unknown, making the induction of a relational schema all but impossible. Furthermore, some hearers and readers of Jesus' parables—both past and present—may lack a particular understanding of a base object necessary for understanding the point of the parable, though the object may be familiar. For example, consider the parable of the Prodigal Son. Learners who do not understand the father's unconditional love for his wayward son because they have not experienced that love from their own fathers may have difficulty inducing and mapping the relational schema that Jesus intended.

Learner Variables: Processing Goals

A third variable that affects analogical mapping is the nature of the learner's purpose in processing the analogy. The results of studies by Zook and Di Vesta (1991), Zook (1993), and Zook and Maier (1994) all suggest that learners make mapping decisions based on their perceptions of the purpose of the analogy. These studies consistently found that learners would refrain from mapping inappropriate base features when the purpose of the analogy was made clear to them. Understanding the purpose of the analogy helps to provide the superordinant system constraint identified in Gentner's (1983) structure-mapping theory. Learners who think consciously and deliberately about the superordinant system constraint are better able to select only those base relations that are consistent with the mappable relational system.

Jesus often made the instructional purposes of his parables clear by stating them explicitly. According to Zuck (1995), Jesus used several strategies to make his learning goals apparent to his listeners: (a) beginning the story with a question (e.g., Matthew 11:16; Luke 13:20), (b) beginning a story with a statement and rhetorical question (e.g., Matthew 24:44-51; Luke 14:28-30), and (c) concluding a story with a statement of the main point that made the application clear (e.g., Luke 10:36; Luke 11:5-9; Luke 16:13). Zuck (1995) notes that Jesus made the application of his parables explicit fourteen times. Thus, for at least that many parables, Jesus did not make the application explicit, leaving his learners to create their own purposes and, therefore, opening the door for inappropriate target domain inferences. A reader who adopts Jesus' instructional purpose in relaying the parable of the Prodigal Son is less likely to attend to surface features such as the robe and ring that the father gives to the son as an expression of his joy. In contrast, a reader who approaches the parable for the purpose of justifying a materialistic lifestyle may be tempted to use those surface features to make questionable target domain inferences concerning the rewards that accrue when people come to God in repentance. The parables, therefore, have the potential to produce as many different theological inferences as the number of different purposes and agendas with which readers approach them--hence Snodgrass' (2000) admonishment that Jesus' parables not become "polyvalent modeling clay" (p. 27).

Instructional Variables: Analogy Content

Analogy content refers to the target domain information to be learned and, more importantly, the base domain analog that is selected for relational comparison. Analogies are more than mechanisms by which prior knowledge is linked to new information. In addition to helping learners connect new information to prior knowledge (Cardinale, 1992-1993; Simons,

1984), analogies also facilitate the process of knowledge restructuring (Vosniadou & Brewer, 1987). By forcing learners to consider the equivalence of two superficially disparate knowledge domains (base and target) that heretofore had not been considered similar, they are encouraged to change their knowledge so it is organized around deeper relational ideas rather than salient superficial objects. Such knowledge restructuring is most likely when the surface features of the base and target are as different as possible, forcing learners to search for and construct a more abstract understanding of their common relational schema.

Analogies that have readily apparent object correspondences have "high transparency"—that is, the learner has little difficulty understanding how the base and target are similar because the objects, themselves, are somewhat similar (Gentner & Toupin, 1986). For example, the parable of the Prodigal Son would be considered a high-transparency analogy because fathers and sons share many of the surface features of God (often thought of as "heavenly father") and sinners (often referred to as "children of God"). Given these similarities, it is not difficult to perceive the correspondence between God and the father described in the parable and sinners and the parable's repentant son. In contrast, the parable of the Mustard Seed (Matthew 13:31-32) would be classified as a low-transparency analogy because a mustard seed shares no surface similarity with the abstract concept of the kingdom of heaven. A learner must work much harder to determine the appropriate object correspondences in a low-transparency parable such as the Mustard Seed than a high-transparency parable such as the Prodigal Son. Difficulties in establishing appropriate object correspondences in low-transparency analogies may produce subsequent mapping difficulties and target domain misconceptions.

Instructional Variables: Analogy Complexity

Analogy complexity is closely related to content. Complexity refers to the quantity of features that are available to learners for mapping: object attributes, mappable relational systems, alternative relational systems, and isolated first-order relations. The greater the complexity (i.e., the quantity of base features), the greater the potential for naïve learners to direct their attention away from the relevant relational system and, hence, for target domain misconceptions to occur. In the fairly complex mutualism analogy utilized by Zook and Di Vesta (1991), Zook (1993), and Zook and Maier (1994), younger low-verbal learners consistently demonstrated great difficulty in refraining from mapping inappropriate base features. Although the complexity of an analogy is determined primarily by the base analog that is selected, the learner's prior knowledge of the base domain can provide additional objects, attributes, and relations as candidates for potential mapping.

The parables of Jesus vary greatly in complexity. Some similitudes and parabolic sayings are simple metaphors (e.g., "the kingdom of heaven is like yeast," "you are the salt of the earth"), and some are more embellished stories with narrative details (e.g., the Prodigal Son, the Sower). Even when the base analogs offered by Jesus are not terribly complex, they have the potential to grow in complexity in the hands of creative interpreters or preachers who use their personal prior knowledge and exegetical perspectives to suggest additional objects and relations that may be related only tangentially—if at all—to the parable's instructional purpose. As Buttrick (2000) warns, "If we design homiletic plots for preaching, we must ask how we can enable the parables to do what they intend to do" (p. 44).

Instructional Variables: Mapping Support

Finally, the degree of mapping support provided in the instructional setting can influence learners' mapping decisions. Mapping support can take the form of direct and explicit cues concerning the analogy's purpose, cautions against mapping inappropriate features, and identifying for learners the specific relations to be transferred from base to target. Certainly, in the Gospel parables, Jesus demonstrates mapping support frequently—although not always—by making explicit the purpose of the parable, stating the principle to be learned, or explaining the analogy thoroughly (e.g., the parable of the Weeds, Matthew 13:36-43).

Jesus also demonstrates another powerful strategy for providing mapping support: multiple analogs. Presenting more than one base analog provides a powerful preventative for inappropriate target domain inferences because it forces learners to induce a relational schema that is common to all the analogs rather than focusing on the details of a single analog. Research studies have consistently demonstrated the value of multiple analogs in facilitating learning and reducing the incidence of analogical misconception (Dagher, 1995; Gentner, Loewenstein & Thompson, 2003; Spiro, Feltovich, Coulson & Anderson, 1989).

Interestingly, Jesus appears to use this strategy naturally at several points in the Gospels. For example, as already indicated, the parable of the Prodigal Son actually represents the third base analog that Jesus compares to God's love for sinners. The other two are a lost sheep and a lost coin. By deliberately providing three very different analogs (sheep, coin, son) for the same target domain principle, Jesus helps his hearers focus on the critical relational schema to be mapped rather than the particulars of each individual analog. Although hearers (and readers) may miss the point of the first analog, they certainly will be much more aware of it by the time they process three different analogs for the same target principle.

Summary and Conclusions

In this paper, we have explored a new focus for inquiry concerning Jesus' parables by demonstrating how theoretical ideas and empirical research findings from the fields of educational psychology, cognitive psychology, and instructional psychology can help to explain and predict potential difficulties in parable interpretation. The facilitative effects of instructional analogies and, by extension, the Gospel parables, has been clearly documented. However, recent theoretical and empirical advances in the study of analogical learning processes also suggest that learning by analogy—and by parable—is fraught with numerous difficulties and dangers. These dangers appear to be mediated by complex interactions between both learner and instructional variables. Given the number and complexity of variables and variable interactions that can influence the mapping process and, hence, analogically constructed understanding, it is not surprising that parable study remains a robust field that continues to attract people with different perspectives and, therefore, different interpretations. The empirical and theoretical evidence presented in this paper suggests that any analogy study is incomplete unless the interpreter considers learner and instructional variables that may influence the mapping process and the resulting meanings that are constructed.

Jesus' parables are instructional analogies and, therefore, can—and should—be analyzed from an instructional and psychological perspective. Although such analyses may not radically change the interpretations that are constructed by different people who bring their different perspectives (or learner variables) to the enterprise, they at least may help us better understand the reasons why such varied interpretations may be generated. As we have seen from psychological evidence, constructing theological understanding from Jesus' parables—doing

theology by analogy—is risky business, and it is made all the more dangerous when we ignore the cognitive processes that account for analogical learning.

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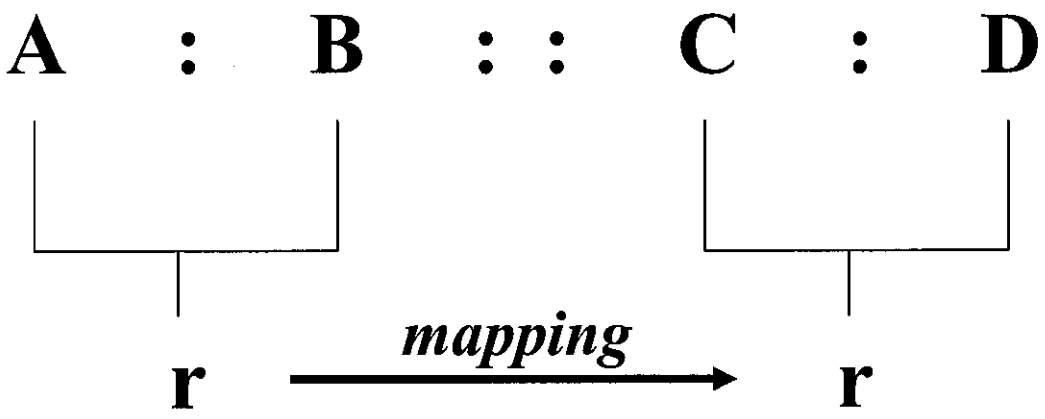
Figure 1.

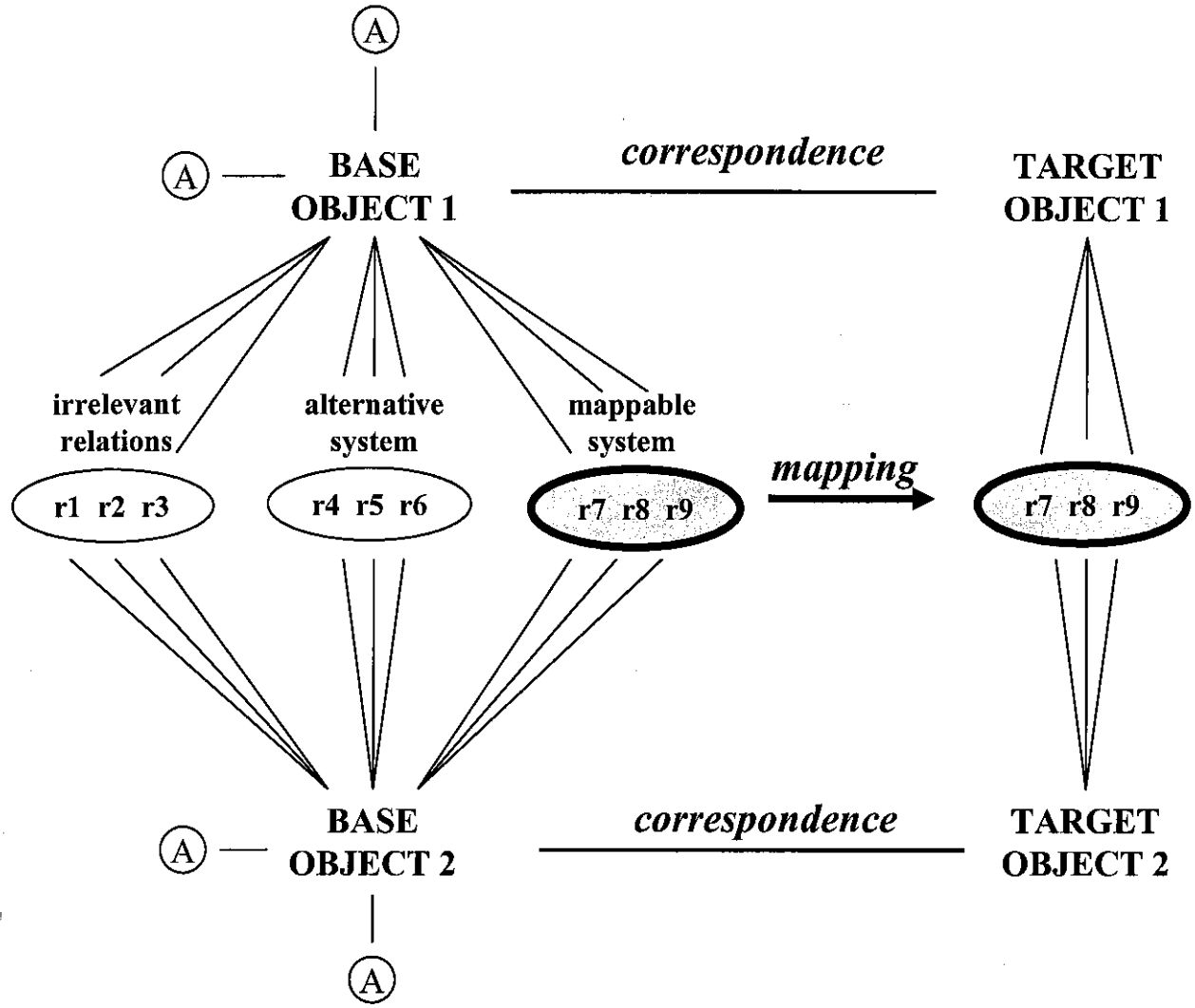
Mapping the common relation in a proportional analogy.



r = inducing a relation

Figure 2.

A schematic summary of structure-mapping theory



A = Attribute
r = relation

From Zook & Maier (1994)

Figure 3.

Formation of analogical misconceptions:
A six-variable model.