

## CHAPTER 4

### THINKING ABOUT MATHEMATICAL LEARNING WITH CABO VERDE *ARDINAS*

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The research reported in this chapter takes part of the results of the project *Cultura, Matemática e Cognição – Pensar a Aprendizagem em Portugal e Cabo Verde*<sup>1</sup>, especially in what concerns understanding the idea of ‘learning as an integral part of generative social practice in the lived-in world’ (Lave & Wenger, 1991, p.35) together with the perspective that addresses ‘learning as increasing participation in communities of practice’ (p. 49). The analysis of these ideas led us to try to understand the meaning of participation in a social practice (and therefore in a community of practice). Our goal was to look into the ways (mathematics) learning relates to forms of participation in social practice in an environment where mathematics is present but that escapes the characteristics of the school environment. Because we believe that culture is an unavoidable fact that shapes our way of seeing and analysing things, we decided to look at a culturally distinct practice and that constituted a really strange domain for us: the practice of the *ardinas*<sup>2</sup> at Cabo Verde islands in Africa.

In order to address the research problem we looked for analytical tools that we believe are coherent with the theoretical perspective drawing from Lave and Wenger (1991) and our need to understand the idea of social practice: (i) the explicit presence of rules in the *ardinas* discourse led us to Wittgenstein (1992/1953) and Goffman (1991/1974); (ii) the need to clarify the relationship between the ways that *ardinas* use mathematical objects within the practice of selling newspapers and the school mathematics they are supposed to know led us to address the connections between competence and ‘taxonomic features of knowledge’ (Julien, 1997) and to the idea of ‘thinking as internal conversation’ (Restivo, 1998).

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<sup>2</sup> *Ardina* is the Portuguese name given to those people who sell newspapers in the street. This was the way newspapers were sold for example in Lisbon until the eighties.

In this chapter we first set the scene presenting a full description of the practice observed in Cabo Verde; the subsequent analysis takes advantage of short episodes depicted from the observations made; finally we conclude with a summary of our main findings.

## 1. A GLANCE ON THE *ARDINAS* PRACTICE

The practice of the *ardinas* has naturally a history that relates to the evolution of the country and to the society where it develops. The data collection that supports this research was carried out in two time periods: the first phase was from March to June 1998 and the second phase during the month of March 1999. This way it was possible to enlighten the historical transformation of the practice, mainly through focusing our attention on the transitions experienced by the participants. Focusing our analysis on those experiences helped us to understand better the forms of participation of the *ardinas* in that practice, its role in the learning that came out of that participation as well as in their use of mathematics. This research process brought also to the front some other issues that pushed us to reflect upon the research process itself within the field of mathematics education research.

Therefore, it seems important to give a picture of the life that we could share with the *ardinas* during the time of data collection, trying to make explicit the relationships among people, between people and activity and the lived-in world. We begin this part with a brief and global presentation of the *ardinas* involved in the study. In a second step we will present a description of the practice observed taking into account the time sequence of its development.

### 1.1. *Who are the Ardinas?*

The *ardinas* are young boys aged between 12 and 17 years that sell newspapers in the streets of Praia (the capital of the Republic of Cabo Verde). In 1998 there was just one national newspaper (called *O Tempo*) but from January 1999 there appeared a new one (called *O Espaço*). Both of these newspapers come out once a week and are written in Portuguese<sup>3</sup>. The group of *ardinas* who used to sell these two newspapers was variable (19 in 1998 and 32 in 1999). Only 9 *ardinas* from the 1998 group were carrying on this practice in 1999, and there was no formal link to the institutions that owned the newspapers.

One of the newspapers (*O Tempo*) was trying to implement a selling system based on the shops such as coffee shops or stationary shops but with very low success. In fact the population did not adapt to this way of buying newspapers, so selling news-

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<sup>3</sup> Portuguese is the official language in Cabo Verde. Therefore, it is for example used in the school and it is the language of the newspapers. However, Creole is the spoken language used in everyday activities. Far less people are really fluent in Portuguese.

papers in the city of Praia was totally dependent upon the availability and interest of the young boys to volunteer for selling. Some of these boys also were in charge, both in the past and in the present, of selling Portuguese newspapers, and especially a particular one on sports very popular in Cabo Verde. This one was on sale on the street but on a different day. There were also two other *ardinas* who did not sell national newspapers because they were dedicated to selling two Portuguese weekly newspapers of general interest whose contents are more in the field of politics. These two young boys had already a small number (but a rather constant number) of clients and the places for selling were clearly different from the others. In most cases these *ardinas* were taking the newspapers to the offices and hotels in the city. The relationships between these two *ardinas* and the others were not very strong and frequently they did not even say hello when they met in the street.

There was no external sign (such as a special t-shirt, a bag or a cap) that could be one to identify the *ardina* except the fact that he was carrying a number of newspapers under his arm. However they were careful in the way they dressed on the days of selling. They managed to be clean and it seems that they tried to maintain a certain combination of clothes especially for that activity. Some of them had special care with clothing in order to have access to certain places of selling (for example, in official departments).

Some of the boys started selling newspapers just prior to the data collection for this project (March 1998) but others had already been selling newspapers in the street for about six years. Most of them were *ardinas* because they wanted to get some money to help the family ('to help my mother' as they usually said).

Because data collection was carried on in two phases we could identify differences in these two periods. In 1998, the group of *ardinas* was living in two places, 9 *ardinas* were living at the Eugenio Lima area in Praia, which was one of the most problematic places in the city mostly with inhabitants coming from the rural zones looking for a job in Praia. There was another group of 10 *ardinas* coming from S. Martinho, a small village close to Praia. In 1999 the group was enlarged with boys coming from Praia, and those from S. Martinho started leaving this activity<sup>4</sup>. The growing of the number of *ardinas* in the group was slow; for example, during the month of March 1999 we observed the integration of only one new *ardina*.

## 1.2. *Ardinas' Practice*

In the two periods of data collection (1998 and 1999) some common aspects were observed; but we could also identify different aspects. The work of the *ardinas* was divided into three different phases: (i) receiving the newspapers, (ii) selling, and (iii) paying back the money to the newspaper agency. The organisation of these three

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<sup>4</sup> Several factors contributed to the fact that these boys abandoned the practice of selling newspapers in the street: some of them had the opportunity of working in S. Martinho helping the construction of infra-structures in the village organized by the local authorities.

phases was necessarily connected to the instructions of the directors of the newspapers but the *ardinas* positioned themselves in that organisation in their own way according to several facts (that then become more visible). This means that in this practice we could identify a pre-existent structure or arena, in Lave's (1988) terms, which was redefined in the local context of action and that develops with the participation of the *ardinas* (and that certainly would be different for other *ardinas*).

### 1.2.1. In 1998

Every Friday morning, in the main building of *O Tempo* agency, the newspapers were delivered to Disidori, the man who was responsible for the whole process of selling<sup>5</sup>, returning the non sold newspapers and payment. In order to have the newspapers sold Disidori distributed them among the *ardinas*; this operation took place at the door of the agency. The number of newspapers distributed to each *ardina* was negotiated and in most cases the number of newspapers varied between 50 and 150 for each. During the **distribution** Disidori wrote down in a list the names of the *ardinas* and the number of newspapers distributed to each one. This list was the reference document for the final phase when the *ardinas* were paying back to Disidori after selling.

The participation of the *ardinas* in the activity of selling was based on their will to do that. The link of the *ardinas* to the newspaper agency was very informal assuming a very personal character in relation to Disidori (more than to the agency); there was no penalty and no need for justification if the *ardina* decided not to show up for selling. If he decided afterwards to come back for selling he knew that he could do it (notwithstanding that he could not have immediately available the number of newspapers he wanted to have). On his side, Disidori had a link to the administration of the newspaper, which was made visible to all when he signed a document against the delivery of the newspapers (which made him responsible for the payment to the administration). Besides that, Disidori received a fixed amount of money (that he recognised as the payment for assuming the responsibility) plus a part of the money of selling each newspaper. We can say that there was a mutual dependence among the *ardinas* (in order to get money they had to sell the newspapers), Disidori (to get more money he had to be sure that the *ardinas* really sold) and the administration of the newspaper (to sell the newspapers they needed the help of Disidori and the *ardinas*).

The group of *ardinas* changed over time. After a varied period of time some of the *ardinas* abandoned the activity of selling newspapers. Usually these boys got involved in other activities (for example, serving the army, getting a job or emigrat-

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<sup>5</sup> This adult had been one of the *ardinas* when he was a boy and for some years he was involved in the work with the *ardinas* but in no way that had not much visibility in institutional terms. He had not a working place in the agency of the newspaper and he only worked for the newspaper on the day when it was being sold. Besides that he lived in S. Martinho and had friendship links and even family links to some of the *ardinas*.

ing to another country). New boys then came to substitute for those who dropped out and generally these newcomers were accompanying a friend or someone from his family who was already an *ardina*. In the case of these new *ardinas* Disidori had the last word for their acceptance in the group. Disidori tried to know the *ardina* and talk to his family. He also used to choose one of the old-timers to take responsibility for the newcomer – ‘to teach him and to protect him’ as they said. In the distribution of the newspapers among the *ardinas* what happened was that the old-timer received all the newspapers (for him and for the newcomer) and it was his job to give a small number of newspapers to the newcomer (first 5, then 10, 15, etc.) as he was selling.

Immediately after receiving the newspapers the *ardinas* ran very quickly to the usual places for **selling** in the city; their goal was to try to sell all the newspapers during the day. Some of the *ardinas* tried to maintain their own place of selling. However, those places varied during the day according to the rhythm of selling and the rhythm of the city (namely, at the street in the rush time, at the working places on the working schedule, close to the restaurants at lunchtime). The price of the newspaper for the customer was 100 escudos; by the end of selling, the *ardinas* should pay to Disidori 87.5 escudos per newspaper sold and give back the non-sold newspapers. These amounts were defined by the newspaper administration. During the day most of the *ardinas* spent some time at the Square of the city or in nearby streets given that these were the places where selling was more common. In fact this is the area where most of offices, banks and public services, coffee shops and markets are located. On the other side this is the zone of the city where some local people develop their activity selling sweets and pottering on the street. Because those people stayed on the Square during the day, the *ardinas* got a close relationship with them which is in fact useful to both parts: the *ardinas* ask those people to keep a number of newspapers for them avoiding to have to carry a big number of newspapers, they exchange small coins in order to facilitate the change to customers and together contribute to attract potential customers.

Besides the strategic role of that interaction in the integration of the newspaper selling into the socio-economic life of the city, the Square was the place where Disidori stayed for long periods during the day of selling. He also walked around to the different places where the *ardinas* were selling in order to check how the process was going. Some time after the distribution of the newspapers by the *ardinas* Disidori went to the Square carrying with him a set of newspapers for the possibility of those *ardinas* who were in the school (and because of that could not come to the distribution of the newspapers at the agency) or that he could distribute to those who sell very quickly and ask for more newspapers. The Square was the main point of convergence of the boys at several moments during the day: (i) at lunch time, those who did not approach the restaurants to sell, stay and rest for a while, (ii) when they finished selling and came to pay back to Disidori.

Those *ardinas* who were in a beginning phase of learning the practice of selling usually kept close to an old-timer who was responsible for them. On one hand, this was because the newcomers received a small number of newspapers (which they had’ to pay back to the old-timer before receiving more newspapers for selling). On the other hand, it was within the observation and interaction with the old-timer that

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