combine in a consistent way the different periods of the movement of the planets and other heavenly bodies.
p. 329 For ↳ instance, as pointed out by Crump, observing the phases of the moon is simple but it is also 'misleading, for any calendar based on it inevitably gets out of step with the seasons' (p. 84). The duration from one full moon to the next appears to be about twenty-nine and a half days, and the solar year is not a multiple of it. Thus the months of the Gregorian calendar are not equal in length, and most of them except February are longer than a true lunar month. Ascher noticed that unlike these various non-congruent cycles, the week is different in kind, because it 'has no intrinsic relationship to any physical cycle; it is, instead, a completely arbitrary grouping of some number of days' (Ascher 2002: 40).

Following these observations, it is not surprising that in many cultures around the world one can find different ways of measuring the periods of time. In Africa, for instance, the Yoruba, Igbo, and Bini of southern Nigeria have a four-day week (Zaslavsky 1973: 64). Among the native people of America, '[t]he numeral type of calendar, in which the series of months or particular months were referred to by means of figures and not descriptive terms, used to be found along a continuous area of the Pacific coast, from the Aleutian Islands and adjacent lands to northern California; inland, the area included part of the River Columbia basin' (Lévi-Strauss 1990[1968]: 338). Some societies between southern Oregon and northern California have a calendar consisting of ten lunar months named after the fingers. In this particular part of America, the total year is the result of the addition of five winter months and five summer months (p. 337).

The fact that time measurement requires the combination of cycles with different periods explains why numerical representations of time generally rely on a multiple base counting system. In the western system of time measurement, 60 is the base for grouping seconds and minutes around the clock, but hours are grouped by 24 according to the duration of the day, and days are grouped by 7 according to the duration of the week. These different bases are combined so that we can perceive durations in an easier way. Let us take an example. Can you perceive the exact duration of 98,745 seconds? You will probably find it a bit difficult, but it should become easier if you represent it as the duration of 'one day three hours twenty-five minutes and forty-five seconds'.

The measurement of weight and distance in societies where there is a need for it makes use of various kinds of auxiliary instruments, such as the ruler for measuring length or the balance for measuring weight. As Crump pointed out, these tools are 'conceptual means by which two different entities can be compared in numerical terms'. For the class to which the measure is applicable, 'this implies that some abstract property is recognized as being common to all members of the class' (Crump 1990: 73). Furthermore, different abstract properties can be linked through the method used for measuring particular aspects of reality. For instance, the area under cultivation 'can be related to time, in terms of the labour input, just as the English acre was originally defined as the area which could be ploughed in a single day' (p. 74).

p. 330 Let us take an example illustrating a simple but ingenious tool for dividing a given length. In the Solomon Islands, there exist different types of musical wind instruments made of several bamboo tubes called 'panpipes'. Zemp has described the making of this kind of flute:

> When cutting new panpipes, the instrument-maker measures octaves not only on two different-sized instruments, but also on pipes of the same instrument. He then either doubles the length of a pipe, or halves it, thus obtaining, respectively, the lower and higher octaves. The instrument-maker then blows simultaneously into the two pipes, to check the accuracy of the tuning by ear. (Zemp 1979: 13)

It is not difficult to double the length of a pipe because you just have to place it in two adjacent positions, but how to 'halve' it? In a film devoted to the making of panpipes, Zemp (1994) reveals the process: the instrument-maker takes a string to measure the length of the pipe, then he joins the two ends of this string and pulls the resulting loop. The length that he obtains is exactly half of the previous one.