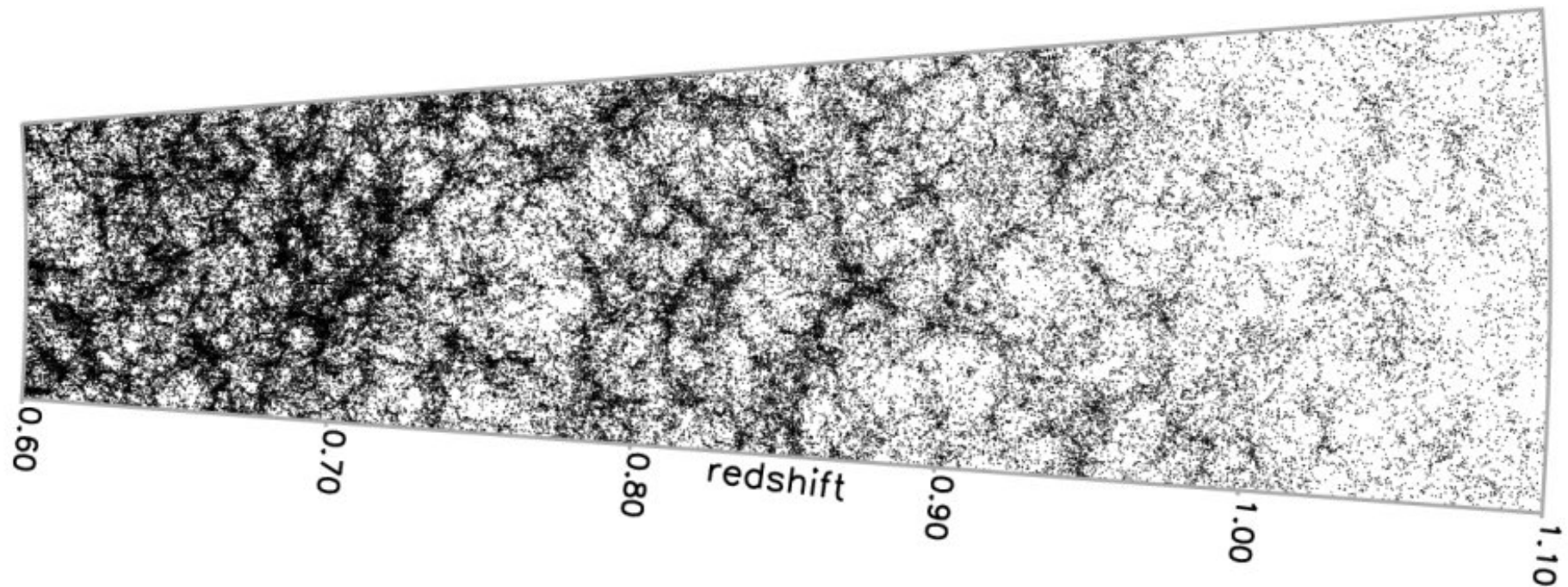


Lister Staveley-Smith (ICRAR/UWA)



- › **Dark matter simulations** (Chris Power, Greg Poole)
 - Precision model for underlying dark halo distribution
 - Possible to simulate large volumes with different cosmologies

- › **Semi-analytic simulations** (Chris Power, Darren/Simon, Guinevere Kauffmann)
 - Paints galaxies in efficient manner
 - Current method of choice for large (Wallaby-sized) galaxy simulations
 - “Models for the people” (Darren)

continued...

- › **Hydro simulations** (Alan Duffy, Klaus Dolag)
 - Gas distribution; HII to HI transition
 - 60% of material in cold flows at $z=3$
 - Magnetic fields important

- › **Light cones** (Alan Duffy; Max on Tue)
 - tricky
 - Needed for observers to make simulations useful!

- › **Data handling and visualisation** (Klaus Dolag, Greg Poole)
 - data management challenging!
 - good practice for observational (ASKAP/SKA) data sets



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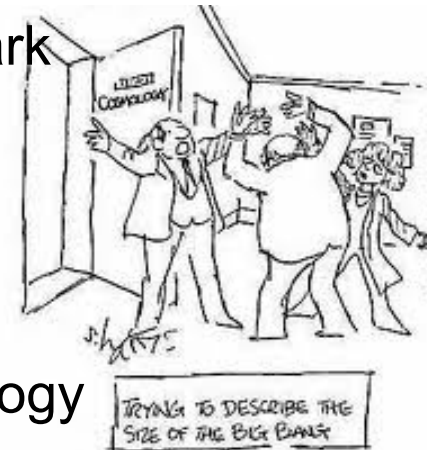
RESULTS AND APPLICATION

› Growth of structure

- Wallaby should provide best low- z measurement of the amplitude of the mass fluctuation spectrum (Florian Beutler)
- Wallaby (and SkyMapper) should reliably measure any dark flows (Morag Scrimgeour)

› Cosmology

- Wallaby volume possibly too small for competitive cosmology (Chris Blake)
- Need to find niches (Florian, Morag, Chris Blake)
- Ensembles of simulations essential to calculate measurement errors





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RESULTS AND APPLICATION

continued...

› **High-mass galaxies**

- Stellar mass and bulge growth appear to explain most observed galaxy parameters (Guinevere Kauffmann; Helga Denes)
- Dynamical scaling relations unify FJ and TF distances (Barbara Catinella)
- how do the most-massive galaxies regulate their gas mass?

› **Low HI-mass galaxies**

- why are too few apparent in hydro simulations? (Alan Duffy)
- what is the regulation mechanism?

WHAT FUTURE SIMULATIONS ARE USEFUL?

- › More dark matter simulations with different cosmologies? (Greg Poole)
- › Higher-resolution zoomed simulations for local Universe (Chris Power)
- › Incorporate gas inflow into SAMs (Guinevere Kauffmann)
- › Magnetic fields? (Klaus Dolag)
- › Modelling HI sizes to match observations (Alan Duffy)
- › Constrained realizations (Klaus Dolag)
 - Local Group
 - Bulk flows flows (Morag Scrimgeour)
- › Simulations important for understanding errors in cosmology (Chris Blake)
- › Join forces to provide pipelines/user interface to Wallaby team/rest of world? How to disseminate data