

OF GRASS, FOOD, AND HOSPITALITY: THE ROLE OF COGNITIVE STUDIES IN THE TRANSLATION/COMMUNICATION TASK¹

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Abstract

This paper explores the development of cognitive studies (as approached by anthropology, linguistics and psychology) as it relates to the theory and practice of the translation of Scripture. Key contributions of this developing field include methodological approaches and greater theoretical insight to prototype theory, schema, conceptual blending, the concept of meaning, computational approaches, and discourse analysis. This article applies these insights to translation illustrated by a case study from the Samo translation of Matthew 14:13-21. The article concludes by recognizing that, while complex, the objective of translation is relevant communication that people are able to apply to daily living.

Key words: Cognitive studies, Bible translation, Relevance theory, Schema, Conceptual knowledge, Samo/Papua New Guinea

1. Introduction

As a Bible translator, trained in anthropological linguistics during the 1960s, I was constantly interested in the Samo² response to what I was so diligently translating. My translation assistants were adept at asking questions I did not have the right answers for. “Right”, of course, was a relative issue dependent on the perspective from which the response could draw. My theological training and academic background provided an answer, but it was frequently not the answer the Samo needed. Such was the case when translating Matthew 14:13-21. The feeding of the five thousand presented an array of questions for the Samo that began when they wanted to know what kind of grass was growing on that Galilean hillside two thousand years ago. My field notes give the account.

When we translated the story of Jesus feeding the five thousand the first question the Samo asked was, “What kind of grass did Jesus tell the people to sit on?” This was not a question I had anticipated and, of course I did not have an answer. We solved the problem by going for a walk and collecting grasses. We brought the grass home and I asked my assistants to sort the grasses into piles on my porch. By doing a semantic analysis of the way

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² The Samo are semi-nomadic horticulturists living in the dense rain forest of Western Province, Papua New Guinea. Contacted late in colonial history and only officially pacified in 1969 (from constant raiding that resulted in frequent cannibalism) they provide a fascinating opportunity for anthropological study (Shaw 1996, 1990). Their response to the Gospel was the result of anthropologically-informed Bible translation (Shaw 1988).

the Samo categorized those piles of grass I discovered their classification was based on placement in the environment: In the forest or in open places. After much deliberation, the Samo decided that the hillside in Galilee must have been an open space for that many people to sit down. The grass must have been soft enough not to hurt anyone sitting on it. Therefore, the grass name used in the translation is the same as that found on airstrips – one of the few open spaces the Samo know.

Of about forty different types of grass in the Samo repertoire, they singled out a type called *dicau*. It matched their expectations and enabled them to make inferences that avoided images of people sitting in the forest or other inappropriate places. Using the right nomenclature met with audience expectations and allowed them to focus on the miracle rather than on the type of grass. Using the wrong grass name could have derailed the translation because of the wrong conceptual information it suggested to the Samo. Thus the question for Bible translation (or any translation for that matter) arises, “How can an ancient text be communicated so that present-day receptors can make sense of the message in a way that reflects the intention of the ancient author?”

My attempt to properly translate “grass” in Matthew 14:19 in the Samo context (along with a host of other issues in this passage that must, from the Samo perspective, be handled before the story can communicate to them) provides a fitting example of cognitive processing that reflects a burgeoning literature collectively coming to be known as “cognitive studies”. It is the result of investigations largely coming out of anthropology, linguistics, and psychology. It is the result of researchers attempting to understand *how* the brain processes information. Each field has long been interested in *what* the brain processes: Cultural data, language, and mental states. Studying how the brain processes and utilizes cultural knowledge that enables people to speak with others about their experiences and maintain a healthy perspective which itself is reflected culturally, is a relatively new phenomenon. This phenomenon, in turn, is becoming increasingly crucial to the translation process and the impact a translation makes on people for whom it is intended.

Ernst-August Gutt has brought the importance of cognition on the translation process to the attention of the translation world, especially as he recognizes the move toward the importance of relevance theory on the communication task in general and translation in particular (Gutt 2000, 2004). However, little has been done to present the cognate disciplines as they impact both the theory and practice of translation. It is to these issues that I now turn in developing this article relating cognitive studies to the translation enterprise.

2. The Nature of Cognitive Studies

In presenting the essence of cognitive science, Paul Thagard notes that “the central hypothesis ... is that thinking can best be understood in terms of *representational structures* in the mind and *computational procedures* that operate on those structures” (Thagard 2004, emphasis added). In other words, the brain processes information in pictures and then modifies those pictures to bring them in line with what is being experienced. Both a connectionist, conceptual approach and serial symbolic processing are necessary to appreciate the complexity of the *what* and the *how* of cultural, linguistic and mental processing (McClelland and Rumelhart 1986). Thus it comes as no surprise that these three disciplines contribute to a new dynamic study, each discipline prefaced with the term “cognitive”: Anthropology (building on cultural research pertaining to attributes of material culture as well as all aspects of appropriate behaviors emanating from conceptual knowledge); linguistics (with its long lists of things, actions, abstracts and relational words transformed by grammars into communicable discourses); and psychology (appreciating the rationale of mental

states varying from healthy to unhealthy often indicated by examining the relationship between observable stimuli and corresponding responses by means of neurological processing).

This newly forming discipline, in turn, can be used to enable a greater understanding of and appreciation for Bible translation. When the ancient texts, created thousands of years ago, were originally presented to an audience, authors were able to maximize conceptual knowledge to effectively present the message and bring appropriate responses. Today's receptors (now separated from the source by much time and space as well as cultural and language differences) cannot assume that same understanding between author and audience. The information available to contemporary receptors is different from what was assumed by the original audience. How can these differences be overcome as translators attempt to ensure that contemporary audiences hear the same dynamic message as the original receptors and apply it to their lives? This question, I maintain, reflects the need to incorporate cognitive studies and their respective approaches into the translation task.

In the last twenty years our understanding of communication theory has altered the way we view the transfer of information. In the late 1940s C Shannen and W Weaver presented the code model approach to communication (Shannon and Weaver 1949). This approach strongly influenced Eugene A Nida's assumptions about how communication and, hence, translation took place. The code model is basically a serial understanding of communication. The "telephone game" we played as children is a good example—with, unfortunately all too often, the same garbled result. As translators, we do not want a message to miscommunicate; rather we want a translation that will help people understand what it was God intended them to know, particularly about their relationship with God (Rogers 2002).

More recently Dan Sperber and Deirdre Wilson have helped us understand, in part with input from cognitive studies (linguistics in particular), that a network approach to communication more accurately shows how a message should present authorial intent, thus enabling receptors to make inferences that are more in accordance with that input. They maintain that communication takes place to the extent that receptors make inferences that match an author's intent (Sperber and Wilson 1986). An individual's cognitive environment, the information available to receptors, is critical for an understanding of that message. At issue then, is the extent to which information is available to receptors that will enable them to make inferences about a message, and the extent to which that cognitive environment needs to be adjusted in order to ensure that the inferences intended by the author are, in fact, made by the audience. It is these issues that need to be addressed in the translation enterprise. It is the search for answers to the question posed in the introduction and its application to the translation task³ that drives the remainder of this article. I will use the particularity of the Samo as a case study for illustrative purposes in order to ground theory in a context that impacts the communication of a text.

3. Key Concepts in Cognitive Studies⁴

In his summary of the development of cognitive anthropology, Roy D'Andrade posits four stages that in turn reflect the whole of cognitive science. Stage one was foundational for

³ How can an ancient text be presented so that present-day receptors can make sense of the message in a way that reflects the intention of the ancient author?

⁴ The overview of cognitive studies that follows is by no means intended to be comprehensive. Rather it reflects my attempt to make the connection between insights from this expanding discipline and the translation enterprise. The paper is an attempt to consolidate my thinking, integrate the concepts, and communicate my understanding of them in light of translation issues.

establishing the shift from “behaviorism” to a “culture as knowledge” position characterized by Ward Goodenough’s definition of culture “as whatever it is one has to know or believe in order to operate in a manner acceptable to its members” (Goodenough 1956).⁵ The second stage from the late 1950s through the mid 1970s focused on methodologies necessary to collect and analyze data reflective of the new cognitive paradigm. The third stage, up to the mid 1990s, saw the development of prototype, metaphor and schema theory as well as the restructuring of linguistic and psychological approaches relevant to cognitive studies. Finally the fourth stage emphasizes computational approaches and interface of the cognitive disciplines.

Following the publication of Steven Tyler’s state of cognitive anthropology in 1969,⁶ interest in understanding the term “cognitive” in this developing paradigm brought anthropologists and psychologists together in their appreciation of linguistic methodological developments. By the mid 1980s, the contributions of George Lakoff working on the relationship between metaphor and human reasoning (Lakoff and Johnson 1980), Anna Wierzbicka on semantic primes (conceptual indivisibles that exist in every language and thereby serve as semantic universals) (Wierzbicka 1972), and the early work of the cognitive linguists (Langacker 1978, 1982) all contributed to the understanding of mental conceptualizations that reflected “connectionist networks”, developed by computational psychologists. This insight was designed to model how the brain processes information and fed the expanding number of “case studies” that riddled the literature as the cognitive movement began to escalate.⁷ What, then, were these major contributions and how do they impact translation?

3.1 Research Methodology

A quick glance at methods texts across the cognitive disciplines indicates the proliferation of methods for this field and their importance for research. Despite the clear methodological procedures written into articles reflecting the meaning and use of a host of domains,⁸ the “how to” aspect of the “new ethnography” remained a complicated mystery to all but an initiated few. Finally, James Spradley published his often cited companion volumes presenting what he called the “Developmental Research Sequence” (DRS) (Spradley 1979, 1980). This consisted of placing a particular study within the larger cultural context, and then working through the data to present the “meaning” of a *domain* of interest within the wider culture. Methodologically this breakthrough has impacted cultural analysis and ethnographic fieldwork. However, the method was largely based on the appropriate collection of linguistic data ranging from long lists of words to entire discourses. Despite its complexity, the method was important for grounding the information in a particular language and

⁵ Interestingly, this article was originally published in *Language*, rather than an anthropological journal, an early recognition of the interdisciplinary nature of cognitive studies.

⁶ This volume presented the pros and cons of the burgeoning field, including the best of articles demonstrating its viability, methodological contributions and criticisms (Tyler 1969). It remains strategic background reading to this day.

⁷ Clearly, by this stage in the development of cognitive studies, the contributing sub-disciplines were at a conceptual stage that allowed for their integration. This shows the mutual benefit to each other, thereby justifying the discussion of a collective approach called “cognitive studies”.

⁸ Articles on kinship terms (Schneider 1965), color terms (Berlin and Berlin 1975), firewood (Metzger and Williams 1966), disease (Frake 1961), and even the rules for getting drunk (Spradley 1970) populated the pages of anthropology and linguistic journals during the 1960s and 70s. McGee and Warms (1996) note that analyses during this period were increasingly focused not just on feature presentations within particular domains but on analyzing categories as mental processes. Of importance was that researchers present “native categories” in terms of mental processing, thus anticipating the development of cognitive models and the importance of schemas.

culture and led to the development of computer assisted programs such as *Anthropac* and *Fieldworks*.

This methodology was perfect for enabling me to work out with the Samo what grass-type should be used in the translation of Jesus feeding a large number of people. Initially I had used a generic term, *kisi* which could be loosely translated 'ground cover', and that produced confusion which forced the Samo to ask, "What kind of 'grass'/growth was it?" Although at the time I was not sure why the grass type was important, I reacted to the intuitive Samo response by doing a classic pile sort of the collected grasses. In this way, I began to piece together what was important about grass for the Samo. In short, in this domain of grass types, what componential features were represented in the taxonomic structure of grasses that could be useful in appreciating the Samo rationale for ordering that part of their world and then applying that understanding to translating Scripture into the Samo language?

In the end, we used the term *diyau* which designated the type of grass that was common to airstrips and other "open spaces" where sunlight allowed this broad blade grass-type to grow prolifically. Clearly, if there were so many people, they could not have been sitting in the forest where grass was often thorny and entwined the underbrush beneath the forest canopy. These were important semantic contrasts that affected the way the Samo conceptualized grass and, in turn, perceived the feeding of the five thousand. Suffice it to say, at this juncture, the methodology associated with semantic analysis and its concomitant cognitive research was immensely helpful in enabling the Samo to infer that Jesus told the people to sit on the grass that grew on an open hillside in Palestine.

By the early 1970s, Goodenough's conceptualization of culture as "knowledge" was becoming more widely accepted among anthropologists and others interested in cognitive study. No longer was the focus on describing the various parts of culture and noting their integration. Researchers were more interested in understanding what people of a society considered important and how, or whether, these cognitively formed units were shared, distributed across the society, and internalized by the members who pass them on to the next generation (D'Andrade 1995:247).

3.2 Prototype and Metaphor

Eleanor Rosch, a psychologist, is often credited with initiating interest in cognitive linguistics (Rosch 1973). Her focus on categorization and prototype theory, utilizing her research among the Dani in the highlands of Irian Jaya, (now called Papua), sparked a new perspective on meaning as a dynamic network of ideas rather than a container of static information. This perspective had a considerable impact on Lakoff who made metaphor famous by extending the concept beyond the linguistic definition to appreciate its influence on thinking about whole areas of human experience (Lakoff and Johnson 1980; Lakoff 1987). Anthropologists, linguists, and psychologists all share an interest in semantics. The interest is on how meaning is reflected in standard linguistic structures such as syntax and morphology and how that relates to human perception as well as human behavior based on perception, i.e. what the structures represent.

The focus of research on metaphors, and the prototypes that emerge, is on understanding the human need to categorize. Categories, in turn, reflect human experience. A prototype is a reference point, an ideal or typical example of a category that serves in making judgments of the similarities and differences to other experiences and things in the same category (McElhanon 2005:43-46). Lakoff expanded the nature of categorizing to reflect on the kinds of prototypes people use to organize their experience (Lakoff 1987). Without go-

ing into detail here, I simply note that, “prototype based reasoning constitutes a large proportion of the actual reasoning that [humans] do. Reasoning with prototypes is, indeed, so common that it is inconceivable that we could function for long without it” (Lakoff and Johnson 1999:19).

Kurt Feyaerts brings an interdisciplinary approach to appreciating the both and relationship between metaphor as interpretation, and translation as a means of “processing” information. Metaphor has long been an enigma for translators and rightly so, for it reflects a psycho-social reality that exceeds the linguistic input. Something happens in the brain that introduces formerly unrealized imagery. Such imagery is, interestingly, often the focus of religious experience and, therefore, requires “a cognitively inspired theory of meaning [that] provides the study of religious language with new valuable insights” (Feyaerts 2003:9).⁹

Illustrating from the Samo conceptualization of “grass” in the translation of Matthew 14, the term, *diyau* is both the name of a specific type as well as a generic for non-forest grasses. Thus, it serves as a prototype of “open space” grass. By using this term, the Samo receive a considerable amount of information that triggers an elaborate “mental space” or schema (I will return to this shortly) which connects their “knowledge” of grasses in the jungles of Papua New Guinea with the hillside above the Sea of Galilee. While by no means a one-to-one connection, it enables the Samo to envision a large crowd of people sitting on comfortable grass enjoying a meal provided by Jesus. At the very least, the use of this prototypical term does not create dissonance and, therefore, allows the Samo to focus attention on the miracle rather than on what people were sitting on. Had we used a term associated with forest grasses, many of which have thorns, the Samo would have had a very different (and wrong) impression of this important event in the life of Jesus and his disciples.

3.3 Schema Theory

As far back as the 1930s, FC Bartlett proposed that “schema” was a mental structure that enabled “an active organization of past reactions, or of past experiences, which must always be supposed to be operational in any well-adapted organic process”, i.e. it is the ability to remember (Schacter 1989:692). More than memory, however, schema, as it has come to be used by the cognitivists, serves as a connecting device between an external trigger and the internal processes of the brain to move an individual to some sort of culturally appropriate action. It is all very neurologically complex, but in essence, input patterns trigger a network of mental processing that enables output (or conceptual processing) that is culturally, linguistically and psychologically appropriate.

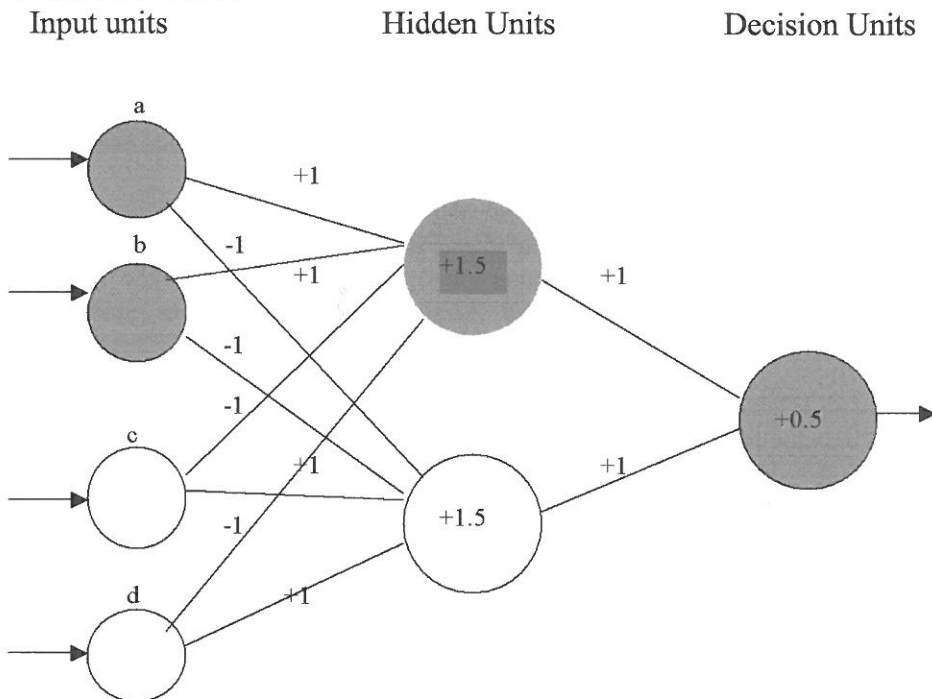
D’Andrade’s representation of a connectionist network resulting in a decision unit portrays how the brain processes information (D’Andrade 1995:138). The behavior that results when the decision unit is activated is ultimately of great interest to translators—it can be analyzed and communicated. The work of anthropologists through much of the past one hundred years has been devoted to describing human behavior. It is cognitive anthropology that takes us into the brain and seeks to appreciate not just *what* is important but also *how* it enables conceptualization that can be acted upon.

⁹ The volume addresses this tension between metaphor and translation and applies cognitive studies to a call for communicative rather than literalist translations.

Figure 1

Schema

A Connectionist Network



+ = Appropriate mix
 - = Inappropriate mix

From D’Andrade, 1995:138.

The model of schema presented in Figure 1 emphasizes the nature of information processing within a network. When there is a recognized input, the network is triggered to process an expected result. Well formed input produces salient mental representations that “involve strong expectations about what goes with what along with a powerful tendency to group together such parts into a gestalt whole...[S]chemas are a kind of mental recognition ‘device’ which creates a complex interpretation from minimal inputs; it is not just a ‘picture’ in the mind” (D’Andrade 1995:136).¹⁰

In his presentation of schema theory, D’Andrade draws from computational mathematics to note how schema serves as a model that reflects connectionist, or parallel, thinking. “In a connectionist model thinking consists primarily of pattern recognition.” Connectionist networks serve as “a remarkable mechanical model of how schema processing might work

¹⁰ A considerable literature has developed around this concept. Both Shore (1996) and Strauss and Quinn (1997) define schema as a type of mental model depending upon, but not limited to, a connectionist approach to processing information. It is the nature of the input and how the brain processes it to enable understanding that is of importance to translators.

in the human brain. Furthermore, there is little doubt that the brain, with its ten billion or so neurons, is a massively parallel connectionist network” (D’Andrade 1995:140). Psychologists were the ones who worked out, through their experimental models, how schematization might actually work in the brain. I will deal with this in more detail when discussing Parallel Distributive Processing (PDP) later. For now, I wish to look at D’Andrade’s four principles of connectionist theory that inform an understanding of schema:

- connectionist networks have a great capacity for ‘filling in’ missing inputs with default values;
- connectionist networks can be trained to learn very abstract and subtle characteristics of stimuli;
- connectionist networks are sensitive to context;
- connectionist networks are able to *blend* interpretations into a reasonable synthesis when presented with parts of different patterns. (D’Andrade 1995:139).

Because schemas are connectionist (and, therefore, process oriented) in nature, rather than serially constructed (with a focus on product), they work as a network, thus allowing for a considerable amount of individuality even within the more generic set of cultural assumptions (not unlike Wierzbicka’s semantic primes). Individuals incorporate personal experience and interest into the schema, thereby projecting themselves onto the general cultural matrix. The “hidden units” that D’Andrade posits within a connectionist network reflect individuality that contributes richness to the schematic “input units” which together result in culturally appropriate output that, at the same time, may be relevant to individuals. Thus the generic and the specific, the universal and the personal are united in the schema concept.

Once again, this concept can be applied to the example of “grass” in the Samo translation of Matthew 14. The prototypical use of grass noted above, serves as a trigger for a schema. *Diyau*, triggers a cognitive network relating to the characteristics of broad leafed grass, the location of that grass-type in open, sunlit spaces, and the kinds of activities that may take place in the context of that grass type. There may also be personal experiences relating to *diyau* that will fit in with and expand understanding, not restrict it. Therefore upon hearing the story and Jesus’ instructions for people to sit on the “grass”, a whole schema representing people in an open space sitting down comfortably and enjoying each other’s company are all part of a schema triggered in the Samo mind by use of this grass-type. The fact that the people in the story enjoyed a meal while sitting on the grass was unfamiliar to the Samo who usually eat large meals while sitting on the bare ground in front of a longhouse. Whether it was the same type of grass that actually existed on that hillside above the Sea of Galilee is immaterial, as is what went through the minds of those who actually experienced that moment. What is critical for a translation to communicate, however, is the need to focus on what happened irrespective of the grass-type. The fact that the Samo immediately asked a question focusing on the type of grass, indicated that it was an important trigger to a broader schema that provided the context for the miracle of Jesus feeding more than five thousand people (5000 was the number of men – women and children were over and above). The Samo instinctively knew it was men because of the junction of the respective schema which created a new conceptual blend.

D’Andrade goes on to note how this understanding of schema theory resulted in disconnecting cultural information from primarily linguistic input.

With schemas and connectionist networks the strong dependence of thought upon language was broken. Connectionist networks put together schematic clusters of features into complex objects without any necessary linguistic base. Along with this divorce from strict

semantic analysis went an increase in interest in mental processes such as reasoning, metaphor and memory (D'Andrade 1995:246).

Schema theory, then, allows for cultural understanding that moves beyond language to also include psychological and cultural information that reflects actual application of relevant information to human living, not just how semantic domains are organized as earlier componential analyses suggested. Beyond the meaning of the words, it is important for a translator to understand the psycho-cultural assumptions that accompany how people utilize the linguistic information. The cognitive categories (as reflected in linguistic units) are actually concept or thought patterns that can be collected and analyzed in terms of relevant approaches to life, which is why discourse and not just word lists is important to the methodology.

Schema theory reflects the process by which information is organized for usefulness in living. Within a cultural setting, it enables people who share the schema to interact with a minimum amount of processing, thus enabling them to spend time thinking about more important things. The schemas of daily life help organize living such that people do not have to process that information and can, therefore, spend more time focusing on what is important to them. Put another way, people do not have to think about their cultural frameworks because they are shared with and assumed by all with whom they interact. When those schemas are challenged within another cultural context (as my schema of grass was not assumed by the Samo) people are then forced to focus on the assumptions and recognize the cultural particularity of the schema. Sperber and Wilson argue that "human cognitive processes...are geared to achieving the greatest possible cognitive effect for the smallest possible processing effort" (Sperber and Wilson 1995:vii). This is a very important consideration for Bible translators who desire to ensure the greatest understandability for the least amount of effort on the part of those who use the translation.

When the Samo interact with Jesus feeding the five thousand, the type of grass is important in order to keep the information in the background and enable them to focus on what Jesus was doing. Had we used a type of grass common to the forest environment, the Samo would have missed the message: Jesus cared for the people and decided to send them home satisfied rather than hungry. Undoubtedly this message served as an important trigger for a Jewish schema central to those who first experienced the event, and a translation of that event should communicate a similar message. Using the right trigger (or input) for the schema is important to the translation task in order to ensure an understanding of the intended message.¹¹

Donald A. Norman sums up by noting that schema are "flexible configurations, mirroring the regularities of experience, providing automatic completion of missing components, automatically generalizing from the past, but also continually in modification, continually adapting to reflect the current state of affairs" (Norman 1986:536). Schema, then, serves both as a cultural convention or model as well as an individual processing device for effective interaction with other culture bearers. When translating across cultures, one must focus on understanding schemas that are reflective of the assumptions and expectations of the original author and audience and then gradually integrate that information with the translator's encyclopedic knowledge and personal experience, as well as that of the new receptors

¹¹ Deriving the intent of a message is a contentious subject in itself. How can we, today, ensure that our interpretation matches the assumptions of an ancient author? In a word, we can't. However, exegesis of a text, complete with linguistic input, textual criticism, discourse analysis, and research associated with the life and times of the context being translated brings today's translator reasonably close to understanding the ancient text and its intent. Such scholarship must accompany the translation task.

who may well have different schemas that reflect different assumptions about reality¹². Schema theory looms large in affecting what people will “hear” when they encounter a translation, and as we have seen in this discussion so far, utilizing methodologies, prototypical representations and symbols that serve as trigger mechanisms for whole conceptual images is central both to cognitive studies and their application to translations that enable people to “hear the Word of the Lord”.

4. Further Concepts in Cognitive Studies

Having presented a brief historical background of the development of cognitive studies, and discussed the role of methods, prototypes and schema as it relates to translation, I now look at the role of conceptual blending, a cognitive approach to meaning, parallel distributive processing and discourse analysis in Bible translation and the value of cognitive studies in translation.

4.1 Conceptual Blending

In a critical and highly acclaimed work, Gilles Fauconnier and Mark Turner capture our imagination and bring an earlier understanding of “mental spaces”, “conceptual mapping”, and “conceptual integration” together to present what they call “blending”. “Blending is in principle a simple operation. It operates on two input mental spaces to yield a third space, the Blend. The Blend inherits partial structure from the input spaces and has emergent structure of its own” (Fauconnier and Turner 1998:269). Conceptual blending, then, is a product of background mental “operations [that] are highly imaginative and produce our conscious awareness of identity, sameness, and difference. Framing, analogy, metaphor, grammar and commonsense reasoning all play a role in this unconscious production of apparently simple recognitions” (Fauconnier and Turner 2002:17). A blend takes the input ideas and “runs” them together to produce a novel conceptualization that nothing in the inputs by themselves might suggest. An example is easier than a definition.

In the translation case study of Matthew 14, there is an interesting blend in the miracle that Jesus performed when he fed the five thousand. I have already belabored the “grass” schema, but we must also understand the “food” schema for the Samo. When there is a large crowd (such as occurs for an initiation or other ceremonial event) meals are eaten in the cleared space in front of a longhouse with a focus on men feeding their allies (Shaw 2003). Allies are friends who gather to help each other, often ceremonially.¹³ Furthermore, men are the ones who prepare and distribute the food in such a context. And the food that people consume is the result of prolonged garden preparation and hunting (two or more years in the case of initiation ceremonies). As the disciples passed out the food in the translation, so Samo men hand out food to those who have gathered at the house; it is not right that people should go home hungry. So when Jesus blesses the five small loaves and two fish and begins to pass them out, the Samo are not surprised that a man would do this. What

¹² Elsewhere I have referred to the interaction between these three contexts as the “communication or translation context”. All three must be accounted for (Shaw, 1988:2, 223). More recently, Van Engan and I discuss the hermeneutics of this mix, using it to develop what we call the “four horizons” model (Shaw and Van Engan, 2003:83ff).

¹³ In the case of the original crowd, we do not know much about the relationships of the people who had gathered. Undoubtedly some of Jesus’ enemies were also there, but the text does not elaborate and neither can the translation of the event. There is, however, some interesting material that a Samo pastor or storyteller can weave into the telling of the event to highlight the Samo conceptualization of allies and enemies – Jesus even fed his enemies – something the Samo would never do.

is a surprise is the instant food – Jesus blesses it and the bread and fish multiply. Jesus’ “blessing” is somewhat comparable to a shaman’s chant over a small loaf of roasted sago or plantains at an initiation. Clearly there is a spiritual aspect to this event; something important is happening here. That was true in the original context as well. When Jesus told the people to sit down, there was an expectation that something was about to happen. And Jesus did not disappoint, he blessed the food and gave it to the disciples who, in turn handed it out. As they did so the food multiplied and there was sufficient for all with plenty left over; everyone was satisfied.¹⁴

What happens in the Samo mind when they process this scene? The Samo hear or read this story and process two schema: A large group of people sitting on a grassy hillside (something they have never seen) and a large crowd being fed. Now let’s “run” the blend. The crowd is too large for the space in front of a longhouse, and the disciples don’t have enough food. When Jesus instructs the people to “sit down on the *diyau*”, the Samo envision a large open space such (as an airstrip) where lots of people can sit down. When Jesus blesses what meager food he has (the Samo are familiar with insufficient food supplies during times of drought) he gives it to the disciples to hand out; men are properly assisting in the feeding of men, while women and children interact as well. As the disciples do what Jesus instructed, the food multiplies, this is the miracle, the focus of the event – the point Matthew seems to be making when he includes this story in his presentation of Jesus (as the Messiah) and everyone has enough to eat as demonstrated by the left over food. Though they have never seen the grassy hillside, the Samo can make sense out of the scene because there is enough contact with what they do know. Their encyclopedic knowledge enables them to fill in the missing pieces with default values which D’Andrade notes is characteristic of schema and, therefore, enables them to process the blend. A large number of people are being shown hospitality before being sent home. It all fits, but there is a new awareness of Jesus as an extraordinary person who did not require an extensive period of time to acquire money to buy or to gather food for a large crowd. And the Samo response? Ingressive whistles of amazement as they gain insight into how awesome Jesus really is. That crowd in Galilee two thousand years ago had a very similar response; the Samo today (like the well-fed crowd) gain new insight into God’s intention for them. Both audiences gain new insight – the translation is faithful in communicating the message.

4.2 Redefining Meaning

What people do, they talk about, and what they talk about is a reflection of what they consider important. Cognitive linguists, like cognitive anthropologists and psychologists, are interested in the mental processes necessary to produce language. As Goodenough was interested in what people had to know to behave correctly, so “to know the meaning of an expression is thus to be able to use it in appropriate situations” (Zlatev 1999:174). Wierzbicka puts it most succinctly, “Language is an instrument for conveying meaning” (Wierzbicka 1996:3). Human beings are driven by a desire to make sense of the world.

¹⁴ A few years ago, my wife and I were in Israel and made a point of going to this region of Galilee. We saw that hillside and as our tour traversed the area, the guide had a member of our group read the story out of the Bible. As I listened to the story, and contemplated the scene before me, I thought of the Samo and their perception of the context. The story took on new meaning for me; my conceptual knowledge was expanded. Seeing the reality of that hillside reinforced what I already knew. However, my experience, together with the Samo understanding and the context of the actual event all blended together to give me a greater appreciation of God’s care for human beings.

Making sense of what we experience entails not just understanding, but an ability to express that understanding, and indeed these two projects inform each other: Our experience is formative to expression...but it is also the case that our expressive resources have some influence on how we perceive our experiences (Janda 2000:4).

Cognitive studies approaches meaning as a network; words serve as windows to a network of concepts that activate various perceptions of reality.

[Cognitive studies] eschews the ‘container metaphor’, which construes words and other linguistic structures as containers, each holding its own little bit of meaning... A more comprehensive (and therefore preferable) metaphor views meanings as windows or points of entry into an enormous network of conventionalized concepts cognitively connected in innumerable ways. From each window certain parts of the network can be expected to be so central in the view that they must be taken into account...but one can from that vantage point also see many less central or less obvious cognitive structures (Tuggy 2003:252).

This matter of perspective is an important aspect of cognitive studies. A formal semantic approach emphasizes a product (a flow of speech: Morpheme, clause, sentence, discourse) in contrast to a process as reflected in a speaker’s conceptualization of a situation (an event that is described utilizing the whole of a person’s experience). Cognitive linguists refer to this as “construal”, that is, “a particular situation can be ‘construed’ in different ways, and that different ways of encoding a situation constitute different conceptualizations” (Lee 2001:2). Different speakers experience the same thing in a variety of ways. I always enjoy reading a story about Jesus from the perspective of the different Gospel writers—each puts a different spin on Jesus’ intent. The feeding of the five thousand appears in all four Gospels, and each is different but portrays the same scene. Different “frames” of experience reflect what cognitive anthropologists call “encyclopedic knowledge”. Accessing this knowledge through the use of schema, metaphor, or regular speech acts puts a speaker and hearer into the same “frame of mind” and ensures communication. Meaning, then, is not a property of utterances but a product of the interaction between an utterance and a ‘knowledge base’. However, each person’s encyclopedic knowledge is vast and connection with another person’s experience is open to a lot of chance within a cultural/linguistic community, let alone cross culturally. Here the importance of “mental spaces” and their relationship to what Lakoff calls “image schemas” is very helpful.

The meaning the Samo attached to Jesus feeding of the five thousand reflects what they already knew. As I noted earlier, they blended two schemas to arrive at a new understanding of experience that while relevant, had never happened to them. Jesus, acting like a super shaman, blessed a large crowd with hospitality.¹⁵ Women relaxed as they recognized that men would provide the food (this was an outdoor scene), and men recognized their distribution task (the disciples did what Jesus told them to do and what the Samo would expect). These conceptualizations enabled everyone to focus on what Jesus did, produce enough food for the whole crowd (with lots left over) from a meager handful of bread/sago¹⁶ and fish. And then the capstone John puts on the whole thing when Jesus says “I am the bread/sago that gives life” (John 6:35). The focus is ultimately on who Jesus is and the need for people to place their faith in him. The focus was not on the food per se, but on who pro-

¹⁵ While some may not want to associate Jesus with shaman, the Samo conceptualization of such individuals in the society creates an appreciation for care and belonging that combines with an understanding of the spirit world and the role of ancestors to create a “gestalt” for the Samo that places Jesus squarely in this role. For greater detail see (Shaw 1981; Shaw and Van Engen 2003:185-188).

¹⁶ Sago, like “bread” for the Hebrews, serves as a generic for food in the Samo language. It is a near-perfect metonymy that has all the semantic elements necessary for effective communication.

vided the food and why – the Samo, like the ancient crowd, got the point! They understood the meaning because they put the two schemas (location and food) together. They ran the blend and received new insight about their relationship to God, through Jesus whom God sent to “dwell among us”. That is the purpose of a translation, to communicate the author’s intention for people who were not part of the context to understand. Ultimately, for the Samo and all other people groups, God is interested in the people whom he created and for whom he demonstrates, in a myriad of culturally appropriate ways, that he cares about them. Clearly this is an important message because the story is told in all four gospels (a concept often repeated has more salience than something mentioned only once) and though each has a different perspective, the over all meaning is the same; God cares about human beings and desires to have a relationship with them (1 Peter 5:7).

4.3 Computational Research/Parallel Distributive Processing

The work of the Parallel Distributed Processing (PDP) group informs us that cognitive processes are in large measure computational and can be represented by models that are generated by computers. The combination of “parallel” processing (rapidly interactive “networks” seeking a “relaxed” or steady state) and “serial” processing (slower “distributive” connections of information leading to change) provide useful models to help appreciate “how the mind works” as Steven Pinker (1997) entitled his critically acclaimed book.

The work of the PDP group has made a vital contribution to understanding the “micro-structure of cognition” as the subtitle of this two volume work indicates (Rumelhart and McClelland 1986; McClelland and Rumelhart 1986). Their basic question was, “how are we to understand the capabilities of human thought, given the time constraints and noisiness inherent in neural systems?” (1986:x). The group worked in an interdisciplinary manner and attempted to develop tools for understanding cognition from the basis of human information processing with respect to “perception, memory, language and higher level thought processes” 1986:xi-xiii).

What makes people smarter than machines? They certainly are not quicker or more precise. Yet people are far better at perceiving objects in natural scenes and noting their relations, at understanding language and retrieving contextually appropriate information from memory, at making plans and carrying out contextually appropriate actions, and at a wide range of other natural cognitive tasks (Rumelhart and McClelland 1986).

The computer has often been presented as an analogy of mental processing. However, computers with their “0”s and “1”s in combination are serial processors, connecting digital information in sequence at very high speeds (much faster than a human brain). In the PDP model, the “D” represents the serial “distributed” pattern activation aspect. At the same time the “P” part of the process represents a networking of conceptual units that are themselves bundles of information. When an input, such as a sound, visual experience, or thought, is introduced to the system, it activates a set of interconnected networks and seeks a “goodness-of-fit” within the network. If it finds something to connect to (something it recognizes) it does so and seeks maximum “goodness”, i.e. a kind of steady state in the system. If it does not find a fit, it keeps looking until it finds something it can connect to. This happens very rapidly enabling the brain to process multiple stimuli and make sense out of them in milliseconds. When the steady state is achieved, however, the system is different than it was before the process began and this sequencing of gradual changes alters the network. It is a very complex process within the brain. Both parallel and distributive processing is continually taking place, enabling pattern recognition, decision-making, and change to take place. In tandem, these parallel and serial means of processing represent what takes

place neurologically and can be simulated by software programs, enabling a computer to appear to be doing the same thing. In truth, however, despite the effective development of Artificial Intelligence and Elisa-like programs, computers cannot compete with the human brain.

Through PDP we see all the pieces to the cognitive studies puzzle come together. We have a new appreciation for the Samo gestalt of people sitting on open space grass being fed by Jesus who demonstrates hospitality; it all makes sense to the Samo as it did to those who gathered on that grassy hillside to listen to Jesus. And interestingly, by understanding this Samo perspective others gain a new appreciation for this text and what happened on that ancient hillside. The Samo perspective and our textual understanding blend into a grand PDP network within our brains for the purpose of expanding our collective, as well as individual, awareness. Everyone gains – the whole is greater than the sum of its parts!

4.4 Discourse/Text Analysis

Discourse is another fruitful area of study that brings the strengths of cognitive studies into focus. Following through on the hypothesis that “grammar is conceptualization” and appreciating the language specific nature of the various structures extant within a grammar, brings new insight to text analysis. David Lee (2001) has demonstrated the application of prototype theory to discourse. This reflects the nature of categories, with their central as well as peripheral members, and allows for analysis of open-ended constructions without assuming that all languages share a specific set of necessary conditions. If it can be shown that there are underlying textual elements which apply across sociolinguistic boundaries, these can then be applied to the translation enterprise. Hatim and Mason (1993) and John Tuggy (2003) have looked into these matters with some success, but much more work remains to be done.

If the broad discourse structure of the different genre are understood, that understanding can be brought to bear on the communication of a message to highlight within that particularity what people need to know in order to ensure they understand the intended meaning. Thus, knowing how the Samo link stories and transition from one setting to another in narrative discourse is essential to communicating the meaning of the case study in Matthew 14. All levels of semantic awareness, together with cultural and psychological construals, enter into the translation process.

In Samo narrative structure, transition is signaled by vocal intensity, a change of setting, often new participants, and other changes of scene that trigger an awareness of a new context. At the same time it is essential to maintain the style of the narrator and ensure that Jesus remains the primary agent, thereby ensuring continuity across the discourse. Furthermore, in accordance with Samo narrative discourse structure, there must be a creative introductory phrase which indicates the author’s purpose or intent. So when, in the narrative, the Samo are told, “Jesus took care of a lot of people by feeding them” it provides insight to the episode to come, and moves the story forward by presenting what the author wants the audience to learn. Here is where the need to appreciate the goals of the four gospels is important; the message of the specific stories adds up to the general theme as communicated by the overall discourse which, together with the narrative style, varies from one author to another. If that information is not conveyed through the translation, the contemporary audience will not appreciate the author’s purpose and may miss the point of the message, whether it is an entire book, or a specific story within the broader context of a book. So it is essential for translators to understand the big picture of a discourse structure as well as the specifics of the stories, how they are introduced and the context of their presentation within

the discourse – it is all necessary for effective communication that ensures people are able to conceptualize the scene even though they may never have been in such a context.

5. The Value of Cognitive Studies to Translation

While by no means exhaustive, this discussion of cognitive issues as they pertain to effective translation demonstrates the complexity of translation and the necessity to bring every possible tool to the translation desk. A translator must, as relevance theory makes clear, consider both sides of the communication equation. Authorial intent and audience inferences are both based on the respective understanding of the cognitive environment each assumes. When the audience is far removed in time and space from the author the task becomes even more complex and time consuming. Harriet Hill has recently completed a major study focusing on how to characterize culturally informed content in a source text and its presentation in a new receptor context and then make appropriate adjustments to ensure understanding of the intended meaning across the “gap”. This necessitates a considerable amount of background information relative to the psycho-social context in the source language as well as that of the contemporary translation context (Hill 2003, 2006). She presents a matrix of mutual cognitive environment possibilities to help translators appreciate the issues that are at stake, both the nature of what is known and what must be known in order for receptors to understand a text (Figure 2).

Figure 2
Mutual Cognitive Environment Possibilities

	Think It Is Shared	Do Not Think It Is Shared
Actually Shared	<p>Quadrant 1 KNOWN</p>	<p>Quadrant 2 UNRECOGNIZED</p>
Not Actually Shared	<p>Quadrant 3 UNINTENDED</p>	<p>Quadrant 4 UNKNOWN</p>

Adapted from Hill 2003:92, 93.

Where there is little or no mutual cognitive environment between the communicator’s understanding of experience and that of the new receptor audience, measures must be taken to expand the encyclopedic knowledge as much as possible. Without this the new audience will make inappropriate assumptions based on their own experience and thereby arrive at the wrong interpretation of the communicator’s original intentions, i.e. the message will either be considered irrelevant or relevant for the wrong reasons. When inferences do not match the original intention, an appreciation of that meaning does not take place. Therefore, to the extent possible, translators must strive to create as much overlap of the respective mutual cognitive environments as possible by providing a bridge of assumptions that will

ultimately yield an interpretation that is reasonably close to the original. This can be done in a variety of ways, some reflected in this paper.

The cognitive environment of the audience can be enhanced by utilizing semantic components, prototypes, schema, and conceptual blends to ensure correct understanding. By making textual adjustments in the discourse structure of particular genre or communicative styles, the message as originally intended can be presented more meaningfully.¹⁷ Notes, commentaries, and other means of providing missing information can also be included to ensure understanding. All these means assist translators as they attempt to provide a way to ensure that contemporary receptors are able to expand their view of reality and thereby match, or at least envision, the original perspective, the “construal” of those who originally processed the message. The objective is to provide, to the extent possible, missing assumptions that will enable today’s audiences to link their cognitive environment with that of the original audience and thereby appreciate the message for themselves. As Hill’s matrix makes clear, the means to accomplish this depends on how much knowledge the two audiences share, or think they share, and what can be done to ensure a maximum overlap (Figure 3).

Figure 3
The Impact Of Assumptions On Perceived Relevance
With Corrective Strategies)

	Think It is Shared	Do Not Think It is Shared
Actually Shared	1. Intended assumptions actualized so inferences match intentions: Relevance achieved.	2. Assumptive similarities not recognized so inferences perceived as irrelevant are actually relevant. Strategy: Identify similarities and encourage understanding
Not Actually Shared	3. Assumptions based on wrong understanding so inferences perceived as relevant are actually irrelevant. Strategy: Correct wrong assumptions; adjust the strength of assumptions.	4. Lacking assumptions so inferences based on lack of information are perceived as irrelevant despite actual relevance. Strategy: Provide missing assumptions linked to existing cognitive environment in order to demonstrate relevance.

¹⁷ David Andersen’s recent dissertation attempts to do just this by showing how an analysis of Biblical Hebrew clause types, in terms of topicality and functional voice, will make a contribution to the task of translating Hebrew into other languages. This produces a greater appreciation for narrative and directive discourse in Hebrew and sets up a more precise means of helping translators clarify the topicality patterns behind voice distinctions that are signaled by Hebrew syntax and make them available in the receptor language (Andersen 2006).

The adjustments that are reflected in a transition from a contemporary conceptual background to an understanding of a text which people can apply to living their lives is a lengthy process with missional implications beyond the purview of this article. However, by using a case study from my translation experience with the Samo, and an application of that data to utilizing Hill's matrix (see Appendix), I have tried to communicate the importance of accounting for the contributions of cognitive studies and adapting them to the translation task.¹⁸

Clearly, this is a big job. Translation is much more complex (but no less essential) than Nida presented in his classic treatise, *Toward a Science of Translating* clear back in 1964, and amplified in 1969 in his co-authored book with Charles Taber, *Theory and Practice of Translation*. He assumed the code model of communication and posited that translation was a matter of deconstructing the contextual forms to derive common meaning that could then be re-constructed using new forms relative to the receptor context (Nida 1964; Nida and Taber 1969). Cognitive studies move us beyond a focus on forms and meanings and force us to reckon with authorial intent and the mental processes necessary to allow contemporary audiences to make inferences that will reflect the original cognitive environment that spawned the intent. Communicated understanding, then, is an outcome of the processing that results when two sets of encyclopedic knowledge interact to produce a meaningful exchange. Put in PDP terms, translation should not be just a serial, connect-the-dots, approach to communicating a message. Rather it must include a network approach that recognizes processing within a complex system.

The brain seeks to find nodes of understanding necessary to fire conceptualizations that result in making decisions that reflect relevance. The translator's job is to match relevance intended by the source, to the reality of a receptor's context, and do it with a minimum of conscience processing (Sperber & Wilson, 1995:125). In short, translation is not, "How do I say what the author said?" but rather, "If the author had used the receptor language, how would the message have been presented?" The result then, is far more than a product (a translation). Rather, a translation initiates a process whereby people imagine themselves in the original context while at the same time drawing relevance to their current circumstances. This is the ultimate in conceptual blending. It requires both parallel and serial processing that creates new insights and understanding that people may never have thought of before. To this end translators must strive.

In a recent article, Nida reinforced what he has often said before; translation involves the cooperative input from a multiplicity of disciplines:

Anyone attempting to translate the Scriptures from one language into another must reckon with the contributions of at least five different disciplines in interlingual communication: 1. Philology... 2. Linguistics... 3. Cultural anthropology... 4. Sociosemiotics... and 5. Psychology, that helps to explain A. how purely physical sounds can be interpreted as verbal units... B. how these units are transferred to the conceptual area of the brain, and C. how the resulting concepts are organized and stored... No one discipline can possibly account for the astounding complexity and varieties of language expression (Nida 2003:298).

What Nida calls for is the application of cognitive studies to the translation task. I have no doubt Nida would have utilized the concepts of Relevance Theory had it been available to him. This article has been an attempt to take his call for interdisciplinary study and the im-

¹⁸ The Appendix demonstrates the relative understanding of various aspects of this text vis-à-vis Hill's matrix and the nature of adjustments necessary to ensure that the Samo appreciate Matthew's intentionality in presenting this story and ensuring that the meaning is communicated. It is only a sample for illustrative purposes, not a full analysis of the passage.

portance of cognitive processes seriously and anticipate their impact on how we do translation in the 21st century. We cannot, indeed we must not, continue to translate the way we always have. We must recognize the interdisciplinary impact of cognitive studies—conceptualizing the various mental images that together enable a translator to create for a contemporary audience the sense of wonder experienced by those who first received the message. As Gutt notes:

Cognitive studies ... have provided increasing evidence that the very structures that enable the human mind to communicate also impose significant constraints on the conditions under which communication can succeed. These constraints are at work also in translation, affecting its likely success or failure in crucial ways (Gutt 2004:1).

Here, I have attempted to answer the question posed in the introduction, “How can an ancient text be communicated so that present day receptors can make sense of the message in a way that reflects the intention of the ancient author?” The message must be perceived as relevant, as worthy of attention by the new audience. A translation must enable people to actualize their response with respect to the original expectations and relate it to appropriately living their lives. As Jesus said, “I came so that everyone would have life, and have it in its fullest” (John 10:10). May his intent energize Bible translation and enhance a people’s understanding of the original communicative context while at the same time make a difference in the way they apply that text to the reality of their contemporary circumstances.

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APPENDIX

Matthew 14: 13-21

First Receptors' Assumptions	Bible Text	Samo Assumptions (with quadrant in Hill's matrix indicated)
<p>The Jews were looking for a Messiah who would fulfill King David's reign and overthrow Roman tyranny. Matthew tells them that Jesus is the Messiah but the kingdom is about Heaven and not of this world.</p>	<p>Matthew: Discourse = Narrative. Theme = Jesus is the fulfillment of OT promises and people should pay attention to and obey what Jesus says.</p>	<p>The Samo know nothing about the Jews, the OT or the NT. What they learn is from translated stories. Therefore they need sufficient OT material to ground the NT. The initial genealogy in Matthew is an important beginning. Narrative text moves a theme line forward to a grand conclusion.</p>
<p>Life for the Jews of that day was difficult; disease, hunger, and spiritual need—they were constantly looking for the next "savior". John the Baptist whom they had thought was Elijah returned was now dead, and they turned to Jesus in large numbers. Jesus sought to meet their needs physically (healing and feeding) and spiritually (teaching).</p>	<p>Discourse: This text fits into the larger context of Jesus ministry in Galilee. It follows the recounting of John the Baptist's death—Jesus was looking for solitude. But the crowds pursue him and he "feels sorry for them".</p>	<p>The Samo knew nothing about John the Baptist except what they understand from the NT translation. But they identified with the Jews desire for physical and spiritual well-being. When the story is introduced with "Jesus took care of a lot of people by feeding them", the Samo pay attention to see how Jesus did this. The story serves a bigger purpose. What and how does it accomplish this?</p>
<p>Context-far from home late in the day. People are hungry after being with Jesus all day.</p>	<p>Mat. 14:15 "That evening the disciples came to Jesus and said, "It's already late and this is a lonely place. Send the people away so they can go to the villages and buy food"</p>	<p>Time of day = need to go home before bush spirits are out in force. (4) People should have accounted for their need and brought food. (3)</p>
<p>Hospitality = providing for people's need</p>	<p>14:16 Jesus replied, "They don't have to leave, why don't you give them something to eat?"</p>	<p>Hospitality = taking care of guests. (1) Jesus is generous (2)</p>

<p>The crowd did not know what was transpiring at this point.</p>	<p>14:17 But the disciples replied, "All we have here are five loaves and two fish."</p>	<p>The people were foolish not to bring food with them (3) Disciples are stingy (3)</p>
<p>Something is going to happen because Jesus is telling them to sit down.</p>	<p>14:18, 19a Jesus asked the disciples to bring the food to him and told the people to sit down on the grass.</p>	<p>What can Jesus do with so little food? (4) What kind of grass was it? (4) Everyone must have been allies or they wouldn't sit together (3)</p>
<p>When Jesus blessed the food he proved his spiritual identity. The disciples obeyed and did what Jesus told them to do.</p>	<p>14:19b Then Jesus took the five loaves and two fish. He looked toward heaven and blessed the food. Then he broke the food and gave it to the disciples and they gave it to the people.</p>	<p>When Jesus blessed the food he acted like a shaman-this proves his spirituality (2) When the disciples did what Jesus told them to do food was provided (1)</p>

(This is a partial list of available information for illustration only)