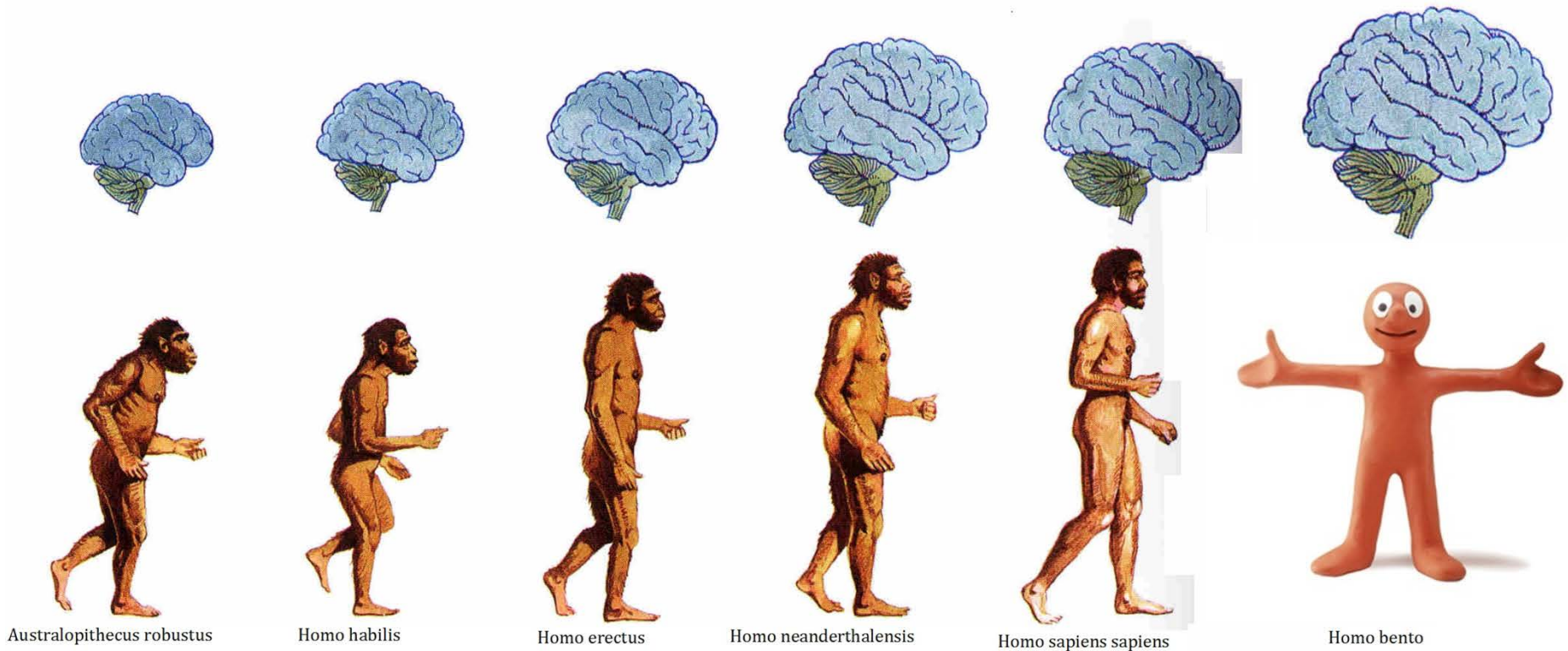


Project: Bentonite Mechanical Properties

Overall idea of HomoBento

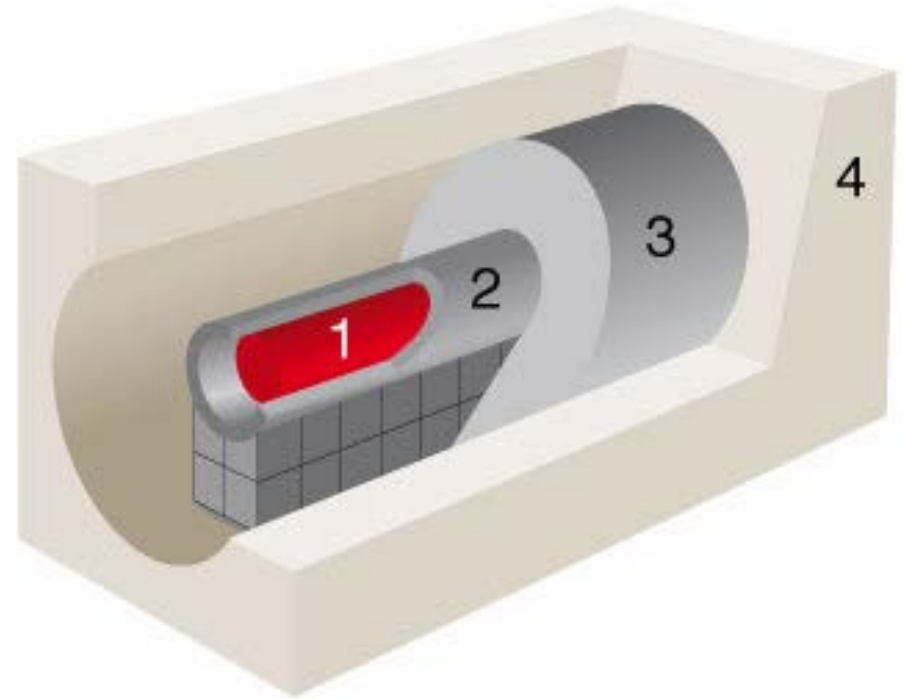
Patrik Sellin, SKB



Bentonite Mechanical Properties

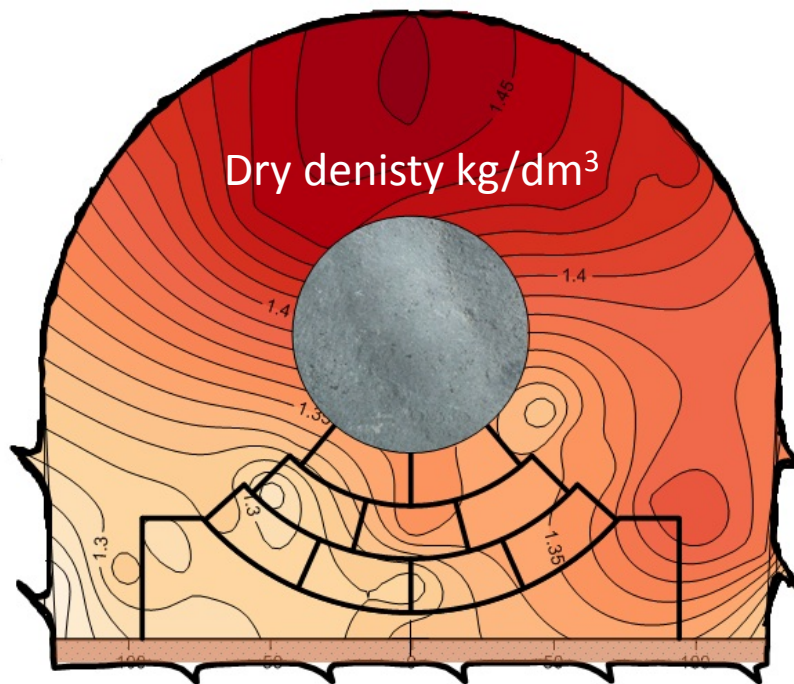
- Bentonite is used in most European disposal concepts:
 - Buffers
 - Backfills
 - Seals
- Generally installed as pellets, blocks and voids
- Design requirements and long-term performance are based on “average” properties
- Swelling is expected and required

Initially inhomogeneous systems



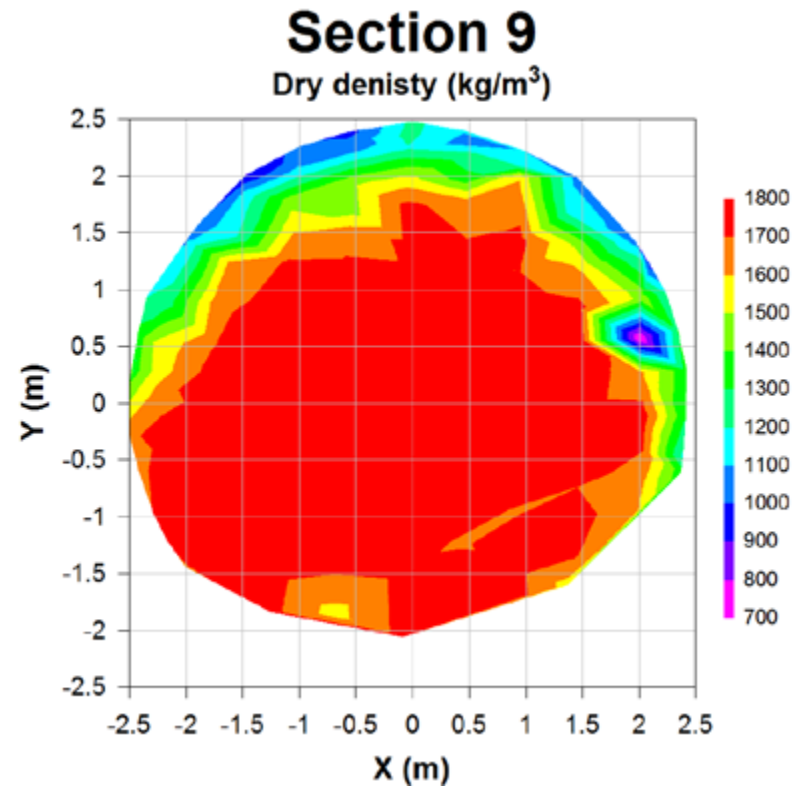
System after saturation and swelling

EB experiment, Mont Terri URL



Fair homogenization: "reasonable" dry density gradients

Prototype Repository, Äspö HRL



Poor homogenization: "unacceptable" dry density gradients

Mechanical Homogenization in Bentonite (HomoBento)

- Currently considered in an optimistic way (full homogenization)
 - This has to be verified in the license processes
- Common issue in most programs
 - The working group had strong and common interests to contribute to the issue
- The conceptual understanding of homogenization is incomplete
 - Is the underlying physics correctly represented?
- Available numerical models are not able to predict experimental behavior
- Laboratory and field data is available
 - Possible to continue model improvement
- Strong benefit from a joint effort
- Off-spring from DOPAS, FORGE, LUCOEX and PEBS
- The number of interested partners could be ~30+
 - This includes WMO, TSO, Universities, Research organizations/companies
 - Will be a management challenge

New Project: HomoBento

- Core WG already formed:
 - ANDRA, Enresa, Nagra, Posiva, SKB
- Working group discussion at IGD-TP 6th Exchange Forum
- If encouraged by IGD-TP, start-up meeting early 2016
- Potential workpackages:
 - Design and safety assessment
 - Benchmarking/code testing
 - Laboratory experiments
 - Conceptual and mathematical model development

