Malagasy divination, which addresses a more complex traditional knowledge involving elaborated mathematical ideas. First of all, we show how gestures can be used by Indigenous experts as a means of explanation. This case study describes how a diviner explains the distinction between an even and an odd number of seeds. Secondly, we present an experimental task of mental calculation which shows that having a videorecording aids analysis because the transcription of an expert's comments while doing this task reveals afterwards the successive steps of his calculation. In the third example from Madagascar the diviner moves the seeds with his hand in order to execute a complex transformation of a tableau, illustrating a computational rather than explanatory use of gesture. In all these Malagasy examples, I will discuss the vocabulary used by diviners to show that language only makes up a small proportion of the knowledge underlying this complex traditional practice.

14.2 Completeness and Consistency of Data Collection During Fieldwork

Some activities in traditional societies seem to rely on a complex set of formal procedures and precise rules that are not easy to describe when doing fieldwork. The development of the field of ethnomathematics has
p. 321 been motivated by the fact that sometimes these sets of rules or procedures appear to have properties of ↳ consistency and abstraction which make them close to what we call mathematical ideas, and actually they can be formalized in a mathematical framework. It is crucial to point out that the consistency of such sets of rules cannot be analysed properly if the description of the data lacks some particular element. Ethnologists have to work through every detail of the presentation of the procedures they are studying.

This question goes far beyond the attention to detail that characterizes the work of careful fieldworkers. There is a specific difficulty in the case of ethnomathematics due to the logical dependency linking the completeness of ethnographic data to the consistency of the mathematical knowledge underlying them. Let us take an example to illustrate this point. Traditions of sand drawing in different parts of the world have revealed an interest of native people in a mathematical concept named ‘Eulerian path’. It means tracing a figure continuously and covering each line once and only once without lifting the finger from the surface. In order to check that a given path is Eulerian, one has to check that each line is covered ‘once and only once’ and thus to know exactly how each of them has been traced. As soon as this information is missing for one line, the data are incomplete and the whole mathematical structure becomes unreachable. Fortunately in the case of sand drawing, as we will recall below, we have extant records of these wonderful examples of cultural artefacts. It is not always the case, and one possible reason might be that many anthropologists in the past were limited in their understanding of mathematics. Today, fieldworkers having to record this kind of activity should be advised that the consistency of the described facts must be trusted even when the procedures seem complicated, not to say obscure, because these procedures are probably not at all inconsistent. This applies very well, for instance, to the complex tableaux of seeds used in Malagasy divination that we will study later in this chapter. They are so elaborated that Vérin and Rajaonarimanana (1991: 62) described ethnologists recording the workings of divination as being ‘anxious’. As we will see, there exists behind the complexity of divination procedures a strongly consistent mode of thinking.

In his fieldworker's handbook for ethnologists, Mauss noted in 1947:

> The most widespread game, reported worldwide, is the string game or cat's cradle. It is one of the most difficult games to describe. The fieldworker should learn how to make every figure so as to be able to reproduce the movements afterwards. It is preferable to use words and sketches to describe the string game since film blurs the figures. To make the sketch indicate the position of the string at each moment and also the direction in which it will be moved so as to pass from one position to the next. The written description will call on a precise vocabulary. (Mauss 2007[1947]: 72)