

THE USE OF GLASS BOXES TO PROTECT MODERN PAINTINGS IN WARM HUMID MUSEUMS

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Project goals

- Test the efficacy of well-sealed boxes as protection for modern paintings in warm and humid museums
- Develop a simple enclosure to be later improved and replicated
- Spread the concept and results throughout Brazil

Project development

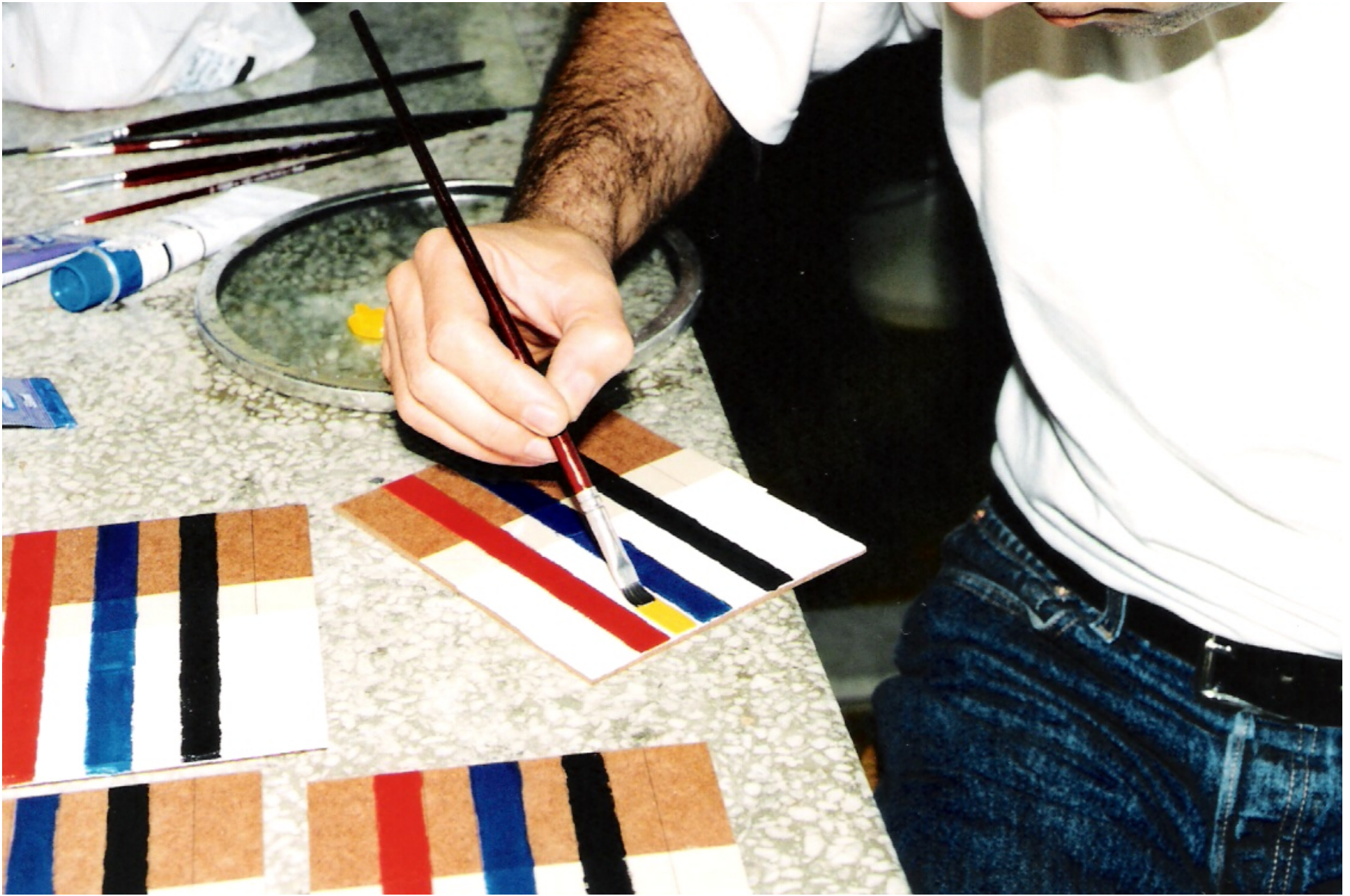
- Designing the box
- Preparing the painting replicas
- Fungi sampling
- Mounting of 5 boxes and packing
- Shipping and installation
- Results



Painting replicas being made



Painting replicas being made



Painting replicas being made



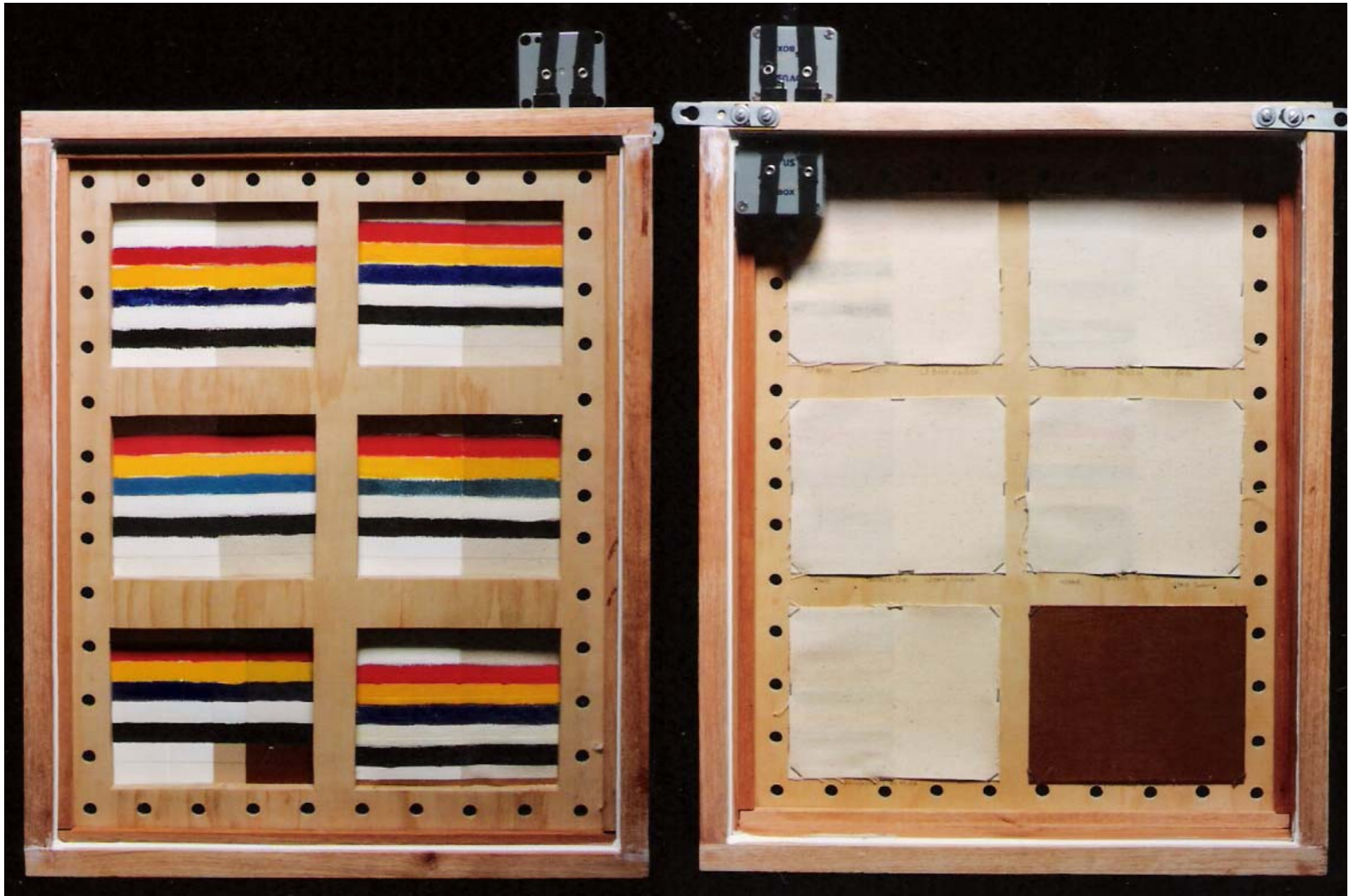
Cleaning and mounting the boxes



Fungi sampling



Fungi sampling



The box ready (front and back)



Packing



Museums

- Museu de Arte Contemporânea de Pernambuco – MAC, in Olinda (Northeast)
- Museu de Arte da Pampulha – MAP, in Belo Horizonte (Southeast)
- Museu de Arte Moderna do Rio de Janeiro – MAM, in Rio de Janeiro (Southeast)
- Museu de Arte Contemporânea da Universidade de São Paulo – MAC, in São Paulo (Southeast)
- Pinacoteca Barão de Santo Ângelo – PINA, in Porto Alegre (South)

Results

- 3 out of 5 exterior dataloggers failed
- T and RH annual average values of the microclimates in the 5 boxes
- Performance evaluation of the boxes exposed at the:

Museu de Arte Contemporânea de Pernambuco

Museu de Arte Contemporânea da Universidade de São Paulo

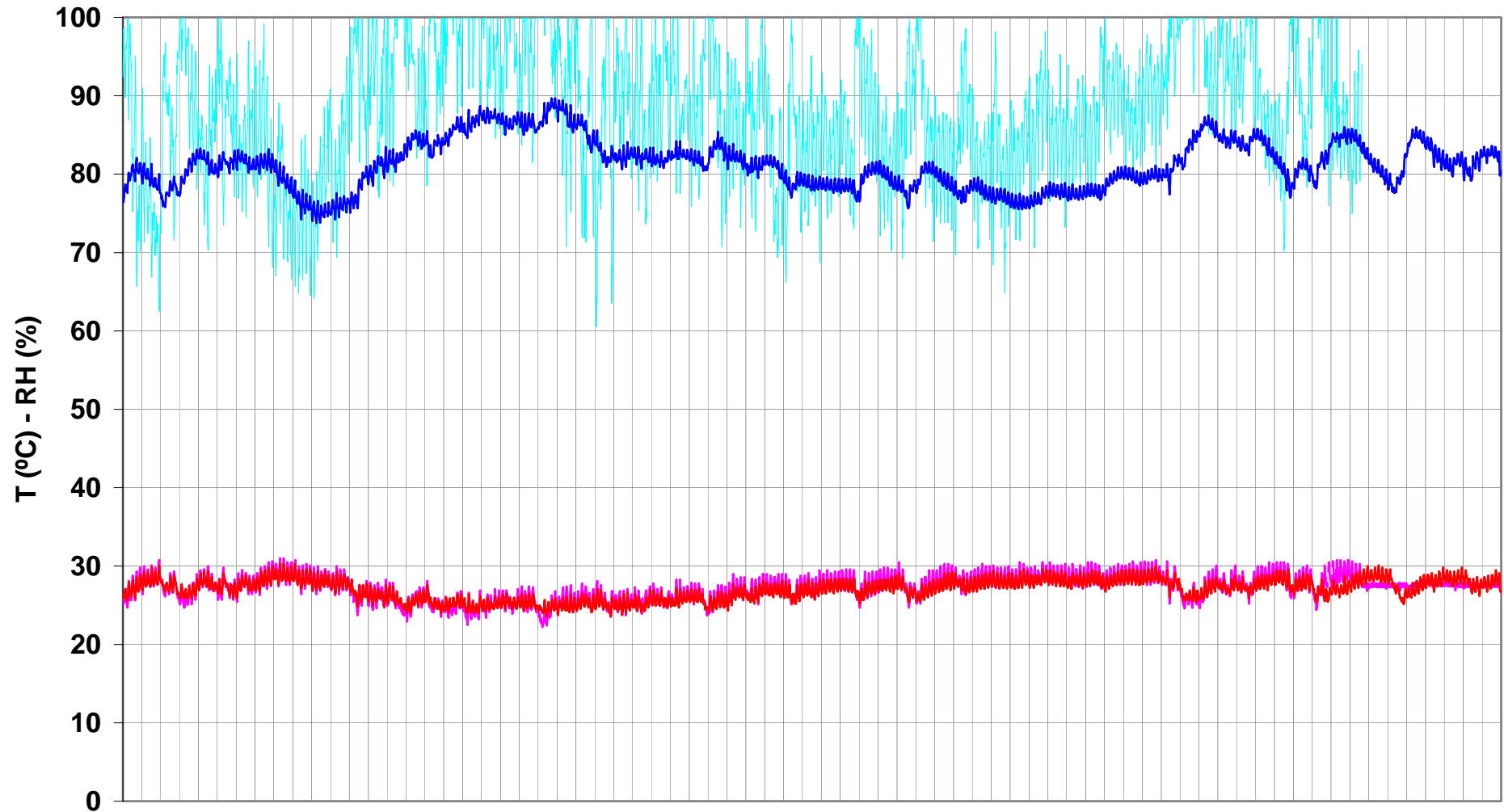


Museu de Arte Contemporânea de Pernambuco MAC-PE



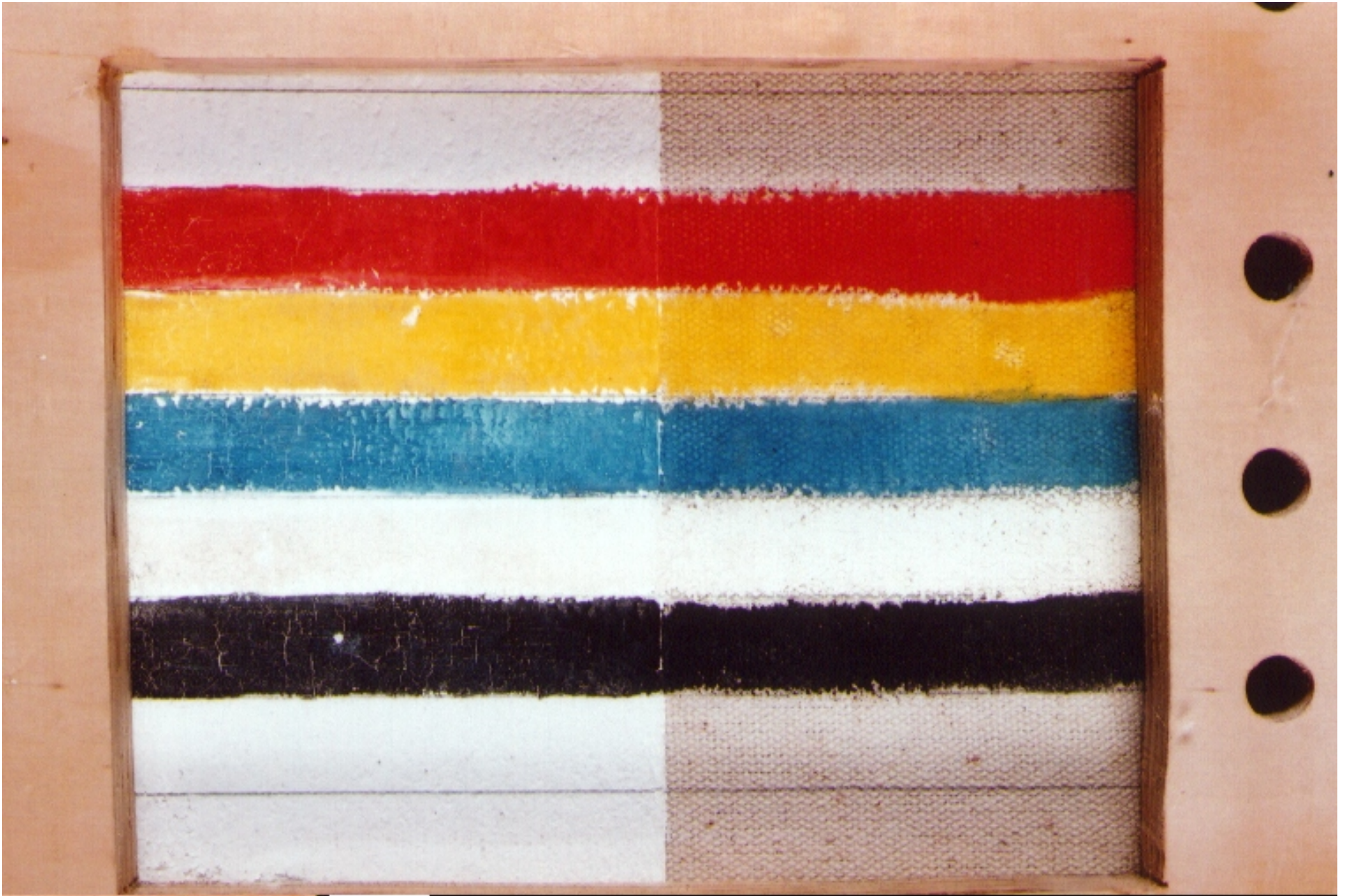
MAC-PE exhibition room and the boxes

MAC - PE



April 2001 to April 2002

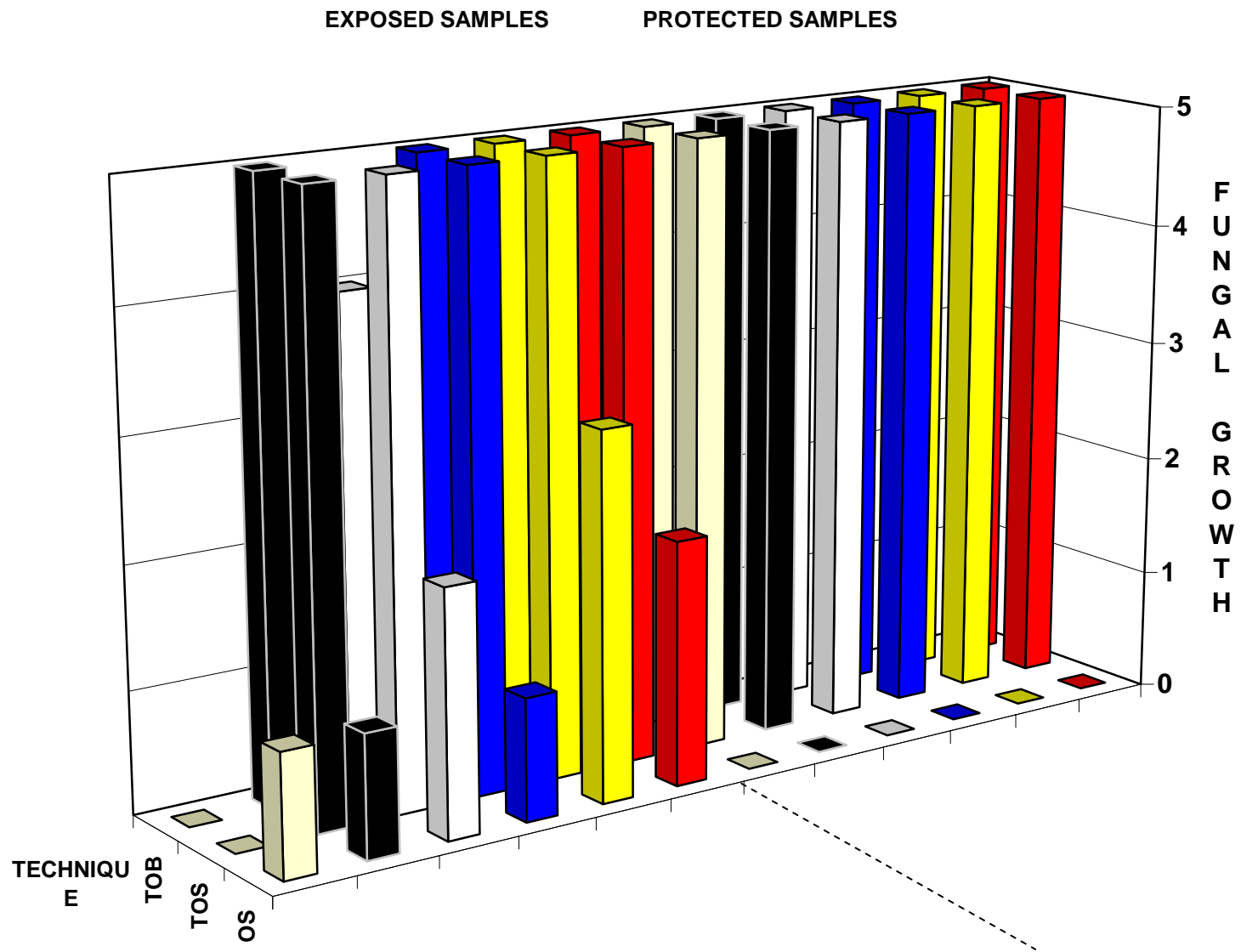
— T outside the box (oC) — RH outside the box (%) — T in box (oC) — RH in box (%)



MAC-PE egg tempera in box



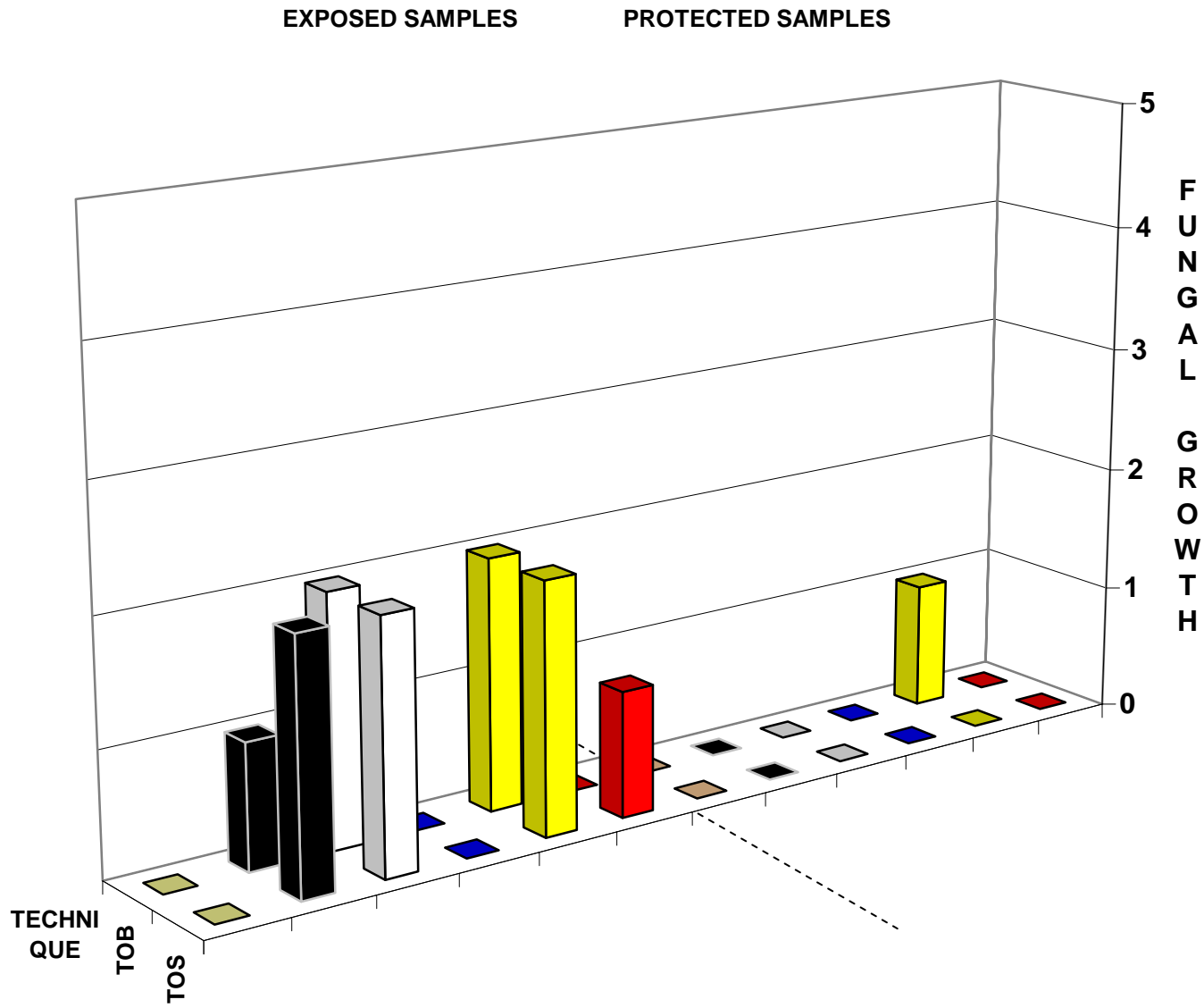
MAC-PE egg tempera outside the box



MAC-PE degree of fungal contamination



MAM-RIO entrance hall

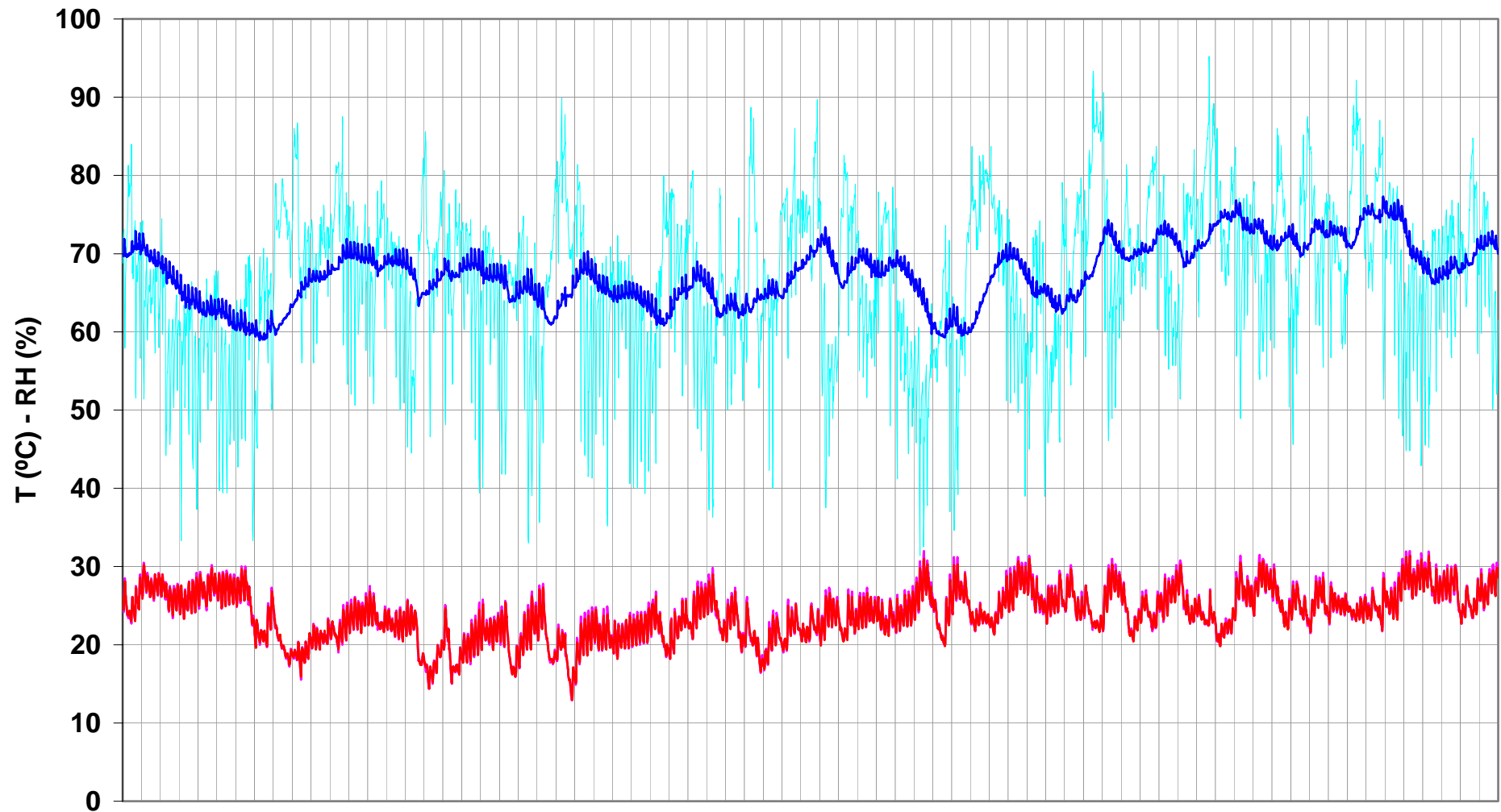


MAM-RIO degree of fungal contamination



Museu de Arte Contemporânea da Universidade de São Paulo MAC-USP

MAC - USP



April 2001 to April 2002

— T outside the box (oC) — RH outside the box (%) — T in box (oC) — RH in box (%)



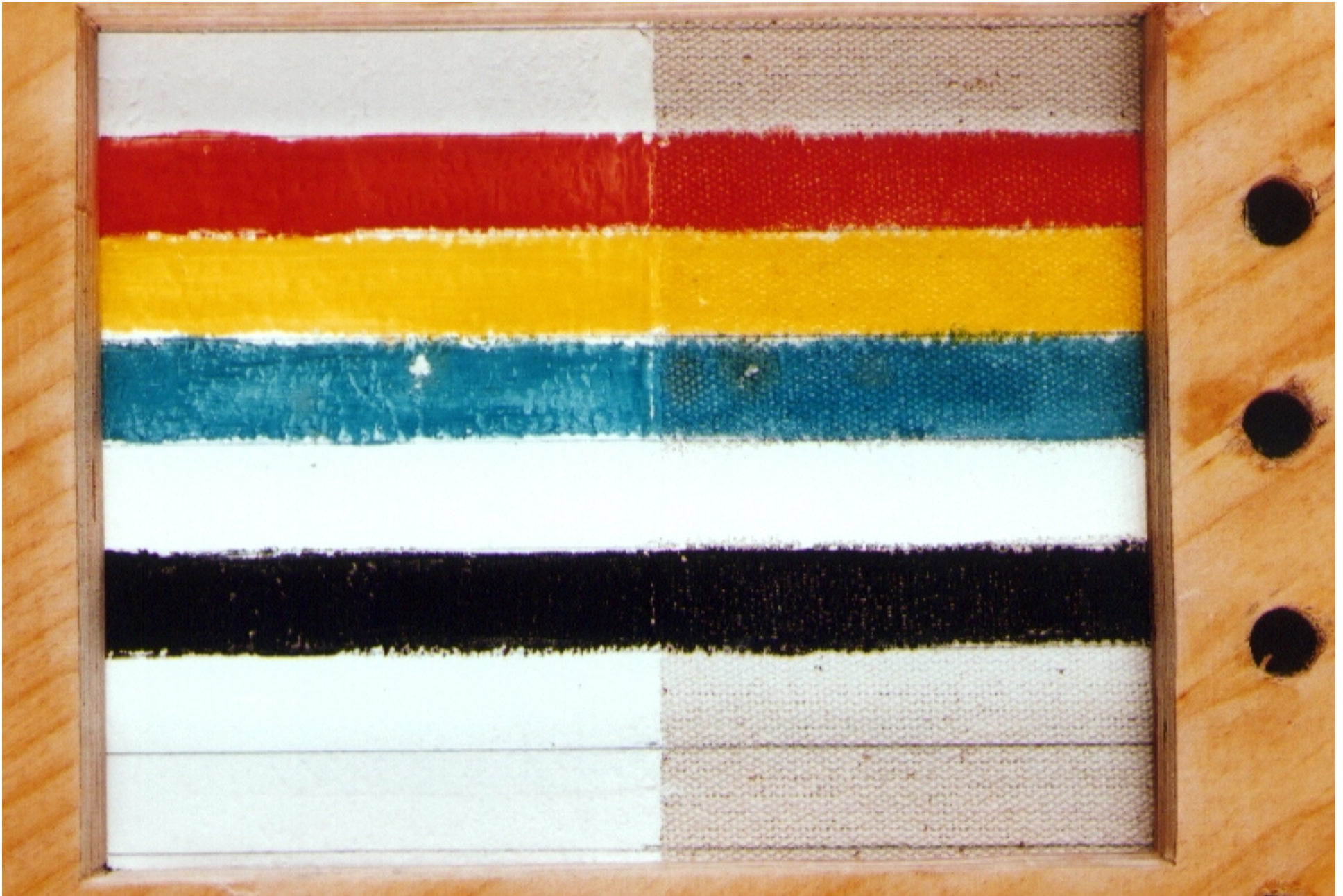
MAC-USP mixed media on canvas in box



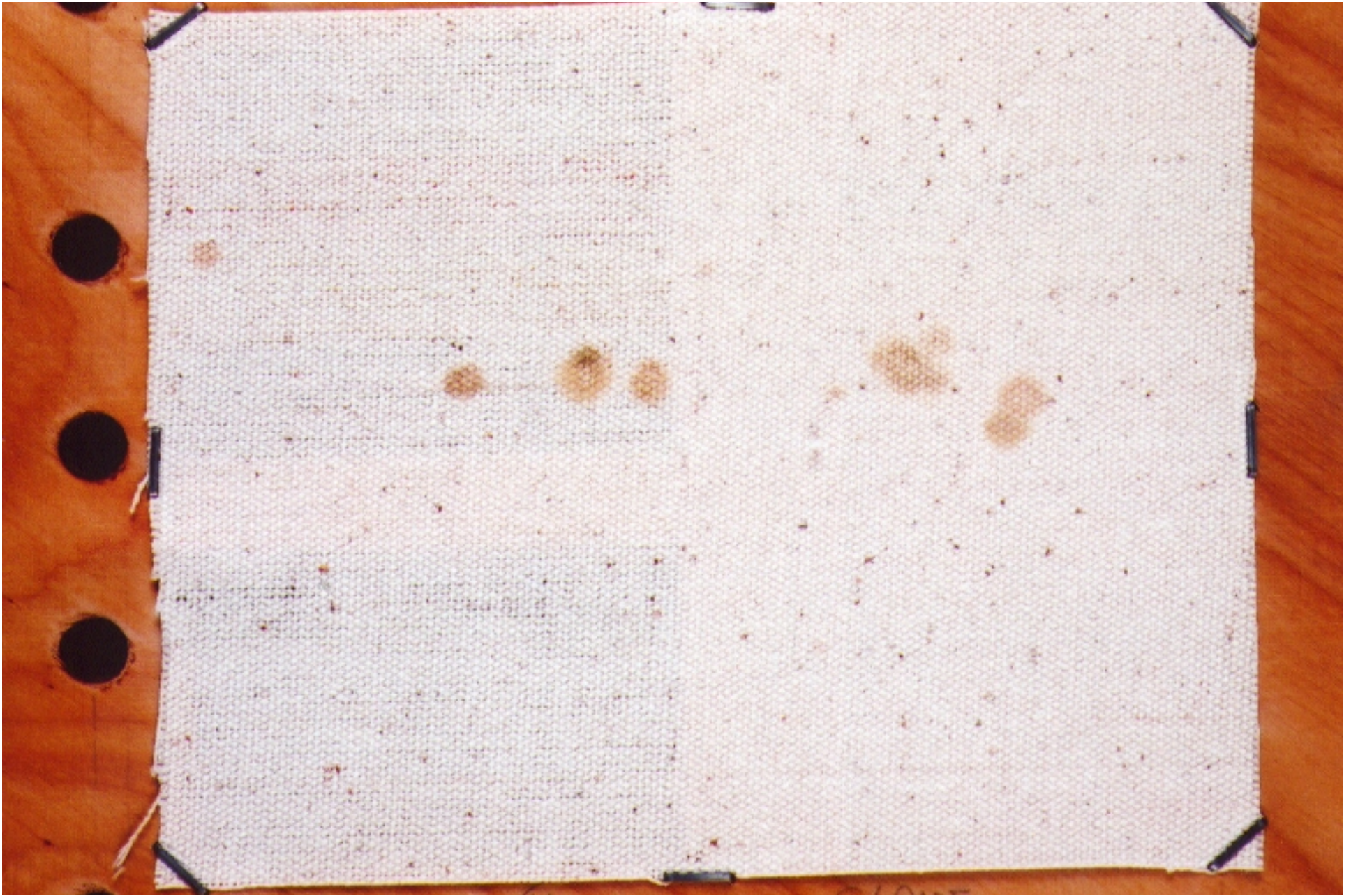
MAC-USP mixed media on canvas outside the box



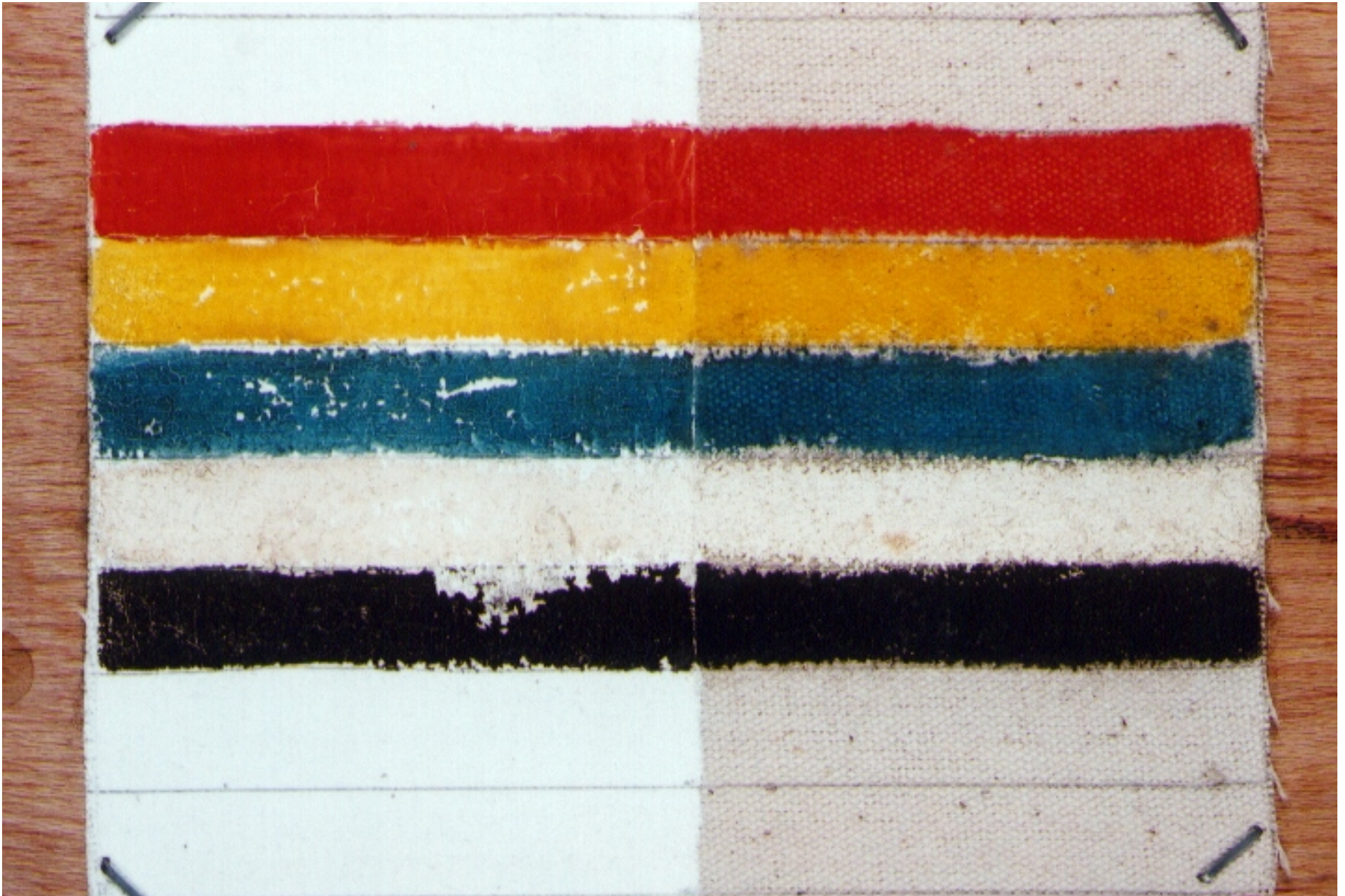
PINA-POA exhibition room



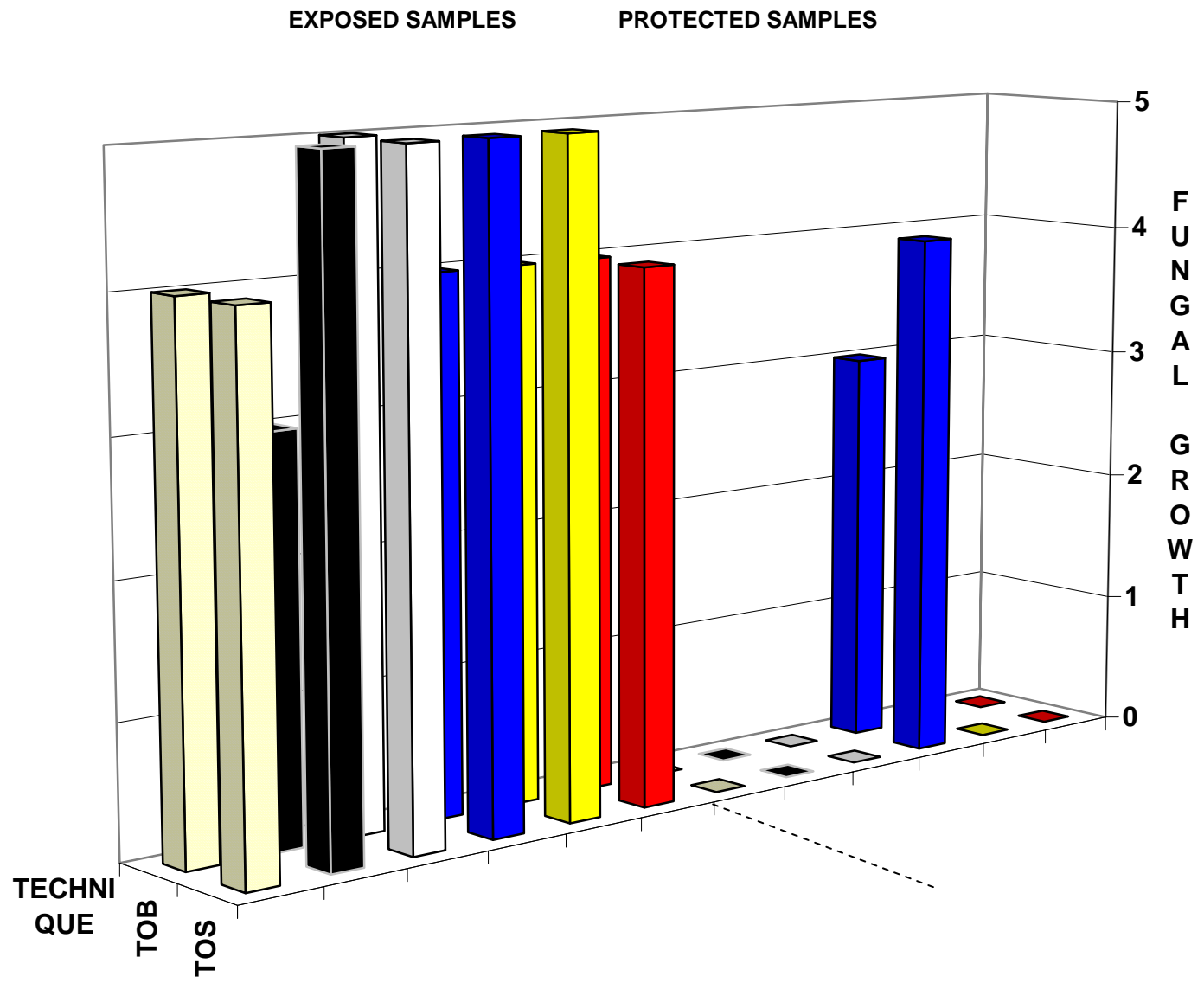
PINA-POA egg tempera in box



PINA-POA egg tempera in box (back)




PINA-POA egg tempera outside the box



PINA-POA degree of fungal contamination

Annual average values in the boxes and visible damages

Museums	T (°C)	RH (%)
Museu de Arte Contemporânea de Pernambuco (MAC-PE)	27	81
Museu de Arte da Pampulha (MAP-BH)	28.7	63
Museu de Arte Moderna (MAM-RIO)	26.9	73
Museu de Arte Contemporânea da Universidade de São Paulo (MAC-USP)	23.8	67.5
Pinacoteca Barão de Santo Ângelo (PINA-POA)	22.5	78

 Mould growth

 Undulation

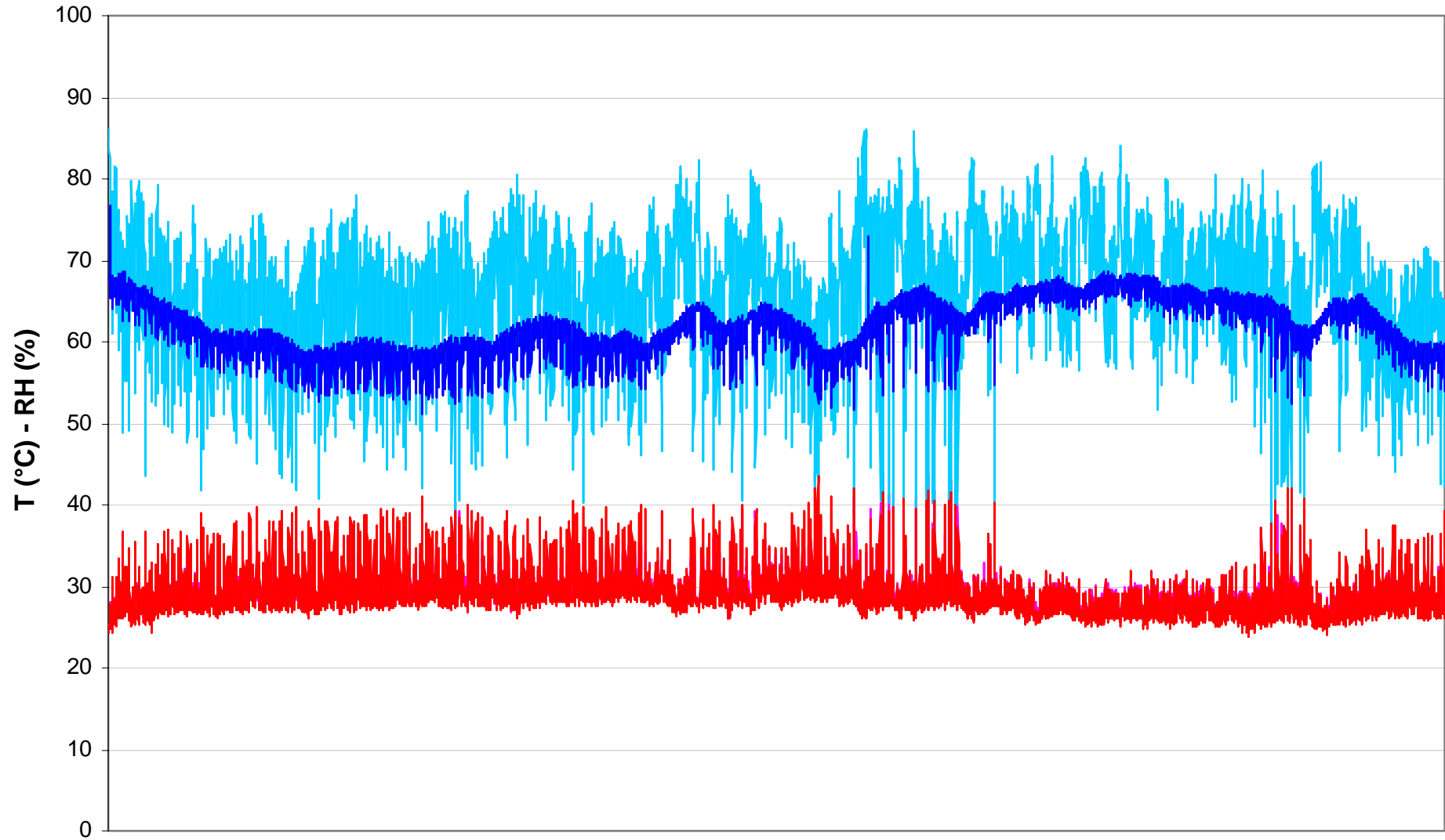
Further research

- New lighter more stable materials (aluminium and special glasses)
- Other parameters to analyse – colour changes and surface soiling
- Right equipment to measure microclimates
- Air tightness of the box



Box in Recife – PE, exposed to the morning sun light

Glass box in Recife



September 1, 2006 to October 15, 2007

— Temp. Ext. — RH Ext. — Temp. Int. — RH Int.

Conclusions

- Efficient in buffering daily climate fluctuations
- The paintings inside the box showed less microbial contamination
- The paint layers were protected against dust and soiling

Acknowledgement

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Thank you

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