Scaphandre or *Souffleur*: notes on underwater and underground moderations to risk.

HEALTH IN ARTISANAL AND SMALL-SCALE GOLD MINES

Evidence from Kamituga, DR Congo

Seminar 10 november 2022

12 novembre 2021

IOB, Lange Sint-Annastraat 7. 2000 Antwerpen

Simon Marijsse

Research and setting (2018-)

- Field notes and Surveys
- Walking method and interviews on-the-go
- Observant participation
  - Kamituga (South-Kivu, 2018, 2019, 2021)
  - Walikale (North-Kivu, 2019)
  - Shabunda (South-Kivu, 2018, 2020, 2021)
  - Kalima (Maniema, 2021)
- Archival data collection
  - Ministry of Foreign Affairs
  - Royal Museum for Central-Africa

Research and setting (2018-)

- Marijsse, S., & Mwisha, T. M. (2022). Taming air and water: The fight against shimoke in artisanal and small-scale gold mining in South Kivu. *The Extractive Industries and Society*, 101168.

- Geenen, S., & Marijsse, S. (2020). The Democratic Republic of Congo: From Stones in the River to Diving for Dollars. In *Global Gold Production Touching Ground* (pp. 263-281). Palgrave Macmillan, Cham.

Imported and moderated engines as "boundary objects"

- Double-piston air compressor?
- *Scaphandre*?
- *Kiboko ya shimoke* (*souffleur*)?

Connecting two case-studies:

- Shimoke and *souffleur* in hard-rock mining (1.)
- Underwater smoking and *schaphandre* in alluvial mining (2.)

=>How to connect them?
How to account for similarities and difference?

Expanding upon previous research via a detour to Science & Technology studies:

- Akkerman, S. F., & Bakker, A. (2011). Boundary crossing and boundary objects. *Review of Educational Research*, *81*(2), 132–169.
- Star, S., & Griesemer, J. (1989). "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39". *Social Studies of Science,* 19 (3): 387–420.
- Choy, T. (2011). *Ecologies of comparison: An ethnography of endangerment in Hong Kong*. Duke University Press.
- Sloterdijk, P. (2009). "Airquakes." *Environment and Planning D: Society and Space* 27(1): 41-57.

"Boundary objects are objects which are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites" (Star & Griesemer, 1989, p. 393).

1.1. Quod Shimoke?

Shimoke is a heavy air, which you do not smell, but you feel it [both are *sentir* in French]. It happens when the diesel pump heats up and a leak in the suppression tube causes the fumes to spread through the tunnels. Then, it becomes difficult to breathe. It paralyzes you and you feel it in your body. I remember that in the years 1981-1985, during the SOMINKI era, I worked as a clandestine miner (called a ninja) in Cabo, in the site which was called Danger. […]. We could not smell anything, but it was in the air. That was the first time we were confronted with the *shimoke* of Chinese diesel pumps.

It (*shimoke*) is derived from the English. Smoking. Even in an airplane they say not to smoke, no? Back then [under SOMINKI], there were problems with silicosis [a pulmonary disease tied to exposure to rock dust], tuberculoses, and gas [both TBC and silicosis are called *kampaku* locally, or 'to cough a lot']. They (the miners) have popularized it, it is the smoke in the mines, which comes from the fuel. You will often hear, he died because of smoke, but smoke is mostly after a drill or a leak in a motor pump. It is all part of the *shimoke*.

1.2. Shimoke and the *Souffleur*

- Problems created by water and “heavy air” in tunnels lead to a challenging workspace.
- Risk management through techniques (whistles, gestures, etc.) and technical modification.
  - Communication between the above-ground cabin and the underground.
  - Modification of the workspace
    - Holes to aerate
    - Fume-evacuation tubes in cast-iron
    - Multiple ways of artificial aeration

Manual bellows (*Muguba*)

Souffleur (Carrubba)

King Max spraying device (Carrubba)

Kiboko ya Shimoke (Carrubba)

1.3. Take away

- Airborne substances cannot simply be reduced to a singular biochemical category.
- They show agentic capabilities that imply:
  - Embodied remembrances about past ecosystems and work regimes.
  - Attunements that speak to current forms of toxic exposure.
  - Socio-technical moderations that actively co-shape the workspace.

2.1. “Underwater smoking”

You smoke and it goes in your mouth, and you let it flow out. You bite and close the tube and you inhale. When you exhale, you open slowly the tube and inhale again. It’s a game of teeth. To block, to open, to block, to open. Before liberating, you block it, you close it. When you leave it open, you inhale again” (Diver, Walikale).

2.2. What motivated technological choices?

- *Free diving techniques (1970s-1980s)*
  - *zolo-zolo*
  - *kimbokoto*
- *Scaphandre (1990s-)?*
  - *Quado or tran-tan-tan (small 110 Honda engine, trantantan)…*
  - *+ Integration of a tank (kibuyu).*

- *Technical choice as risk management not frugal innovation*
  - ‘souple’: able to let go and evacuate.
  - Time management.
  - Sand got stuck in scuba gear.
  - Underwater communication with the pontoon.

2.3. Extended take-away

- Socio-technical moderations that actively co-shape the workspace.
  - Re-engineering and -design is embedded in pre-existing itineraries of skill and know-how.
    - Methodological implication: Not consider ASM as a homogenous history of techniques.
  - Consider technical moderation as a *choice* tied to risk and harm.
    - Methodological implication:
      - To not reduce technical choices in ASM to a lack of means.
    - Ethnographic implication:
      - Call for attention to technologies *in-their-use,*
      - how they transcend and communicate between social worlds,
      - yet also delimit these: a *scaphandre* is not a *souffleur*, and yet it is.

Thank you!

Sara Geenen
Boris Verbrugge
Filip De Boeck
Peter Lambertz
Divin-Luc Bikubanya
Philippe Dunia
Kaminkya
Edouard Kalakuko
Thierry Munga
Henri Kyetile

Special credit goes to Robert Carrubba for the use of visual material