



Socio-Anthropological Lessons Learned From Natural Disaster Management

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Introduction

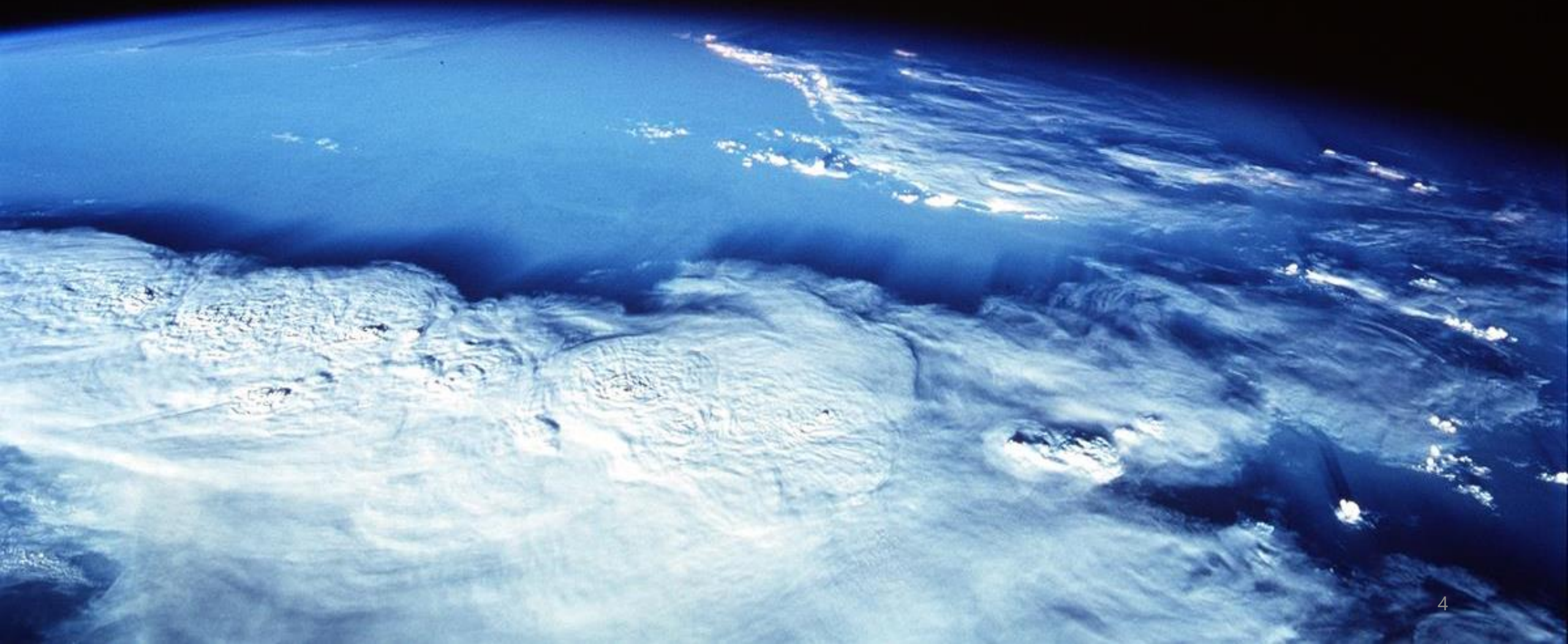
- **Anthropology:** From the Greek words *ánthrōpos* (ἄνθρωπος, "human") and *lógos* (λόγος, "study")
- Socio-anthropology enables the **analysis of local cultural knowledge**. In the context of Planetary Defense, it aims to **contextualize and understand better the populations that may be impacted**.
- A disaster will **disrupt a pre-established social order** that one **must get acquainted** with it to **better assist it**.

Structure



- **I. Examples of Social Challenges**
- **II. Socio-anthropological Lessons Learned from Natural Disaster Management Literature**

I. Examples of Social Challenges





Different Priorities

- **Social inequalities** induce the probability that some social categories **will suffer more significant damage than others**.
- On most occasions, **severe socio-economic problems** will be perceived as **more important than a natural threat**. The risk of an asteroid colliding with Earth **may seem quite abstract** and **not of immediate importance** to populations facing **life-threatening struggles** such as **famines, war, economic hardship** or lack of health care coverage.



Resistance to Displacement

- As anthropologist Boscoboinik has explained, despite seismic shocks or tsunami warnings, **human communities** over the ages **have consistently avoided being displaced**. This can be explained by a **cultural attachment to their land**, or a **fatalistic belief** that it is “their fate” to be killed by the disaster in question.
- **Economic reasons** can also play an important part in their refusal to be displaced. Indeed, they **may not have anywhere else to go** and/or **may not have the economic resources necessary to leave**. Decision makers dealing with asteroid threat management will therefore have to consider that **some populations will decide to remain in the zone of impact**.



Mass Death Management

- An asteroid impact would entail a **collective trauma** where *"the living sleep along the dead"*: with mass graves, cities eradicated, saturated cemeteries, etc.
- Local populations can be deeply disturbed by **the lack of cultural care during mass burials.**
- During a natural disaster, populations can perceive **death rituals as necessary to try to make sense and somehow "normalize" the disaster.** A **disregard for death rituals** can deeply disturb sets of population and **enhance their traumas.**



Losing Faith

- An **asteroid impact may deprive some people of their faith**. Such was the case after the earthquake that shook Lisbon, Portugal, in 1755, killing in an instant a hundred thousand people. Philosophers from all over western Europe came then to **challenge the concept of divine justice**, the existence of God itself and precipitated the belief of a “**secular catastrophe**” .

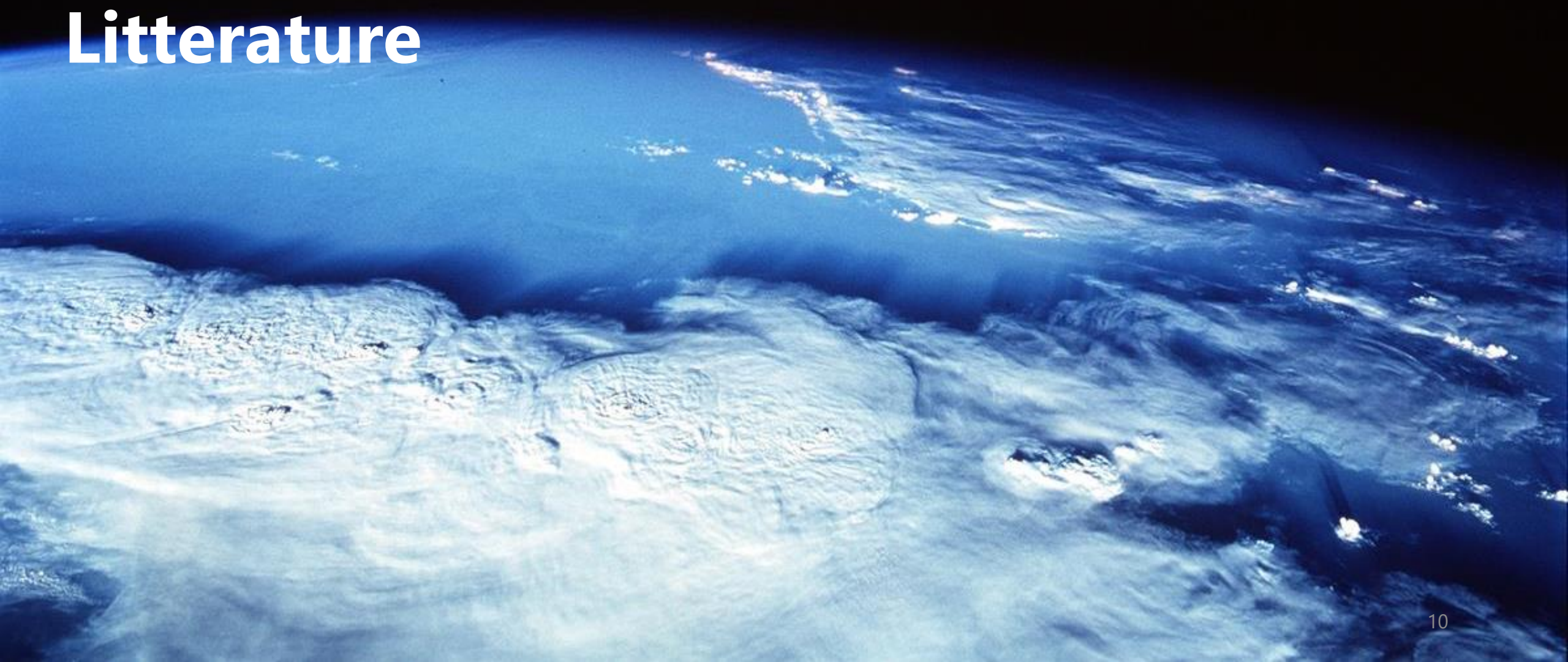


Loss of World Heritage

- An asteroid impact may result in great **cultural loss** which previous disasters may inform the Planetary Defense community on. **The fire of Alexandria's library**, is considered a common example of cultural loss. Built in 334 BC, the library burnt in 48 BC and, with it, **the largest collection of classical antiquity and Egyptian literature** estimated to more than **100,000 pieces of literature**.



II. Socio-Anthropological Lessons Learned from Natural Disasters Litterature





3 Attitudes When Facing a Disaster

Anthropologist Douglas identified three main attitudes towards a disaster: **optimism**, **pessimism** and **fatalism**:

- An **optimistic** attitude: To consider that the asteroid is actually going to **miss the Earth** or that a **mitigation mission will be successful**,
- A **pessimistic** attitude: May result in **mass panic** and **attempts to evacuate the zone** of potential impact,
- A **fatalistic** approach: People believing that it is **their fate to die from the asteroid impact**. The latter could be explained by religious and/or spiritual beliefs that this impact is an “act” of God and/or of the Universe and is consequently **not meant to be prevented**.

These three attitudes will entail radically different reactions and will thus impact risk management.

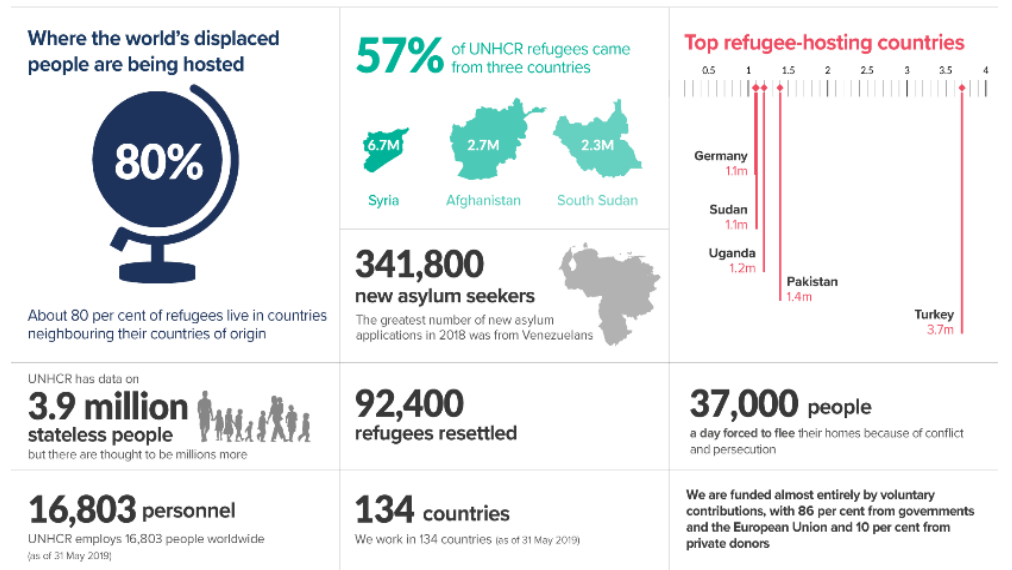
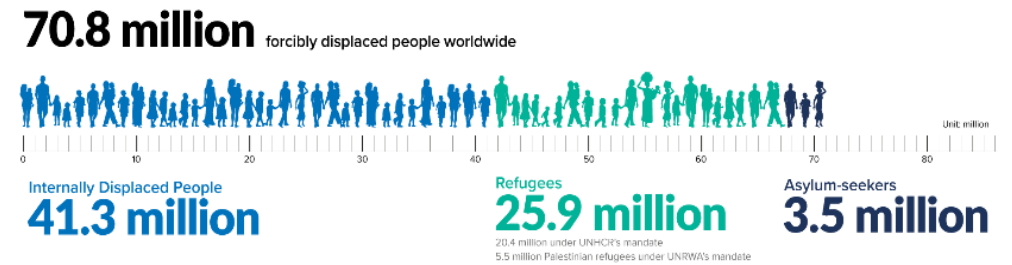


Learning From The Past

- If a large asteroid impacted the Earth, it would not be the first time the world would face a mass extinction. Such information can be found in **pandemics literature**. For instance, during the four years of the **1347-1351** pandemic, **20% to 60%** of the western world population - depending on sources in a context with few statistics - was **killed by the Black Plague**. In other circumstances, entire cities were erased due to a natural disaster. Such was the case of the eruption of **Vesuvius that destroyed Pompeii in 79 AD**.
- These events are so rare that **the means to fight them and adapt to them** tend to **fade over the centuries**. That timescale **defies generational memory** and is one of the challenges facing Planetary Defense.

Learning from better-known natural disasters

- Learn from similarly **rare recurring deadly events through decades/centuries**, such as **volcanic eruptions, earthquakes and tsunamis** (Fukushima, 2011: costliest natural disaster in human history, estimated at **\$235 billion**. More than 470,000 people were ordered to leave their homes and about 174,000 were still displaced in March 2016)
- Learn from data on **population displacement**: The United Nations Refugee Agency estimated that out of the 70.8 million people forcibly displaced worldwide, **80% live in countries neighboring their countries of origin**.





Building « bottom-up » systems

- In order to be efficient and resilient, **any intervention** would need to be **locally rooted**. Top/down-only systems should be avoided as they are eventually **poorly adapted to local needs** or do not know or take into consideration **local practices**.
- Detailed **knowledge** of **international relations** and **local regimes** are also important to set up **cross-border space risk management systems**.



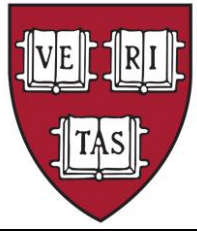
Helping population cope with a « *cata-strophein* »

- Taleb defines a **Black Swan** as a **low probability, unpredictable event** which, should it occur, **would have exceptionally far-reaching consequences**. Such catastrophes can create a mental blocking of unwanted perceptions called **scotomization**. Anthropologists Susanna Hoffman and Anthony Oliver-Smith explain that this can be interpreted as "**comprehension denial**". **Educating populations** on the topic of Planetary Defense could help **prevent this mental shock**.



Conclusions

- **Natural disaster management literature** teaches us that **risk perception will vary depending on the local population observed.**
- I share James's and Friedman's recommendation to **invite anthropologists, psychologists, economists and religious experts** in the design phase of crisis management planning and would extend it to **future Planetary Defense conferences** and similar venues.
- **Goal:** to build joint academic research projects to reflect on and **plan the most adequate ways to interact with populations under a potential asteroid impact threat.**



Thank you for your attention

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