

# On Survivals of Ancient Astronomical Ideas Among the Peoples of the Northwest Coast

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This article is based on the idea, clear enough to the intellect but seemingly difficult for most urban Canadians to grasp in the deeper parts of their beings, that Canada is an American country with a totally Indian and Eskimo past and a significant Indian and Eskimo present. The present plight of the United States is a warning of what happens to countries which choose to base themselves on technological and constitutional notions with no reference to historical realities. Thus our educational system should ensure that the ancient cultures of our country become part of our own background, in spite of those, both Indian and white, who would like the present divisions to remain. If this does occur, the country will remain a rich but weak strip of synthetic Anglo-American and Franco-American culture, with a vast decaying hinterland of aboriginal traditional ways.

Since what we call "mythology" contained, directly or indirectly, most of the intellectual life of Indian and Eskimo peoples, we must therefore try to understand it, even though our minds, conditioned by Greek and Western logic, find this difficult. These cultures made only slight distinctions among those forms of understanding we classify as scientific, esthetic, moral and so on. There were clear distinctions, but they were made according to different, though equally rational, categories. (The idea that reason and logic are not the same, that logic is only a specialized tool of reason, also seems to be a difficult one.)

The intellectual life of the Indians of North Coastal British Columbia was notably rich. In this paper, which is a more concentrated continuation of an article published in *Canadian Literature* for February 1975, entitled *Wilderness No Wilderness*, I am concerned with an astronomical and seasonal diagram which, because of its abstract and geometrical nature, forms a kind of armature upon which many other ideas may be moulded. This diagram is best set forth in the astronomical and calendrical stories of the Haida weather-prophet and astronomer, Walter

McGregor.<sup>1</sup> No doubt this paper is too concentrated for easy reading, but the controversial nature of the subject demands factual density, and a more fluid treatment of these facts would make for inappropriate length.

Information about the astronomical and calendrical systems of the Northwest Coast peoples has not to my knowledge been gathered together into a single study, though much is known. It has been customary to downgrade the astronomical and calendrical skills of these peoples, an attitude which seems inexplicable, since the information available indicates they had expert naked-eye astronomers.

The earth was thought of as a disc or wheel turning, in a boundless ocean, beneath the solid vault of the sky, above which there are other worlds and other skies. At this wheel's centre (whose geographical location is variously fixed depending on that of the tradition-holders) is the earth-axis, which runs up to the sky and pierces it at a certain point. This point is apparently the North celestial pole, yet it may one time have been the pole of the ecliptic, since the sky vault is seen as moving with an eccentric motion, now dipping and now rising above the horizon, as if its axis of motion were off-centre in relation to the turning of the earth beneath.<sup>2</sup> One would have to guess as to whether the idea of the pole of the ecliptic had at one time been grasped by native astronomers, or whether this image of eccentric motion had been inherited from some literate and mathematically-minded civilization and remembered without full intellectual understanding, as an image which worked in practical terms. I am inclined to believe the latter.

This ancient concept is duplicated in so many other preliterate ancient societies, including the ancestors of the ancient literate societies of the Near and Far East (its surviving fragments may be seen in their mythologies), that it may fairly be called universal. It is the basis of the system discussed in that revolutionary book, *Hamlet's Mill*,<sup>3</sup> the authors of which have obviously made their point. This system is so clearly related to that underlying Northwest Coast mythology that the basic question may be stated as follows: does its presence there indicate a mere inert survival of astronomical motives (folklore is full of such) or a diagram which was

<sup>1</sup> J. R. Swanton, *Haida Texts and Myths: Skidegate Dialect*, Bureau of American Ethnology, Bulletin 29 (Washington, D.C., 1905), *passim*.

<sup>2</sup> Thomas F. McIlwraith, *The Bella Coola Indians* (Toronto: University of Toronto Press, 1948), pp. 23-27; and Frederica de Laguna, *Under Mount Saint Elias*, Smithsonian Contributions to Anthropology, vol. 7 (Washington, D.C., 1972), pp. 792-97.

<sup>3</sup> Giorgio de Santillana and Hertha von Dechend, *Hamlet's Mill* (Boston: Gambit Inc., 1969), *passim*.

understood in a properly astronomical and calendrical sense? At first I believed only the former was the case, but a closer study of the myths soon led me to believe that these motives could also be used, by experts, in a strictly astronomical sense.

Clearly, the informants of de Laguna and McIlwraith (see notes) did not understand the calendrical system they were describing, since "the making of calendrical observations is a lost art."<sup>4</sup> There must therefore have been a level of knowledge beyond popular comprehension, though we know that ordinary families could roughly determine the solstices by the position of the sun. In my own enquiries among Indian friends, acquaintances and informants, I have been able to obtain only a few star names and some fragmentary cosmological ideas. Thus I will rely upon material in print. This enables us to learn a great deal which is not specifically stated by the collectors: the statement of an isolated fact inevitably indicates knowledge of other facts without which it could not have been discovered.

Among the Tlingit the following ideas were found — that the world is supported by (and must therefore spin on) a bamboo pole,<sup>5</sup> that earthquakes are produced by displacement of this pole,<sup>6</sup> that tides are controlled by the moon,<sup>7</sup> that the sun may be used for ocean navigation,<sup>8</sup> that the upper sky is cold,<sup>9</sup> that clouds are on or near the level of the "first sky" (the lowest one),<sup>10</sup> that the moon is so close to the earth that people can be carried up to it,<sup>11</sup> that Venus and Jupiter are not fixed stars but celestial bodies of a different kind,<sup>12</sup> that Jupiter, since it is called "Marten's Moon," is something like a moon.<sup>13</sup>

Orientation was in terms of prevailing winds and the direction of the

<sup>4</sup> McIlwraith, p. 27.

<sup>5</sup> de Laguna, p. 793.

<sup>6</sup> *Ibid.*

<sup>7</sup> *Ibid.*, p. 796.

<sup>8</sup> *Ibid.*, p. 794.

<sup>9</sup> *Ibid.*, p. 795.

<sup>10</sup> *Ibid.*

<sup>11</sup> *Ibid.*, p. 796.

<sup>12</sup> *Ibid.*, p. 797.

<sup>13</sup> *Ibid.*

<sup>14</sup> *Ibid.*, pp. 797-98.

<sup>15</sup> *Ibid.*, p. 798.

<sup>16</sup> *Ibid.*, p. 799.

<sup>17</sup> *Ibid.*

sun, the directions of sunrise and sunset being primary.<sup>14</sup> Even ordinary persons customarily noted the rise positions of both sun and moon for private calendrical purposes.<sup>15</sup> Notched sticks were perhaps used, at one time, to mark the passing of the years.<sup>16</sup> Common months were based on the phases of the moon.<sup>17</sup>

In this collection of popular ideas, we may already see that there were two levels of thought on astronomical matters. The beliefs that Jupiter is something like a moon, that earthquakes are produced by the earth's tilting on its axis, and that tides are caused by the moon are popular simplifications of learned ideas. So, though less obviously, is the idea that the world is supported on a bamboo pole: this is a naive folk reflection of the ancient but truly scientific symbolism dealt with by de Santillana and von Dechend. In fact, this idea is specifically East Asian in origin: bamboo was known on the Northwest Coast, but only in a dwarfed and degenerate form. Barbeau has pointed out many East Asian survivals in Northwest Coast culture; in my opinion, he erred only in timing their arrival too recently.

More obvious evidence of degeneration from a complex system is found in de Laguna's calendrical data from the Tlingit.

There are four seasons. Winter is given the same name as "year," and some informants thought the year may have begun in December, which is called "Shortest Day Month," yet most place the beginning of the year at the summer solstice. Obviously, both solstices were observed. The fall equinox must also have been observed at one time, since September and October bear the names "big moon" and "small moon."<sup>18</sup> Such a singling-out of these two months, particularly September, is found all the way down the coast.<sup>19</sup> Their names frequently differ in connotation from those given to the other months, which usually refer to seasonal events: they can be enigmatic references to the size of the moon or the length of the month ("Wide Face"), they can give the month higher rank ("Elder Brother"), they can refer to calendrical corrections ("the Meeting of the Two Ends of the Year") or they can repeat the name of the spring equinox month, as in the case of one Kwakiutl (Narwartok) calendar collected by Boas. A Haida calendar from Skidegate gives April the same name as that given to October in a Haida calendar from Masset: "Between Month"; the same Masset calendar gives March a name of great mythical significance: "Russet-Backed Thrush Month." Most names

<sup>18</sup> *Ibid.*, p. 800.

<sup>19</sup> Cope, *Calendars of the Indians North of Mexico*, University of California Publications in American Archaeology and Ethnology, vol. 16, p. 149 et seq.

for March, however, are related to the seasonal cycle and there is little indication, in these names, of year adjustment at this time. This would seem surprising, since many Northwest Coast village years began in March or April, including the two Haida years known to us, and none began in September or October: one would expect a name implying year adjustment to belong to the month in which the adjustment was made. The answer to this conundrum lies in the nature of an ancestor of the so called lunar zodiac, to which I have referred in my book, *Fire in the Raven's Nest*,<sup>20</sup> and whose operation is thoroughly explained by de Saussure.<sup>21</sup> Observing the full moon nearest the fall equinox would give an astronomically rough but practically usable position of the sun on the opposite day of the year-cycle (near the spring equinox) in terms of celestial sight-lines, as well as in constellational terms: spring observation would then be confirmatory, a double check on information obtained near the fall equinox, allowing one to set the beginning of the year with comparative ease. It should be remembered that in ancient systems based on the horizon and terrestrial sight-lines, the equinoxes occur at the same point, the rough middle of a line whose two ends are marked by the winter and summer solstices.<sup>22</sup> Such a double check would certainly be necessary in an area with frequently overcast skies. The study of mythology and calendar names, of course, will give no idea of the relative precision of the methods used. One is inclined to believe the methods were rough, as compared to those used at Stonehenge, say,<sup>23</sup> or the fully developed lunar zodiac of China.<sup>24</sup>

Strictly speaking, "lunar zodiac" is a misnomer, since in China this series of asterisms is based on division of the equator and the sky-dome to the pole into equal (across the pole) wedge-shaped sections. It is derived from an ancient division of the horizon into four quarters, such as is central to most Amerindian traditions (and many Old World ones). As a system of celestial measurement it utilized principles different from those employed in the twelve-part zodiac based on the ecliptic. Misunderstanding of this has caused much needless controversy and has generated a

<sup>20</sup> Norman Newton, *Fire in the Raven's Nest* (Toronto: New Press, 1973), p. 70 et seq.

<sup>21</sup> Léopold de Saussure, *Les Origines de L'Astronomie Chinoise* (Taipei: Ch'eng-Wen Publishing Company, 1967), p. 541 et seq.

<sup>22</sup> A. Thom, *Megalithic Sites in Britain* (Oxford: Clarendon Press, 1967), p. 107 et seq.

<sup>23</sup> Gerard S. Hawkins, *Stonehenge Decoded* (New York: Dell Publishing, 1965), *passim*.

<sup>24</sup> de Saussure, p. 546.

number of strange theories (cf. Graves' *White Goddess* and Velikovsky's *Worlds in Collision*, both of which nevertheless contain much of value). It seems to have been evolved for the use of navigators: indeed, it uses the principles of nautical astronomy and it may well have a relationship to the origin of the alphabet. Many ancient stories, such as the Irish voyage myths, yield with surprising ease to analysis based on the "lunar zodiac" (quotation marks will be dropped at this point). Thom's discoveries throw much light on its mode of operation.

There can be no effective celestial observation without arithmetic and rule-of-thumb geometry. The question thus arises as to how Northwest Coast astronomers kept track of numbers. The most complete account of a Northwest Coast number system is in Boas' *Kwakiutl Grammar*:<sup>25</sup> it is a decadic system of considerable elaboration. Mr. Lewis Clifton, a Tsimshian of high hereditary rank, has shown me a system of notating numbers which he claims is aboriginal. It is also based on units, tens and twenties (like the verbal number system of the Tsimshian) and the symbols are vertical, horizontal, criss-crossing and diagonal lines, such as might be set out with calculating sticks. At least one of the symbols (that for fifty) is found among the Kwakiutl.<sup>26</sup> De Laguna also reports the use of calculating sticks, manipulated in multiples of ten, among the Tlingit.<sup>27</sup> Since this Tsimshian system has not been reported elsewhere, it is of course possible that it was a local invention of the early contact period, like Sequoia's alphabet; if this is so, it is an achievement of a high order and a true extrapolation of Tsimshian number-ideas. But Sequoia's alphabet was necessary to write Cherokee: why would a presumed Tsimshian mathematical genius of the early nineteenth century go to the trouble of inventing a new calculating system, when our own more efficient decadic system was being taught in the mission schools? For this reason, I am inclined to believe Mr. Clifton's contention. I should record here that when I mentioned this system to a well-known anthropologist of my acquaintance specializing in this area, he showed no interest.

Among the Tlingit de Laguna has discovered memories of calendrical counting devices, a square board "with holes and two pegs" used for calendrical computations, the technique of its manipulation being reserved

<sup>25</sup> Franz Boas, *Kwakiutl Grammar*, Transactions of American Philosophical Society (Philadelphia, 1947), p. 276 et seq.

<sup>26</sup> ———, *Kwakiutl Ethnography* (Chicago: University of Chicago Press, 1966), p. 92. The symbol for fifty in Mr. Clifton's system is five vertical strokes above a horizontal one. I am not being secretive about this system and would gladly pass it along to any professional anthropologist who shows interest.

<sup>27</sup> de Laguna, p. 801.

to experts. It was called "place of moon's teeth" and with it experts could predict to the day the beginning of eulachen runs and the return of migrating swans or geese.<sup>28</sup> This would seem a roundabout way of noting the phases of the moon and if the device simply kept track of the number of months, it would hardly have seemed mysterious to the layman of the village, who had more practical astronomical knowledge than the average modern Canadian. The only interpretation of this device which makes sense is that it was related to predictions of the place of the moon in the ecliptic or (more likely) at certain specific horizon points. "Places of the moon's teeth," therefore, would mean places where the moon fixes its position in relation to specific celestial or terrestrial points of reference.

The times of the night were determined by the movements of the stars, particularly by the tail of the Big Dipper, as they were in China (and, of course, in many other parts of the northern hemisphere). It is not clear whether the Tlingit were aware of midnight as a specific point in time (the word "point" is actually used, but the meaning of de Laguna's informant is not clear),<sup>29</sup> or whether they thought it more vaguely as "the middle part of the night," roughly marked by the passage of some star across a loosely conceived zenith. One is inclined to believe the latter, since midnight can hardly be determined without a timekeeper of some sort and a mathematical division of the sky. Among the Maori and most other Polynesians,<sup>30</sup> whose system seems to have been similar in basic principles to that of the Northwest Coast peoples, midnight had the above vague definition.

The skills of weather forecasting and astronomy were usually combined. They were not secret or mystical knowledges: the astronomer and weather-prophet was an "expert," not an initiate of a secret society.<sup>31</sup> He commonly observed the stars before sunrise,<sup>32</sup> and since he observed which stars disappeared when the sun rose, it seems obvious that he was determining which constellation the sun was "in."

We know that many myths had specific seasonal connotations; some stories had to be told at certain seasons, because they brought about the

<sup>28</sup> *Ibid.*

<sup>29</sup> *Ibid.*, p. 802.

<sup>30</sup> Elsdon Best, *The Maori Division of Time* (Wellington, N.Z.: Government Printer, 1959), p. 18; and Maud Makemson, *The Morning Star Rises* (New Haven and London, 1941), *passim*.

<sup>31</sup> de Laguna, p. 803.

<sup>32</sup> *Ibid.*

weather appropriate to those seasons.<sup>33</sup> Whether or not this interrelationship of celestial, meteorological and human events was literally believed by the calendrical experts we do not know; it is my impression from conversations with the Squamish weather-prophet, Dominic Charlie, before his death, that it was. It must be remembered that the common Northwest Coast Indian idea of the heavens was a "magical" one. The skies were very close to the earth and the heavenly bodies did not move according to impersonal laws but according to the wills of the spiritual entities responsible for them. Periodicity was the norm, but it could be upset by the sinful actions of men, or, as a form of punishment, by these spiritual entities.

Most of the Bella Coola concepts reported by McIlwraith are related to the above. In addition one finds that moon, stars and sun were used for computing time by calendrical experts whose knowledge has been forgotten.<sup>34</sup> The Bella Coola image of the heavens presented by Boas<sup>35</sup> is particularly orderly and beautiful, but as it is not accompanied by informants' explanations there is no time to expound it here. One passage, though, must be quoted, since it relates to the main argument of this paper.

There are twenty-four guardians appointed to take care of the sky. They are called Nexolak.ai'x. According to tradition, the sky must be continually fed with firewood. Once upon a time they put too much firewood into the sky and made it burst. All the pieces except one, called S'alwalo'sem, fell down to our earth. The fragments hit the faces of the twenty-four guardians and distorted them. They tried to mend the sky, but did not know how to do it. They went down the river, and came to Masmasala'nix, whose assistance they asked. Masmasala'nix gathered up the broken pieces, and glued them together. Up to that time the sun had stayed in the east, but now he began to go on his daily course. At that time Masmasala'nix built the bridge over which the Sun travels every day. He placed a wedge in the opening of the sky, into which the Nexolak.ai'x have to put the firewood. This opening is called K.awa'umsta, that is, "mouth kept open by means of a wedge."

The figure Masmasala'nix is often seen as a four-part deity (four brothers):<sup>36</sup> he is or they are the supernatural Carpenter or Carpenters, and the relationship to the Haida Master Carpenter is as clear as anything could be. The twenty-four guardian figures must be twenty-four

<sup>33</sup> *Ibid.*, p. 806.

<sup>34</sup> McIlwraith, p. 27.

<sup>35</sup> Franz Boas, *The Mythology of the Bella Coola Indians*, Publications of the Jesup North-Pacific Expedition, 1898, pp. 27-41.

<sup>36</sup> McIlwraith, p. 39.



divisions of the horizon circle or the celestial equator, and the story may well refer to the obsessive theme of the astronomical myths dealt with in *Hamlet's Mill*: the distortion of stellar reference points due to the precession of the equinoxes. However, there are obvious difficulties in this theory, since the snail-paced precession of the equinoxes is less likely to be visualized as a sudden catastrophe than as the slow senescence of polar and cardinal-point deities, an equally frequent mythical theme. If I ignore Velikovsky's theory of a catastrophic tilting of the pole, it is because it has as yet been neither proved nor disproved: despite his unscholarly use of much mythical material it is clear that such a belief was widely held among ancient peoples, including those of the Northwest Coast.

From the Tsimshian peoples, though their calendrical and astronomical culture was, I suspect, even superior to that of the Tlingit, Haida and Bella Coola, we have little specific information. I must stress again that this merely reflects a deficiency in the anthropological literature: Boas, who has given us such a wealth of material of Tsimshian myth, did little of significance in this area and Barbeau did nothing at all. It is from the Tsimshian missionary Pierce that we learn that "astronomers belonging to the different tribes" gathered in conclave on the hill Andimaul, near Kitsegeucla, in the spring and the fall. On this hill, which had been an observation point from early times, they observed the setting sun, and sent messengers to all the different tribes "warning the people and telling them what they might expect to happen."<sup>37</sup> Pierce tells us no more than this, yet this brief statement indicates the importance the Tsimshian peoples placed on astronomy. It shows that we have here a miniature of an international "scientific community," which is reflected in the basic unity of the astronomical and calendrical systems throughout the northern coastal area. One must not be misled by the variety of local month names which were, solstitial and equinoctial months aside, based on the behaviour of local animals, fish, birds and plants.

When the implications of the foregoing are thoroughly examined, it can be seen that the Northwest Coast peoples had an astronomy much more elaborate than has been suspected, that positions of sun, moon and stars throughout the year could be predicted, if not with the accuracy of (say) Babylonian and mature Chinese astronomy, and that the system employed was based on the idea of the opposition across the pole of fall and spring equinoctial points, and thus on a principle similar to that of the early form of lunar zodiac described by de Saussure. In spite of the

<sup>37</sup> William Henry Pierce, *From Potlach to Pulpit* (Vancouver, B.C.: Vancouver Bindery, 1933), p. 152.

nautical skills of these peoples, it was a land-based astronomy, partly because of the heavily overcast skies of the region but mostly, surely, because they were coastal navigators and rarely sailed out of sight of the land. Whereas among Polynesian peoples complex astronomical knowledge was widespread, since it was a matter of life and death that every large ocean-going canoe have a navigator on board, it would seem that among the Northwest Coast peoples, at least those of Central and Northern Coastal B.C. and Southern Alaska, astronomical knowledge was the possession of a small group allied with the chiefs.

It is a matter of urgency that anthropologists skilled in surveying techniques go to the places indicated by the literature and by modern informants as points of observation and there, in the manner of Thom, take readings which would indicate the sight-lines used to make observations. Any method based on myth-analysis alone will only give a general idea of the concept of the year-cycle and the relationship of mythical figures to seasonal divisions of the sky. As a preliminary, one might start by examining:

- 1) the orientation of petroglyphs containing animal figures;
- 2) the names of prominent mountains and headlands;

3) methods of land-surveying used by the Indians to determine the hereditary properties of various lineages: much is known about these. The well-known fact that such methods define fishing-grounds and other featureless areas necessarily implies a simple rule-of-thumb geometry, which could, by the use of sight-lines, be extended into celestial space.

For reasons stated above, our knowledge of star-names is disappointingly scanty. Yet those names which are known have relationships to names all over the Northern Hemisphere, indicating diffusion routes so old and blurred that they are untraceable. We commonly find Orion as a hunter, a sea-hunter or a hunting or fishing scene: all these are duplicated in the Old World. Among the Chinookan Wasco,<sup>38</sup> stars near the Pleiades are a knife of stars; in India the Pleiades are a razor.<sup>39</sup> In our own tradition, they are sometimes called The Little Dipper;<sup>40</sup> among the Haida they were called Canoe-Bailer.<sup>41</sup> Only the use of "sculpin" (bull-

<sup>38</sup> Ella Clark, *Indian Legends of the Pacific Northwest* (University of California Press, 1960), p. 152.

<sup>39</sup> Richard Hinckley Allen, *Star Names: Their Lore and Meaning* (New York: Dover Publications, 1963), p. 393.

<sup>40</sup> *Ibid.*

<sup>41</sup> J. R. Swanton, *Jesup North Pacific Expedition*, vol. 5, part 1, p. 12.

head) for the Pleiades or a nearby constellation, found among the Tlingit and probably Haida, is unmatched in the Old World, though an examination of the origins of such names for this fish as "bullhead" and "miller's thumb" would certainly reveal a cluster of Taurian ideas. The association with the Great Bear of elks, bears, hunters of these animals or their stretched skins is universal in the Northern Hemisphere and requires no comment.

Such duplication of imagery, based on complex abstract ideas, certainly proves diffusion, but only at a very remote time. To find more recent, though still ancient, relationships of cultural significance, one must look for systems and modes of organization — that is, for "zodiacs." The lunar zodiac is the only one which fits the evidence. While this may appear obscure and exotic to us, it is in fact the simplest system, much simpler than one based on observing with accuracy the constellation the sun rises in at the solstices.<sup>42</sup>

That a certain component of Northwest Coast intellectual culture is East Asian in origin is indicated by the Raven story and its symbolism, which is patently derived from the Raven stories and symbolisms which still survive among the paleoAsiatics and are found as a substratum in civilized China, Japan and Korea. The resemblance is so close as to indicate that this component came to the Northwest Coast fairly "recently," as archeological time is computed. However, an almost striking resemblance is found between the symbolism of Northwest Coast myth and that of the Chinese lunar zodiac and its congeners. This is not to say that the Chinese lunar zodiac was "brought" to the Northwest Coast; long before such a transfer could have occurred, the Chinese astronomical system had become too complex for a nonliterate culture to handle. For example, stars which marked the times of the night and the year were observed as they passed the meridian of the observer, their transit being checked with water-clocks.<sup>43</sup> Thus the lunar stations, which had once been observed as they appeared on the horizon, were now observed as they passed overhead. Since these two events would of course occur at different times of the year (if observations were made at the same time of the night), the symbolism of these stations, which had once followed a comprehensible seasonal pattern, became complicated. In the system as it has come down to us, one constellation, for example, may combine the attributes of two seasons. (Those who have read Schlegel and de Saus-

<sup>42</sup> de Saussure, pp. 541-42.

<sup>43</sup> *Ibid.*, p. 16.

sure will realize how much I am simplifying: I beg their indulgence.) But much of the original seasonal symbolism remained, particularly where bright stars and easily recognized constellations were concerned.

As a transfer of developed Chinese, Korean or Japanese astronomy to the Northwest Coast seems to be out of the question, it is assumed that the resemblance to be explored in the remainder of this paper relate either to some prehistoric ancestor of the Chinese sphere or, more likely, to the sphere of some "barbarian" people on the northern or maritime borders of Chinese civilization which has not survived into our own day.

In the article referred to above, *Wilderness No Wilderness*, I discussed Walter McGregor's story, *Canoe People Who Wear Headdresses*.<sup>44</sup> At one point in this story, the ten canoe-beings are placed in the following curious numerical relationship: 1:6; 7:2; 4:9; 10:5; 8:3. There was no space in that article to point out that this strange numerical pattern is found, precisely duplicated, in the opposing symbols of the diagram known as Ho T'u, the Yellow River Map, traditionally said to date from the time of Fu Hsi, and thus from the very beginning of Chinese civilization.<sup>45</sup> A traditional commentary on the *I Ching* describes how the diagram was used for calendrical calculation.<sup>46</sup> The diagram is specifically related to the stars in the following passage: "Heaven hangs out its (brilliant) figures, from which are seen good fortune and bad, and the sages made their emblematic interpretations accordingly. The Ho gave forth the scheme or map, and the Lo gave forth the writings, of (both of) which the sages took advantage."<sup>47</sup> In the Lo Shu diagram the trigrams relating to these numbers are set side by side around a circle representing the four seasons and the four mid-seasons, as well as the eight directions (cardinal and mid-points), the 5:10 opposition representing the centre.

The similarity at first appears so striking that one automatically assumes transmission of the Chinese diagram to America. This is unlikely. It should be remembered that such oppositions necessarily arise when ten equal divisions of the circumference of a circle are numbered from one to ten and opposing numbers are joined across the centre. The significant fact is, therefore, that both diagrams indicate a ten-part division of the

<sup>44</sup> Swanton, *Haida Texts and Myths*, pp. 36-43.

<sup>45</sup> Richard Wilhelm, trans., *I Ching* (London: Routledge and Kegan Paul, 1951), vol. 1, p. 332, and James Legge, trans., *I Ching* (New York: University Books, 1964), pp. 15 and 366 et seq.

<sup>46</sup> Wilhelm, vol. 1, pp. 334-35.

<sup>47</sup> Legge, p. 14.

year-circle. We come up against de Saussure's ancient denary series and the related series of five, six, eight and nine terms.<sup>48</sup>

The denary and related series are found on the northern part of the Northwest Coast in a series of stories in which various heroes travel through a landscape putting society and nature to rights. In *Canoe People Who Wear Headdresses, He Who Had Panther Woman For His Mother, Supernatural Being Who Went Naked* and *Laguadjina* there are ten heroes; in *How a Red Feather Pulled Up Some People in the Town of Gunwa* there are eight. In other stories there is continual and obsessive play with the number ten, as in *A Slender One Who Was Given Away*, or nine, *The Story About Him Who Destroyed His Nine Nephews* and *He Who Was Abandoned by His Uncles*.<sup>49</sup> In these stories the same symbols occur again and again in various contexts, and one does not need the aid of a computer to discover that they relate to mensuration of some kind. In fact, the characters are heraldic in nature, their behaviour being inexplicable in psychological terms; their actions are balanced against each other in a geometrical fashion; and the plots are totally diagrammatic. To say that the Haida "simply thought that way" would be to show a certain naiveté. Other Haida stories show that they did not, when they wished to tell a story or explain a phenomenon in which mensuration was not involved, think that way at all, but in a way which any person used to myth would find perfectly comprehensible.

De Saussure explains how the series of five, six, eight, nine and ten terms were related. Briefly, they were based on the four quarters plus the centre, which also meant the four seasons and a mid-year at the centre, or on the same series doubled by the splitting of each season into two halves, with the symbol for the centre either single (making nine stations) or double (making ten).<sup>50</sup> He further shows how the denary system — that is, the system of eight half-seasons plus a halved mid-year — was combined with the system of twelve months. In this instance, the two-part centre of the year occurs between summer and autumn, before the fall equinox.

He makes this interesting comment, in discussing the animal figures associated by the Chinese with the months: "Since there are four seasons and twelve months in the year, one would expect to find the ritual calendar divided into four parts and twelve sections marked off by the signs of

<sup>48</sup> de Saussure, p. 205 et seq.

<sup>49</sup> Swanton, *Haida Texts and Myths*, *passim*.

<sup>50</sup> de Saussure, p. 211.

the duodenary series. This is not so, however. The *Yue Ling* bears *five* seasons marked by the signs of the denary series."<sup>51</sup>

It should therefore be emphasized that the denary series, when it was fitted into the twelve-month or duodenary series, was not, properly speaking, a ten-month year, but a four- or eight-part year with a neutral or "rest" period symbolizing the centre. Though de Saussure does not draw this conclusion, it does seem justifiable to note a parallel between the denary series and the ten-month year (ten lunar months plus two vague months in which intercalation was made) which is found among many "primitive" peoples of the Far East and Oceania, a phenomenon too well known to require a footnote. Such a year would resemble the Turkish or Tartar year de Saussure quotes from Al Biruni,<sup>52</sup> which consisted of Great Month, Little Month, and ten months ordinally numbered (first, second, third, etc.). In spite of de Saussure's uncharacteristically feeble explanation of the two unnumbered months, this seems an example of the kind of thing we are looking for, a "primitive" ten-month year among a "barbarian" East Asiatic people who had absorbed many Chinese astronomical and calendrical ideas. When one considers the dominant position of Chinese civilization in the Far East, it becomes clear that there must have been many such.

The ten-month year has not been adequately studied, to my knowledge. But it is known that one version of it depended upon the heliacal rising of certain prominent stars, rather than the phases of the moon. In ancient Babylon the ecliptic was divided into ten divisions marked by Hamal, Alcyone, Aldebaran, Pollux, Regulus, Spica, Antares, Algedi, Deneb Algedi and Scheat.<sup>53</sup> Richer<sup>54</sup> has constructed a ten-figure zodiac (Virgo and Libra are combined in one sign as are Aries and Taurus) from the adventures of Hercules. The Maori system was controlled by the rising of prominent stars, as Best's informants and sources (though not Best himself) make clear.<sup>55</sup> The Polynesian stellar calendar is explained in detail in Makemson's splendid study, *The Morning Star Rises*, to which the reader is referred: it should be added that Polynesian constellation-symbolism differs from that of the Northwest Coast and no direct relationship can be assumed.

<sup>51</sup> *Ibid.*, p. 330.

<sup>52</sup> *Ibid.*, p. 182.

<sup>53</sup> Allen, p. 80.

<sup>54</sup> Jean Richer, *Geographie Sacrée du Monde Grec* (Paris: Hachette, 1967) p. 111 et seq.

<sup>55</sup> Best, *passim*.

In *Canoe Beings*, therefore, we have a series of months determined by the risings of certain stars and perhaps, by extension, by the position of the full moon relative to them. However, it is clear that in this story, observations are made in the morning and are concerned with the sun. The "shaman" in the story, that is, the star-observer, has a fire going, so he must have been there during the night. He observes the canoe-beings coming ashore, and the moment he sees them, they become ashamed and go back: this can only refer to their having been dimmed by the rising of some bright celestial body. In this case, of course, it is the sun.

We will consider the figures of this story in connection with the prominent stars or constellations which arise nearest the sun at ten equal divisions of the year from the spring equinox. The specific stars referred to are the Babylonian ecliptic stars (see above), because these best suit this condition. But correlations must be very approximate for the following reasons: that we do not know the time at which morning observations were made, that at these latitudes there is more than an hour between nautical twilight and sunrise and in midsummer nautical twilight might be said to last all night through, that we do not know whether faint stars were used as markers, that we do not know whether non-ecliptic stars were used and, if they were, how far off the ecliptic they were. The purpose is to make a start at elucidating the astronomical function of certain stories: a more precise analysis would have to be undertaken by surveyors and astronomers.

*March 21st.* The canoe-being here is Supernatural Woman Who Does the Bailing. It is assumed here that the bailing woman is an equinox figure, since she is clearly related to the woman accused of having an affair with russet-backed thrush in Haida myth, "Russet-Backed Thrush Month" being March in the Masset calendar. She is thus related to an intercalary period and is wittily represented as bailing out the canoe of the year. She has been falsely accused of adultery and her arms are burned: she is weeping when the canoe-beings discover her. Thus she has the three major qualities of the chief Haida goddess: she is continually weeping; she is either an adulteress or is falsely accused of adultery (in these stories copulation or battle usually refer to the relationship of a constellation with its opposite across the pole and on the other side of the year); and her arms are burned, this goddess usually being associated with fire. I would also relate her to the figure in *Laguadjina*,<sup>56</sup> who is used as bait to attract Supernatural Eel out of his sea-cave.

<sup>56</sup> Swanton, *Haida Texts and Myths*, p. 252 et seq.

The relevant constellation would seem to be the near-ecliptic Great Square of Pegasus, with Andromeda close by. This contains two Chinese lunar stations: Chi, the Pyre, and Pi, the Wall. One of the Chinese names for the Great Square is made up of characters meaning "a beautiful girl" and "to calumniate."<sup>57</sup> According to Schlegel, there is an alternate meaning for one of the characters, "the mouth of a fish." If I am correct in relating this figure to the girl used as bait, then both ideas would relate to the Northwest Coast figure. The name for lunar station Chi certainly contains the idea of burning, a sacrificial burning or holocaust in this case.<sup>58</sup> Moran, who does not seem to understand the principle of the Chinese lunar zodiac at all, is apparently qualified to discuss Chinese written characters and he finds in the meaning of the two characters, "Chi" and "Pi," almost all the ideas we are concerned with above: a dipper, princes, dragon and to copulate. He notes that the character for "dipper" may also mean "hand": this combined with the idea of fire would of course produce the image of a burned hand.<sup>59</sup>

In this connection, it is significant that among the Arabs the Great Square of Pegasus is known as "The Water-Bucket" (cf. "Bailing-Woman"). A relationship between the Andromeda legend and the theme from *Laguadjina* is also apparent. It is almost as if the Northwest Coast calendar-figures relate to some ancestor or relative of the Chinese lunar zodiac with Near Eastern affinities of a very ancient kind.

*March 21st to April 24th.* The canoe-being here is Chief Supernatural Being Half of Whose Words are Raven. This must at one time have been the "month" preceding or containing the spring equinox, since it ends the series of ten. But the star-figure of this month now rises some weeks or a month later, probably because of the inability of Northwest Coast astronomy to cope with the precession of the equinoxes, which occurs at the approximate rate of one degree every seventy-five years. The Great Square of Pegasus is still dominant, since the ecliptic constellation of Pisces contains few bright stars. The name of this figure could be explained if it were assumed that the clan system extended to the heavens, and that this month originally fell on the boundary between an eagle sector and a raven sector. Such a division seems to be implied in the statements of

<sup>57</sup> Gustave Schlegel, *Uranographie Chinoise* (Taipei: Ch-eng Wen Publishing, 1967), p. 304.

<sup>58</sup> *Ibid.*, p. 277.

<sup>59</sup> Hugh A. Moran, *The Alphabet and The Ancient Calendar* (Palo Alto; Pacific Books, 1953), pp. 49-51.



Fine Weather Woman that "part of the canoe shall be eagle, and part of it shall be raven," and that "the eldest brother in the middle will own the canoe. His name shall be Supernatural Being Half of Whose Words are Raven."

*April 25th to May 19th.* Chief Supernatural Being Who Keeps the Bow Off would be Hamal in Aries or some nearby star. The name would seem to indicate that the calendar was originally formulated when the year began in Aries. The story indicates that this figure has a bunch of feathers in his hair and that he is poling the canoe forward with a red pole. This seems to combine ideas in two adjacent Chinese asterisms, Kouï and Leou, which cover the sky from Pisces to Aries, the latter asterism containing Hamal. Part of the character, "Leou," represents a woman carrying a sprouting rice plate on her head, a figure which has here become a bunch of feathers. There is a closer resemblance, though, to the figure of Amon, the Egyptian King of the Gods, who Aries represented, and who was often shown as crowned with feathers of red and blue or red and green, who carried a long pole-like sceptre and sometimes a war-knife, and was "the lord of the Sektet Boat and of the Atet Boat, which travel over the sky . . . in peace."<sup>60</sup>

The image of a canoe-pole does not appear in the Chinese sphere, but the image of a jade sceptre is associated with Kouï<sup>61</sup> and the image of bamboo with Leou.<sup>62</sup> The animal associated with Hamal in China is the dog. The dog is not specifically associated with this canoe-being, but it is a symbol of the months of the year in the story *Laguadjina* and the symbol of a year consisting of nine forty-day months in a Tsimshian calendrical story.<sup>63</sup> Thus it is associated with the beginning of the year, on the principle that the first of a series represents the entire series.

Since Aries began the year at the time when most of our still-current zodiacal images reached their definitive forms, it is continually associated in the Near East with ideas of beginning or predominance. Thus we find Aries given such titles as *Princeps signorum coelestium* or Prince.<sup>64</sup> If we may interpret the fact that Keeping the Bow Off reddens the pole with his hand as indicating that his hand is bloody this would afford a connection

<sup>60</sup> Allen, p. 77, and Budge, *The Gods of the Egyptians*, vol. 2, Dover, pp. 1-21.

<sup>61</sup> Moran, p. 52.

<sup>62</sup> Schlegel, p. 332.

<sup>63</sup> Franz Boas, *Tsimshian Mythology*, Bureau of American Ethnology, Report No. 33, (Washington, 1909-10), p. 115.

<sup>64</sup> Allen, p. 75 et seq.

with the idea of animal sacrifice attached to this sign from China<sup>65</sup> to the Near East.<sup>66</sup>

*May 20th to June 12th, or perhaps to the summer solstice, June 21st.* The wounded canoe-being, Chief Hawk Hole (the blue hole in his breast is a wound made by a wren) would be the Pleiades. The Chinese *sieu* or lunar station containing the Pleiades, Mao, is called "The House of the Resting Sun," which seems rather to relate to the following canoe figure. More relevant is a group of associations attached to a tiny star (A766 in Taurus), which the Chinese called Youe, the Moon, and which is found between the Pleiades and the Hyades. This star is placed opposite (across the pole from) another tiny star in Libra which the Chinese call Ji, the Sun.

Now as the wren represents the winter, as I recalled in the *Canadian Literature* article, and as combat signifies a trans-polar relationship (the very idea of stellar "opposition" also contains this metaphor), this canoe-being embodies the same idea of the combat of winter and summer which we find in the pair Youe-Ji. The fact that in the Chinese sphere the star representing the summer is placed in the winter part of the sky simply reflects Chinese modes of observation: it does not affect the seasonal symbolism. Schlegel explains in detail the opposition of the principles of heat and cold symbolized in these stars.<sup>67</sup> In observational terms, the necessity for thinking of pairs opposing each other across the pole is to be explained in terms of the lunar zodiac.

Why is the hole a blue one? This cannot be answered specifically because the symbolism of colours on the Northwest Coast has not been adequately studied and because the reference is not amplified in the stories of Walter McGregor which alone, with the less well-ordered stories of John Sky,<sup>68</sup> have that diagrammatic quality which enables reconstruction of the sphere. A clue may be found in a more confused Haida story reported by James Deans,<sup>69</sup> which involves a family of ten (nine sons and one daughter) and obviously belongs to the denary calendar series. Here there appear two mysterious characters, "the big nose of the moon" and "the blue of the moon," who are in opposition. The nine sons are imprisoned by "the big nose of the moon" and appeal to "the blue of the moon," who offers them their freedom on the strange condition that one

<sup>65</sup> Schlegel, p. 575.

<sup>66</sup> Allen, p. 75 et seq.

<sup>67</sup> Schlegel, p. 356 et seq.; p. 123 et seq.

<sup>68</sup> Swanton, *Haida Texts and Myths*, *passim*.

<sup>69</sup> Marius Barbeau, *Totem Poles Vol. 1* (Ottawa: King's Printer, 1951), p. 353.

of the nine take a spear and pierce one of the others through the body. In the end, however, they all kill each other and are resuscitated by the sister, who, a recurrent feature in these stories, has magically potent saliva (probably the Milky Way), which has the power of bringing her brothers back to life. In the better-ordered stories, these resuscitations all occur at the solstices and equinoxes: the reference is to the re-ordering of the months by intercalation or other forms of interpolation.

In China, the bird associated with Mao, the Pleiades, is the rooster, which is also associated with the spring-autumn axis.<sup>70</sup> The hawk of the Northwest Coast sphere would thus at first seem to be without its congener in the Chinese sphere. Yet this impression is removed when we look to the symbolism of the phoenix, a composite and fantastic bird which represented the south quarter of the heavens in the Chinese sphere. William Willetts, the art historian, quotes an argument by a Chinese scholar that the prototype of this phoenix-symbol was in fact an eagle.<sup>71</sup>

Thus it may be seen that all the attributes of this figure are found reflected in the Chinese sphere, though in a manner which reflects the dismemberment and reconstruction of that sphere when Chinese astronomy passed from observations made on the horizon to ones based on meridian transit. Attempts to cope with or failure to cope with the effects of precession would have caused further distortion of relationships.

A resemblance is found far to the west of China, in the Near East (Cicilia), where the Pleiades appear as a dove with a purple-red breast.<sup>72</sup> Alcyone, the leader of the Pleiades, is a kingfisher in the Greek sphere, and the kingfisher is of course a blue bird. It would appear from McGregor's story, *He Who Hunted Birds in His Father's Village*,<sup>73</sup> which I interpret as listing constellations along the Milky Way, that the Pleiades could also be called "Kingfisher." Unfortunately, there is no space here to examine this story in detail.

*June 13th or the summer solstice to July 14th.* The relevant stars here are the Hyades and Aldebaran, and the canoe figure is Chief Supernatural Being on Whom the Daylight Rests. One is reminded of the Chinese term quoted above for the Pleiades, "The House of the Resting Sun." The name certainly indicates that this figure should be placed at the summer solstice, but as this figure is given no heraldic attributes comparison with the stellar symbolism of other spheres is impossible. Similarity

<sup>70</sup> Schlegel, p. 577, and de Saussure, p. 315 et seq.

<sup>71</sup> William Willetts, *Chinese Art* (Penguin Books, 1958), p. 281.

<sup>72</sup> Allen, p. 396.

<sup>73</sup> Swanton, *Haida Texts and Myths*, p. 264 et seq.

with the names of constellations representing either of the solstices in other spheres would mean little, since the name is patently functional and could occur to anybody naming a solstitial constellation.

*July 15th to August 22nd.* Chief Supernatural Being on the Water on Whom is Sunshine is near Pollux, or perhaps Procyon. This image is also too vague for comparison. In his fine paper, *Contributions of Marius Barbeau to West Coast Ethnology*, Wilson Duff refers to the name, Ni-gamks, which means "on-sunshine."<sup>74</sup> This is the name of the princess in the Kitwancool Frog Clan story who marries the Frog Prince.<sup>75</sup> Now Gemini is roughly across the pole from Scorpio, which I have reason to believe represents the "Frog-goddess" of the Tsimshian. But since there is no proof of a precise historical connection between the concepts in the Haida phrase translated "on Whom is Sunshine" and the Gitksan word "Ni'gamks," and since there is no time here to demonstrate the connection of the Frog-goddess with Scorpio, I merely mention this as a possible area of future explanation.

*August 23rd to October 18th.* The star is Regulus in Leo, and the canoe-being is Chief Supernatural Puffin Putting His Head Out of the Water. We are told more about this figure than any of the others, presumably because he represents the fall equinox, a key time of observation. He is mischievous; he makes fun of mussels by spitting them upwards (playing with food or mocking food-animals is a potent symbol in this area of near-blasphemous frivolity); he possesses a bow; he carves from bark a canoe-bailer with the figure of a bird on its handle. The same figure appears in *Laguadjina*, where he also seems to be in the neighbourhood of the constellation, Leo. As I pointed out in the *Canadian Literature* article, the bark bailer must be the Pleiades, which are prominent in the night sky during this month.

The reader may be getting a bit restive at this point, since I have identified the Pleiades as a hawk with a blue hole in its breast, a sculpin, a canoe-bailer and a kingfisher. The vague co-ordinates supplied by myth analysis may have blurred up to four constellations in this part of the sky, which is full of bright stars. However, there is no difficulty in a highly significant constellation's bearing four names. One has only to consult Allen's *Star Names* to realize that it is rather the rule than the exception that prominent constellations will bear more than one name, even in one

<sup>74</sup> Wilson Duff, *Contributions etc., Anthropologica*, vol. 6, no. 1, 1964, p. 67.

<sup>75</sup> ———, ed., *Histories, Territories and Laws of the Kitwancool* (Victoria: B.C. Provincial Museum, 1959), p. 18.

culture. This is particularly true in cultures without elaborate mathematical notation, where verbal formulas have to describe not only the physical appearance of stars but their functions in various systems of co-ordinates.

The Chinese lunar stations in the general area of Leo are strongly associated with ideas of gluttony and drinking, as well as with those ideas of equivocal and ambiguous forces commonly expressed in Amerindian mythology, as elsewhere, by the image of the trickster. Autumn itself is frequently thought of as a "deceptive" season, its bright colours and lingering warmth being seen as disguising the implacable coming on of winter: such symbolism is found all over the Northern Hemisphere.

The asterism Tsieou K'i, a paranatellon of lunar station Lieou, comprises stars in Leo and Cancer, and signifies the branch which Chinese tavern-keepers hung over their door to signify that there was wine for sale.<sup>76</sup> The lunar station Sing, in Hydra southeast of Lieou, represents a battle between the principles of light and darkness or heat and cold, with cold tending to predominate.<sup>77</sup> Sing is also part of the southern Red Bird quarter, giving, with associated constellations,<sup>78</sup> the image of a brightly coloured bird's head. The nature of the Haida sphere demanded a sea-bird at this point and the most colourful available was the puffin, whose head, including the eyes (I am referring to the tufted puffin) contains black, white, yellow, orange, green, red and "bluish."<sup>79</sup> As Schlegel points out,<sup>80</sup> the rainbow was considered the result of "the confusion, the mixture of the principles of heat and cold": the constellation Hien-Youen, which contains Regulus and most of Leo, rules over the rainbow. The symbol of the bow and arrow is seen in the bow-shaped constellation Tchang-sieu, which contains stars in the knot of Hydra:<sup>81</sup> Moran also relates the name "Tchang" to the character for "bow."<sup>82</sup>

The idea of mischief is even more clearly indicated in Near Eastern and Hindu attributes relating to Leo. Leo contains the Hindu lunar station

<sup>76</sup> Schlegel, p. 447.

<sup>77</sup> *Ibid.*, p. 449. In the mature Chinese sphere, this represented the summer solstice.

<sup>78</sup> *Ibid.*, p. 404 et seq. The head of the red bird, with its eyes, beak, neck and throat, was represented by stars from Gemini to the knot of Hydra (Tsing to Tchang).

<sup>79</sup> C. J. Guiget, *The Birds of British Columbia*, Handbook 29 (Victoria: Queen's Printer, 1971), pp. 97-98.

<sup>80</sup> Schlegel, p. 455.

<sup>81</sup> *Ibid.*, p. 463.

<sup>82</sup> Moran, p. 70.

*Phalguni* ("The Bad One"),<sup>83</sup> and *Denebola*, *beta Leo*, was called, in the Arabian system of lunar stations, "The Changer."<sup>84</sup> The symbol of the carpenter is found in the nearby constellation of Cancer, whose Babylonian name was "The Carpenter."<sup>85</sup>

The same method — that of comparison with constellation-attributes listed in Schlegel and Allen, with due allowance made for the blurring of attributes caused by varying approaches to the problem of precession — has been employed with the remaining four canoe-figures. Equally significant relationships are apparent; but I will not examine them in detail for reasons of space.

*October 19th to December 5th.* This is concerned with the area around *Spica* in *Virgo* and the canoe-being is Chief Hawk With One Feather Sticking Out of the Water. *Spica* in China is the Horn of the Dragon;<sup>86</sup> since the Haida sphere outlined by McGregor uses seabird imagery, this projection becomes a feather sticking out of the water.

*December 6th to January 18th.* This is concerned with the area around *Antares* in *Scorpio* and the canoe-being is Chief Wearing Clouds Around His Neck. Compare with the Chinese *Moung-sing*, the Cloudy Star, in *Scorpio*.<sup>87</sup>

*January 19th to February 20th.* This is concerned with part of *Capricorn*, perhaps in the neighbourhood of *Algedi*, and the canoe-being is Chief Supernatural Being with the Big Eyes. The Chinese analogy seems to be with *Koui Sieu*, *opposite* *Capricorn* in *Cancer*, "the eye of sky presiding over the judgment of the wicked."<sup>88</sup>

*February 21st to March 21st.* This is probably also concerned with *Capricorn*, perhaps in the neighbourhood of *Deneb Algedi*. However, *Scheat* in *Aquarius* may be involved in this figure, which I relate to Chief Supernatural Being Lying On His Back in the Canoe. Of *Scheat*, Allen remarks, "On the *Euphrates* it seems to have been associated with *Hasisadra* or *Xasisadra*, the tenth antediluvian king and hero of the Deluge."<sup>89</sup> *Hasisadra* is the same figure as *Utnapishtim*, the Noah figure of the *Gilgamesh* legend, and *Tablet XI* of that epic poem has *Gilgamesh*

<sup>83</sup> Allen, p. 254.

<sup>84</sup> *Ibid.*, p. 258.

<sup>85</sup> de Santillana and von Dechend, p. 314.

<sup>86</sup> Schlegel, p. 87. The dragon's horn pierces the earth, not the surface of the sea, in the Chinese system.

<sup>87</sup> *Ibid.*, p. 160.

<sup>88</sup> *Ibid.*, p. 436.

<sup>89</sup> Allen, p. 53.

addressing him as follows, "My heart had regarded thee as resolved to do battle, yet thou liest indolent upon thy back!"<sup>90</sup>

One's final impression is that of a system of great local age and long local development, built on an ancient symbolic base. It contains within it, much blurred by time, elements of the Old World lunar zodiac, probably of some ancestor or congener of that Chinese form as it is known to us. Some startling Near Eastern resemblances stand out, apparently at random. In my experience, a similar combination of blurred and sharply remembered elements of Old World origin is found in the scalar systems of Northwest Coast music. The visual arts lie outside my area of competence, but it is my understanding that some experts on the visual arts of the area report the same phenomenon in traditional design.

<sup>90</sup> Isaac Mendelsohn, *Religions of the Ancient Near East* (New York: The Liberal Arts Press, 1955), p. 100.