# From Armstrong's footprints to the Voyager record and beyond: Why space archaeology matters to explorers of the Universe

Cornelius Holtorf
Professor of Archaeology



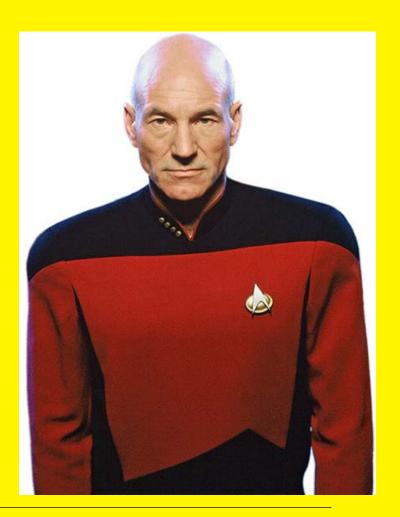
## Space archaeology...

... is archaeology in space.

Does this sound esoteric to explorers of the Universe?

Actually, it is rather mainstream...





### Archaeology in space...

is not necessarily about remains of alien civilizations...

Armstrongs footprints on the moon are an archaeological site too!

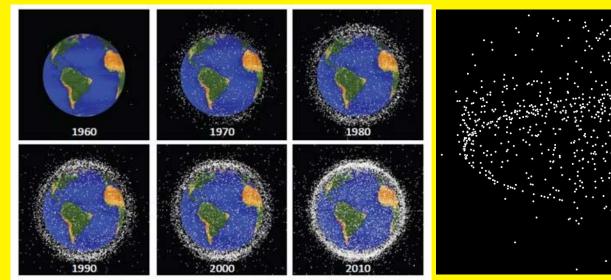








### Archaeology in space: orbital debris

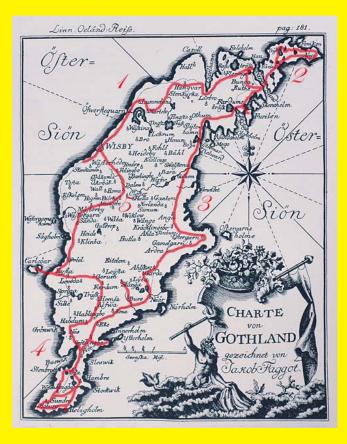


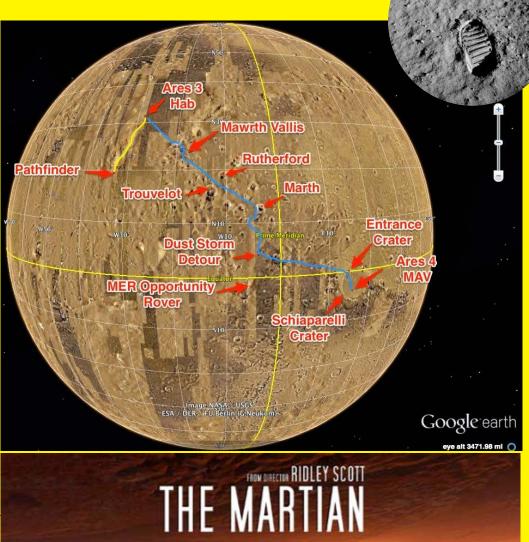


Satellites and debris in low Earth orbit, 1960-2010. Courtesy NASA.

- 22,000+ objects larger than 10 cm
- ca. 1,000 operational spacecraft; the rest are orbital debris.
- ca. 500.000 particles 1–10 cm in diameter
- tens of millions of particles smaller than 1 cm

Archaeology in space: future sites





### Archaeology in space: museums and heritage sites?

Yes....

But do they have to be dull?





### Archaeology in space: museums and heritage

Museums and heritage can be more creative, challenging and contribute

to address societal challenges!





### Archaeology in space: museums and heritage

One current challenge: **social cohesion** – as societies become ever more diverse and migrants cross countries and continents



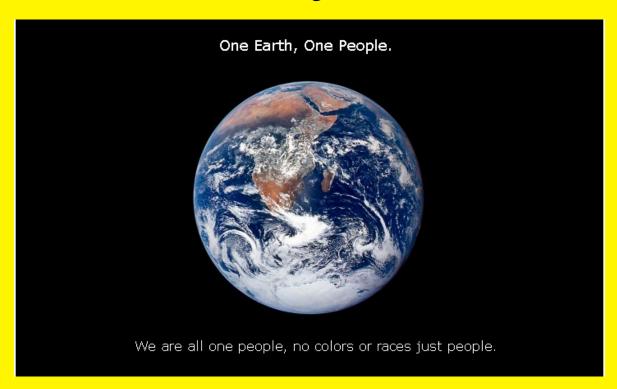


We focus too much on what divides us: history, appearances, languages, religions, customs, values...



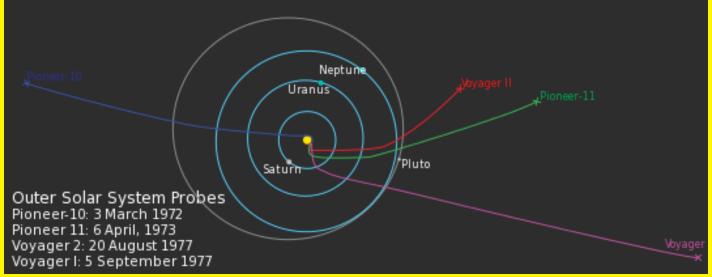
### Archaeology in space: our shared heritage

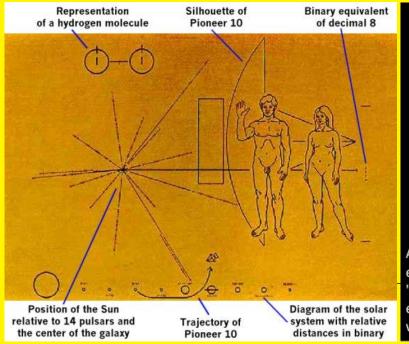
What can create cohesion and a shared sense of belonging? What unites all human beings?





### One Earth





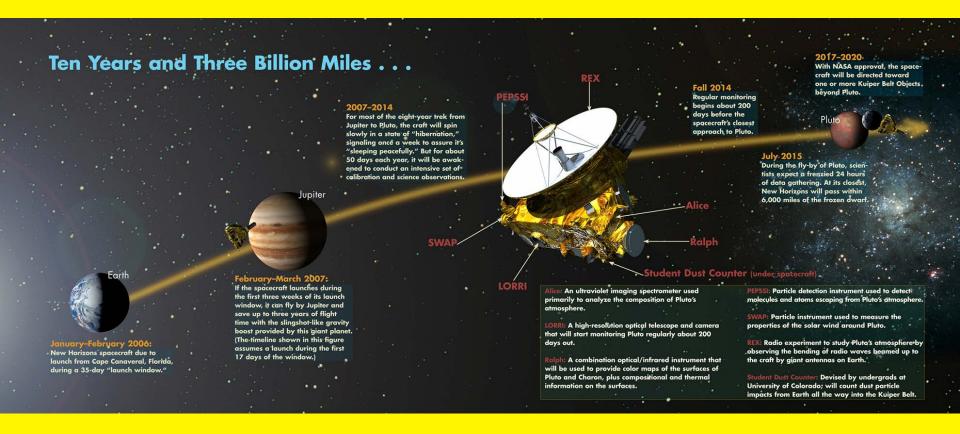


A gold-coated phonograph record containing, in audio-encoded form, 117 pictures explaining our planet and ourselves; greetings in 54 different human languages and "songs" of the humpback whales; a representative selection of sounds, from an elephant's trumpet to a rocket launching; and almost 90 minutes of some of the world's greatest music. Devised by Frank Drake, Carl Sagan, and Bernard Oliver.





### One Earth: New Horizons Message



http://oneearthmessage.org



### One Earth: New Horizons Message



### Conclusion: space archaeology matters

- Which cultural values are significant in space exploration?
- What is the cultural legacy of space exploration *in space*? What can this legacy tell us about the Space Age?
- How can heritage, archaeological sites and museums address societal challenges (*inspired by space*)?



