



Third International Conference on Ethnomathematics Terceiro Congresso Internacional de Etnomatemática

Ethnomathematics and the Brazilian Landless Movement

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Structure of the talk

- Part 1: Setting the scene: Brazilian Landless Movement and their struggle for land
- Part 2: Education in the Landless Movement
- Part 3: Theoretical tools that give support to an ethnomathematics research
- Part 4: Operating with ethnomathematics in a Landless settlement
- Part 5: Ending words

Part 1

**Setting the scene:
Brazilian Landless Movement and its
struggle for land**

Setting the scene: Brazilian Landless Movement and its struggle for land

“[The Empire] is materializing before our very eyes (...) [since] we have witnessed an irresistible and irreversible globalization of economic and cultural exchanges” which instituted “a global order, a new logic and structure of rule – in short, a new form of sovereignty. Empire is the political object that effectively regulates these global exchanges, the sovereign power that governs the world.”

*Michel Hardt & Antonio Negri
in “Empire” (2001:11)*

Brazil's Landless Movement

Movimento Sem Terra (MST)

- “Landless Movement, in Portuguese, Movimento Sem Terra (MST) is the largest social movement in Latin America with an estimated 1.5 million landless members organized in 23 out of 27 states.
- The Landless movement carries out long-overdue land reform in a country where less than 3% of the population owns two-thirds of the land on which crops could be grown.

(<http://www.mstbrazil.org>)

Brazil's Landless Movement

Movimento Sem Terra (MST)

- Since 1985, the MST has occupied unused land where they have established cooperative farms, constructed houses, schools for children and adults and clinics, promoted indigenous cultures and a healthy and sustainable environment and gender equality.
- The MST has won land titles for more than 250,000 families in 1,600 settlements as a result of MST actions, and 200,000 encamped families currently await government recognition.
- Land occupations are rooted in the Brazilian Constitution, which says land that remains unproductive should be used for a “larger social function.”

<http://www.mstbrazil.org>)

Ocupações - Fazenda Marajó



Violência - Desocupação da fazenda Capão Leão - Rio Grande do Sul - 1998



Ocupações - Fazenda Giacometi - Paraná



Ocupações - Fazenda Giacometi - Paraná





Acampamentos - Acampamento Cabanos no Maranhão



Acampamentos - Acampamento Bacia no Paraná



Julien Farruja



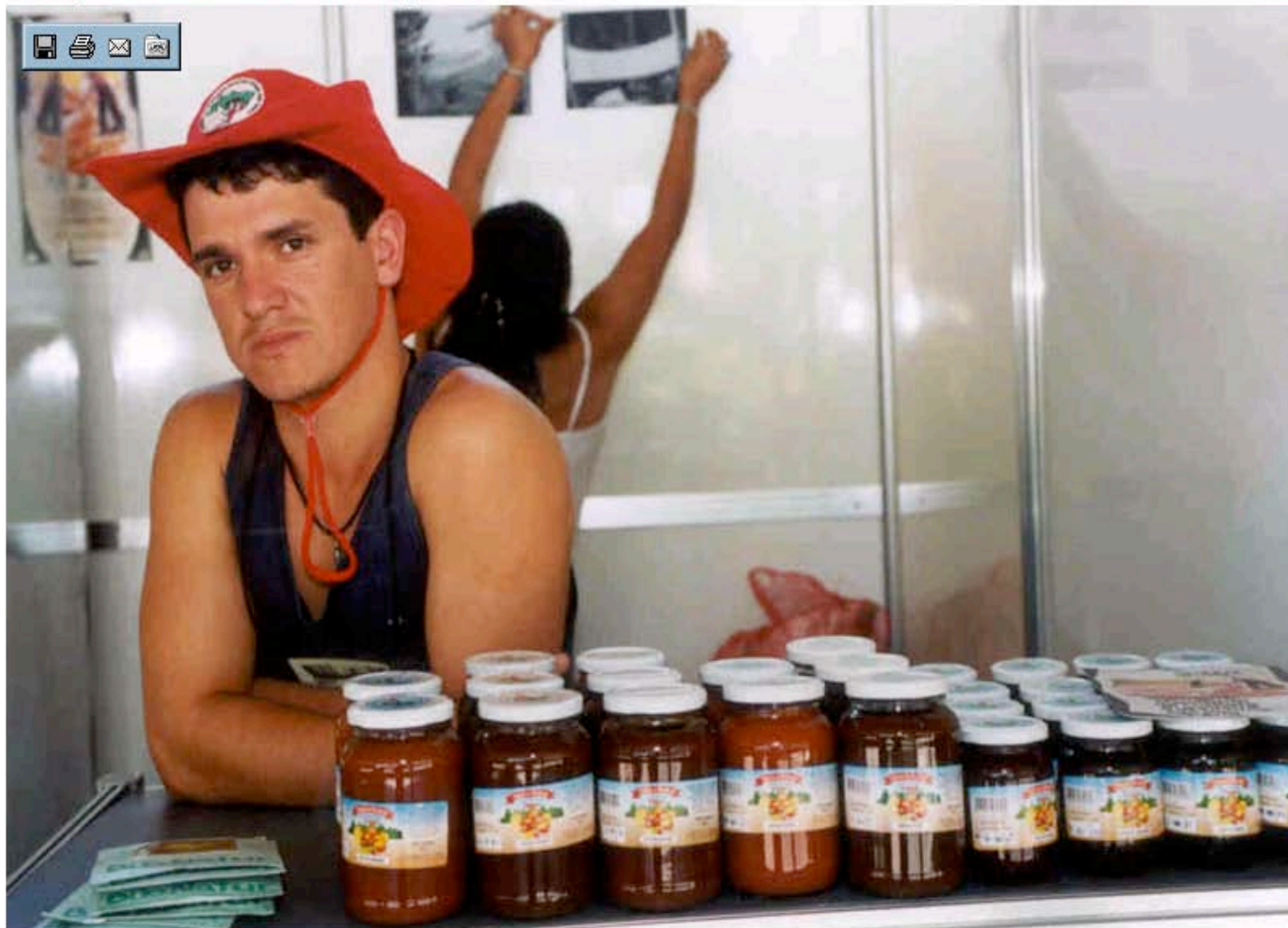
Assentamentos - Assentamento Campos Novos - Santa Catarina



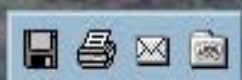
Produção - Coagri - Paraná



Produção - Produtos da Reforma Agrária



Produção - Assentamento Santa Maria do Oeste - Paraná



Produção - Assentamento Conquista da Vitória - Rio Grande do Sul



Produção - Cooperunião - Dionísio Cerqueira - Santa Catarina



Educação - Assentamento Cobrinco - Rondônia



Escola Nacional Florestan Fernandes



Escola Nacional Florestan Fernandes



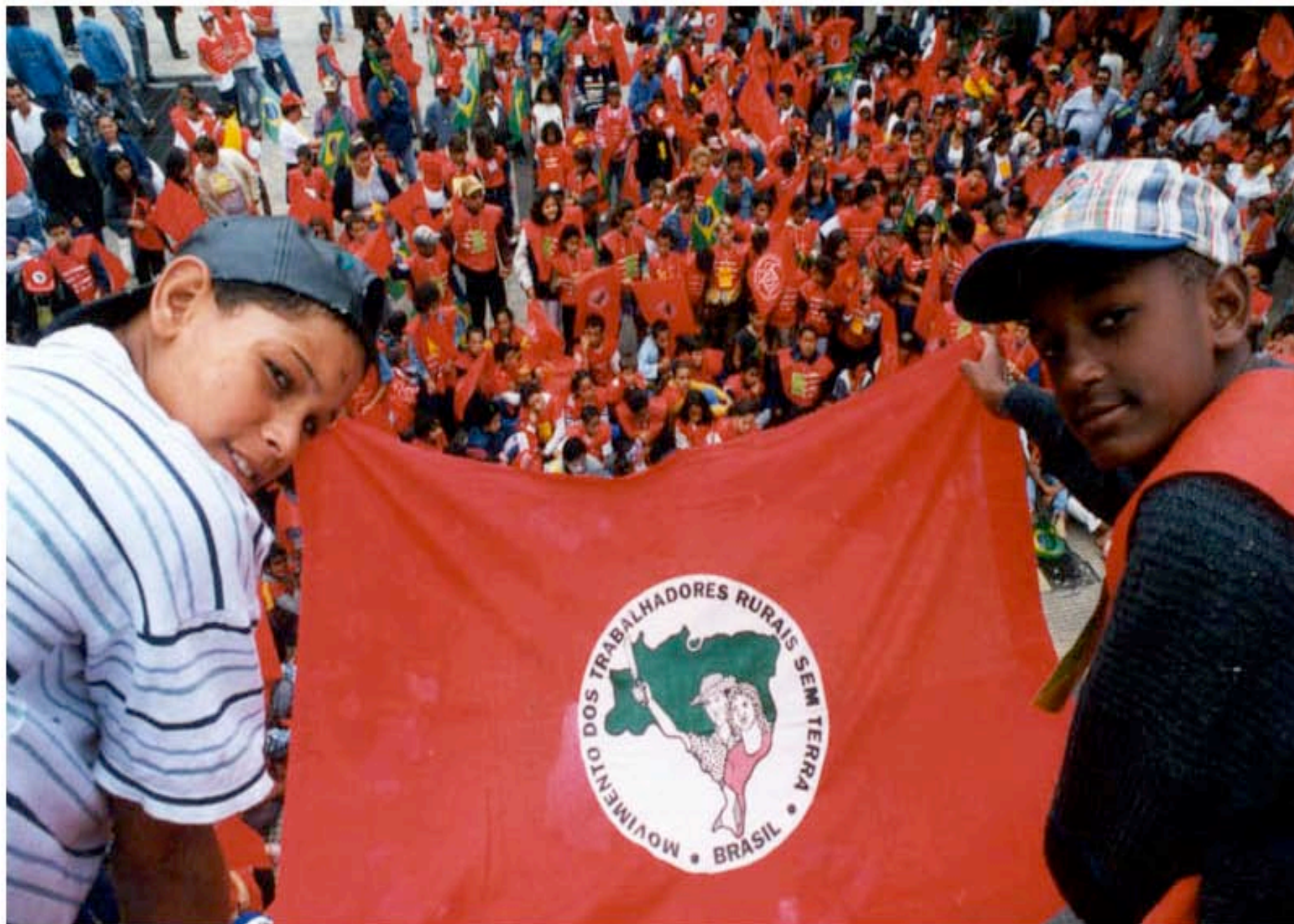


Marchas Nacionais - Marcha pelo Brasil 1997





Crianças - Encontro dos Sem Terrinha - São Paulo



Douglas Mansur

Social Mundial - Caminhada contra a Alca







Educação - Acampamento no Pontal do Paranapanema - São Paulo



Paulo Pinto/ AE

Part 2: Education in the Landless Movement



The educational process that has been developed by the MST over its 20-year history must be understood beyond schooling, since each landless subject educates her/himself through her/his participation in the everyday life of their communities and also through the wide range of political activities developed by the Movement. This means that the children, youth and adult peasants are educated by the multiple facets of the struggle for land, which produce very specific social identities. Nevertheless, these social identities do not form something compact, uniform, in which hundreds of thousands of families from different social strata would ultimately become a unified whole, homogenized by the struggle for land.

But in this educational process there is a sort of rebellion against fixing *one* social identity. There are many axes – such as those of gender, sexuality, ethnicity – which in their crossovers ultimately shape multiple landless identities, multiple ways of giving meaning to the struggle for land. In brief, I would say that the peasant culture of the Brazilian Landless Movement is marked by difference.

The Landless Movement Schooling Project

- 1800 schools in camps or settlements (grade 1 to 8), with 160 thousand students and 3900 teachers
- 250 *lay teachers* who work with children up to 6 years
- 3000 *lay teachers* working with 30 thousand peasants of Literacy and Numeracy projects of Adult Education
- Teacher Training Courses implemented in partnership with public and private universities around the country.

The Landless Movement Schooling Project

“two articulated struggles: to extend the right to education and schooling in the rural area; and to construct a school that is *in* the rural area, but that also *belongs* to the rural area: a school that is politically and pedagogically connected to the history, culture, social and human causes of the subjects of the rural area,”

Edgar Kolling et alii (2002:19)

Part 3

Some theoretical tools of an ethnomathematics research

Ethnomathematics

- It studies the Eurocentric discourses that constitute academic mathematics and school mathematics.
- It analyzes the effects of truth produced by the discourses of academic mathematics and school mathematics.
- It discusses issues of difference in mathematics education, considering the centrality of culture and the power relations that institute it.
- It problematizes the dichotomy between “high” culture and “low” culture in mathematics education.

Cultural difference instead of cultural diversity

“If cultural diversity is a category of comparative ethics, aesthetics, or ethnology, cultural difference is a process of signification through which statements *of* culture or *on* culture differentiate, discriminate, and authorize the production of fields of force, reference, applicability, and capacity.”

Hommi Bhabha (1994:85)

The concept of cultural difference is broader than that of cultural diversity.

The field of ethnomathematics in a post-modern perspective

“there are some key features that are usually associated with postmodernism. First, there is an acceptance of ephemerality, fragmentation, discontinuity. (...) There is an intense distrust of all global or “totalizing” discourses, a rejection of metanarratives, of large-scale theoretical interpretations, of universal application”.

(Sarup, 1996:95)

Part 4



**Operating with ethnomathematics in
a Landless settlement**

Operating with ethnomathematics in a Landless settlement

- The project was developed in a Landless Movement settlement in the south of Brazil
- Involved the mathematics teacher and the 7th grade students of the public school located at that settlement, their families and the agronomist who performed the technical follow up of local farming.
- Specifically this phase of the project emphasized the pedagogical work connected to one of the productive activities of that group of peasants: planting lettuce.









Zatti's production of lettuce

Zatti's involvement in the project led us to the idea of transforming that farming activity into a curricular subject – without simplifying it. During this project's phase, Zatti's own techniques for dealing with lettuce crops were analysed and at the same time connections between the indigenous and technical knowledges were established.

Producing a 'raw' text

The first activity was a meeting of the students, their mathematics teacher and the research team at the greenhouse site, when the settler made a detailed report on the lettuce farming process, from the purchase of seedlings to the sale.

The 'raw' text and the research questions

- What would be observed from an exercise of dealing mathematically with a “raw” text, which was more complex than school mathematics problems and also unusually (dis)ordered, provoked by the presence of data that were not always necessary to perform the calculations?
- How would the students deal with this new kind of “mathematical problem”, which was part of their everyday life outside school but had never before come into it?
- And what would be the project's repercussions for that landless community?

Working on the 'raw' text

The gross return per greenhouse, a total of 390 *reais* was a consensus for the students.

Zatti had said: “On average I get 65 boxes per greenhouse at a single planting, an average of 6 *reais* per box.”

Costs of pesticide

“Pesticide is used because people eat with their eyes, that’s it in practice. I use Orthene[a pesticide]. I use 85 grams at one time for 4 greenhouses, half a kilo of pesticide costs 21 *reais* and 13 *cents*. One also uses urea, I use 1 kg every time I plant, a 50-kilo bag costs 12 *reais*.”

Toni's argument

“45 cents per kilometre is expensive. His car does at least 7 km per litre!”

Toni's argument not only favoured the analysis of elements that were important from the mathematical standpoint, as for instance the process done by the students which resulted in the final value of R\$0.45 per km driven.

It also introduced the discussion on the topic of depreciation, one of the central issues in planning productive activities in the Landless communities.



mudas custo das mudas = 10,32

custo de cada

1600

permissão

de pastoreio

lata de Amarelo

de pintura

lata 0,24

524

investimento 0,30

luz 3,00

carrões de madeira

transporte 54,0

mão de obra 30,0

receita bruta: 85

líquida: 300



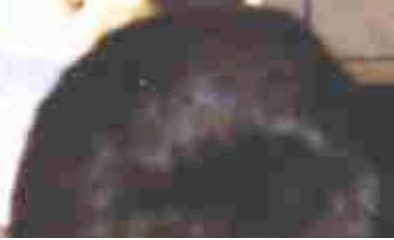
End of this phase of the project

- Meeting in which the students presented the results achieved up to that point. The school community – teachers, students and the settler’s families – participated in it.
- During that meeting sometimes the voices of the students – and of the work we were doing – once again were marked by the out-of-context, formal tone of traditional school mathematics in dealing with the problems of the broader social world.
- This “coming back” to the school mathematics routine was disturbed by some voices from the audience.

10 - DEZEMBRO

JANEIRO - Abril

3	4	TOTAL	1	2	3	4	5	TOTAL
3	2	13	3	3	3	3	2	14
243	176	8	15	88	207	184	130	624
81,645		693,00	373,00	3080,00	890,00	658,00	3020,00	
		346,53	402,24	530,34	620,48	214,89	2170,93	
70		250,53	22,21	579,6			859,01	





Some closing words

The issues I attempted to discuss here are no more than provisional, unmarked by hopes for certainty, in the sense given by Stronach and Maclure (1997:4). I follow them when they say that we “must recognize and try to work within the necessary *failure* of methodology’s hope for certainty and its dream of finding an innocent language in which to represent, without exploiting or distorting, the voices and ways of knowing of its subaltern ‘subjects’”.

At the end of the twentieth century the ideas of linear progress, absolute truths, the rational planning of ideal social orders and the standardisations of knowledge and production embraced by Modernity, the extraordinary intellectual effort produced by its project in developing “objective science, universal morality and autonomous art” and its beliefs “in justice and possibility of happiness of human being have been cruelly shattered”.

(Sarup, 1996:94)



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