groups and continue to be inhabited by them today. Other important linguistic groups are found within the areas as well. Obviously there is considerable geographical overlap in the Sorenson and Hauck models.

SORENSON'S GEOGRAPHY

The most fundamental geographical problem associated with Sorenson's model has to do with issues of directionality. This is revealed clearly in Map 2. In order for his model to fit the geography of Mesoamerica, one must assume that the Nephites had a system of directions with cardinal directions skewed "45 degrees or more" off of the usually observed cardinals (Sorenson 1985, 39). Unfortunately Sorenson never gives an exact figure and provides no map showing Nephite cardinals. Works by David Palmer (1981, 241-50) and Bruce Warren and Thomas Stuart Ferguson (1987, 334-35) do have maps, based on Sorenson's model, showing true north and "Nephite north" which are more than 60 degrees apart. In other words, the whole directional card must be shifted more than 60 degrees to the west for this model to fit the geography of the chosen area. Otherwise, as Vogel (1985) has pointed out, the land north will be on the west, the land south on the east, and so forth. Also the River Sidon (Grijalva River) would be flowing from east to west through the Land of Zarahemla. Making this shift in directions creates its own set of problems, however, because in such a Nephite directional system the sun would come up in the south and set in the north.

Sorenson advances several arguments to explain why Book of Mormon peoples might adopt such a system. He provides examples from a number of cultures to demonstrate that human societies handle directionality and the labeling of directions in diverse ways. Still the Book of Mormon account offers what appears to be a standard scheme of cardinal directions, presumably a scheme brought from the Near East. Picking up a line of argument advanced by Palmer, Sorenson singles out one Hebrew directional scheme which had east as forward, north as left hand, south as right hand, and west as seaward. According to this argument, when Lehi's party landed on the Pacific coast of Mesoamerica, they were confused by their new surroundings and, relying on this scheme, assumed that west was seaward. Later when they realized this could not be so, they somehow retained this altered system of directionality.

As Mormon writer John A. Tvedtnes has noted, the ancient Israelite directional system discussed by Palmer and Sorenson was one of two systems. In the second and more common Israelite system, the term for east means "dawn" and the term for west means "entering, setting" (1982, 9). Both Israelite directional systems were sun-oriented, specifically oriented toward the rising sun. In the directional system

mentioned by Palmer and Sorenson, east was "forward" precisely because when facing east one faced the rising sun. The basis of the directional system was the path of the sun not the location of the sea. Sorenson in his discussion of the temple built by Nephi and his people points out that it would have been oriented as was the Temple of Solomon so that the rising sun on equinox day (either March 21 or September 21) sent its first rays through the temple doors (Sorenson 1985, 143).[5] This equinoctial orientation would seem to indicate that Lehi's group was well aware of the positions of the standard cardinal directions soon after their arrival.

Surely the Israelites, who had some knowledge of nearby lands, realized that west was not always seaward. Lehi and his party should have been aware of this fact after their own extensive travels. Once they arrived in the promised land, they would have had several directional guides, including the path of the sun from east to west and the constellations. Although the northern constellations and familiar stars would have been lower on the horizon than at Jerusalem, most would have been visible. Some new constellations would have been visible to the travelers. There was no north star available in 600 B.C.E., but it seems likely that travelers would have been aware of the rotation of the stars around the north celestial pole. This great wheeling motion is visible on all clear nights and is well known to those who live more intimately in tune with the natural environment than do modern urban dwellers. Additionally Lehi's party had the Liahona, which is called a "compass" a number of times in the Book of Mormon (1 Ne. 18:12, 21; 2 Ne. 5:12; Alma 37:38, 43-44).[6]

Palmer (1990) suggests that the lack of a pole star made the determination of directions difficult and that the Mesoamericans based their directions on solstice readings. He further suggests that they used one of the solstice positions of 65 degrees west of north as their equivalent of north. According to Palmer, this orientation is evidenced by the alignment of Preclassic period sites at 65 degrees west of north. But if Nephites drew upon their Near Eastern heritage to orient temple entrances and other architectural features based on solstice and equinox readings, it is difficult to explain why they would choose a solstice setting as north. The equinox and solstice readings were associated with the path of the sun, not cardinal directions.

In a recent work Sorenson, perhaps recognizing the problems still posed by directionality in his model, offers further ethnographic and

---

5. Sorenson has mistakenly called these solstice days rather than equinox days.

6. Hugh Nibley has suggested that the Liahona rather than being a compass may have been an object related to ancient arrow-divination (1988, 251-63).

archaeological examples of directional systems in order to demonstrate that the "conceptual frameworks which define directions and the languages of reference for them differ dramatically from culture to culture and throughout history" (1990, 406). These examples do not appear to strengthen his argument. None of those who argue in favor of Sorenson's model have shown any evidence from the Book of Mormon account suggesting that anything other than a standard traditional interpretation of the direction system is called for. They must argue that the directionality system is not what the plain meaning of the terms would suggest because otherwise the model will not work. This does not seem to be sufficient cause to assume the existence of a different system among the Nephites.

Another approach to the problem of directional systems is to investigate what is known about the directional systems of Mesoamerican peoples, particularly those located within the area chosen by Sorenson. Barbara Tedlock has studied modern directional terminology of the Quiché Maya, who live in the highlands of Guatemala (1992, 2-3). She notes that the Quiché words for east and west make overt reference to the motion of the sun. East is referred to as "at the rising of the sun" and west as "at the setting of the sun." North and south are given indirect terms referring to the sun's right and left sides as it travels west. Other Maya languages have similar terminologies.

Of course this modern terminology might not relate to ancient concepts. Thanks to the decipherment of directional glyphs found in Classic Maya inscriptions and in Postclassic Maya codices, it is possible to discuss the Classic Maya directional system. Although some ongoing debate on the topic continues, most epigraphers suggest that the Classic directional system was much like the modern one described by Tedlock. It emphasized the daily route of the sun across the sky and through the underworld (east, zenith, west, nadir) rather than the cardinal directions (Tedlock 1992, 173-78). Early Classic period Tomb 12 at Río Azul in the northeastern Petén of Guatemala has a directional glyph painted on each of its four walls. The glyph that indicates "sun" or "day" is infixed in the superfix above the directional glyph on the east wall; the glyph for "night" or "darkness" is infixed over the directional glyph on the west wall. The moon glyph is similarly associated with the directional glyph on the north wall, and the Venus glyph is associated with the directional glyph on the south wall. Thus this directional system may have been in existence during the proper time in at least part of the area chosen by both Sorenson and Hauck. The fact that the terms for east and west were sun related in many languages argues strongly against a shift of these same terms to a different orientation.

Certainly the problem of directionality is a critical issue in the Sorenson geography, but there are other problems as well. For example,

Bruce Warren has rightly pointed out that the Yucatan Peninsula remains a "sore thumb" in the Sorenson and Hauck geographies (1990, 134).[7] The constraints of their models force both to ignore this large area for the most part, yet some of the most important developments occurring during the Book of Mormon period took place there. Many examples and analogies have been taken from the Maya culture of Yucatán by various authors to support aspects of Sorenson's model, but the model itself cannot accommodate the area. It is clear from the archaeological record that trade and other forms of contact between various parts of the Maya area began early and continued throughout the Book of Mormon period. It is difficult to explain why this large and important area containing some of the largest cities ever built in Mesoamerica would escape even the barest mention in the Book of Mormon. This is a significant weakness in both the Hauck and Sorenson models.

HAUCK'S GEOGRAPHY

One of the strengths of Hauck's geography is that it does not require elaborate explanations about a Nephite directional system. Several reviews of Hauck's volume point out other geographical problems encountered in attempting to apply his model. William Hamblin has discussed Hauck's use of a "coastal corridor" rather than an isthmus as the narrow neck of land. This view additionally requires two lands of Bountiful, one by the east sea and one by the west sea. Hamblin also criticizes Hauck's assumption that the terms "northward," "southward," and "eastward" were intermediate compass points between the cardinal directions (1989, 73-75).

John E. Clark, a Mesoamericanist, has provided one of the most interesting and careful reviews of the Sorenson and Hauck geographies. Based on his own internal model of Book of Mormon geography which he developed to evaluate real life geographical models, Clark lists ten crucial features of Nephite geography which can be used as criteria for evaluating any proposed real-world geographical correlations such as those proposed by Hauck and Sorenson (1989, 67-69). Clark's criteria include: the narrow neck of land as an isthmus, significantly more western than eastern coastline, varying sizes of the different wildernesses, Zarahemla and Nephi located in large valleys, size and other characteristics of the Zarahemla Basin, Waters of Mormon as a large highland lake located within a day or two of Nephi, and finally the locations for Zarahemla, Nephi, Bountiful, and Cumorah.

Clark notes that Hauck's model fails to meet nine of these criteria, and whether it meets the tenth is unknown. In contrast Sorenson's ge-

7. An apt analogy considering its shape.