OpenMx Models

Steven Boker[1] Michael Neale[2] Hermine Maes[2] Paras Mehta[3]
Michael Wilde[4] Timothy Brick[1] Jeffrey Spies[1]
Michael Spiegel[1] Ryne Estabrook[1]
Sarah Kenny[4] John Fox[5] Timothy Bates[6]

[1]University of Virginia; [2]Virginia Commonwealth University;
[3]University of Houston; [4]University of Chicago, Argonne National Labs;
[5]McMasters University; [6]University of Edinburgh

OpenMx Models

What is OpenMx?

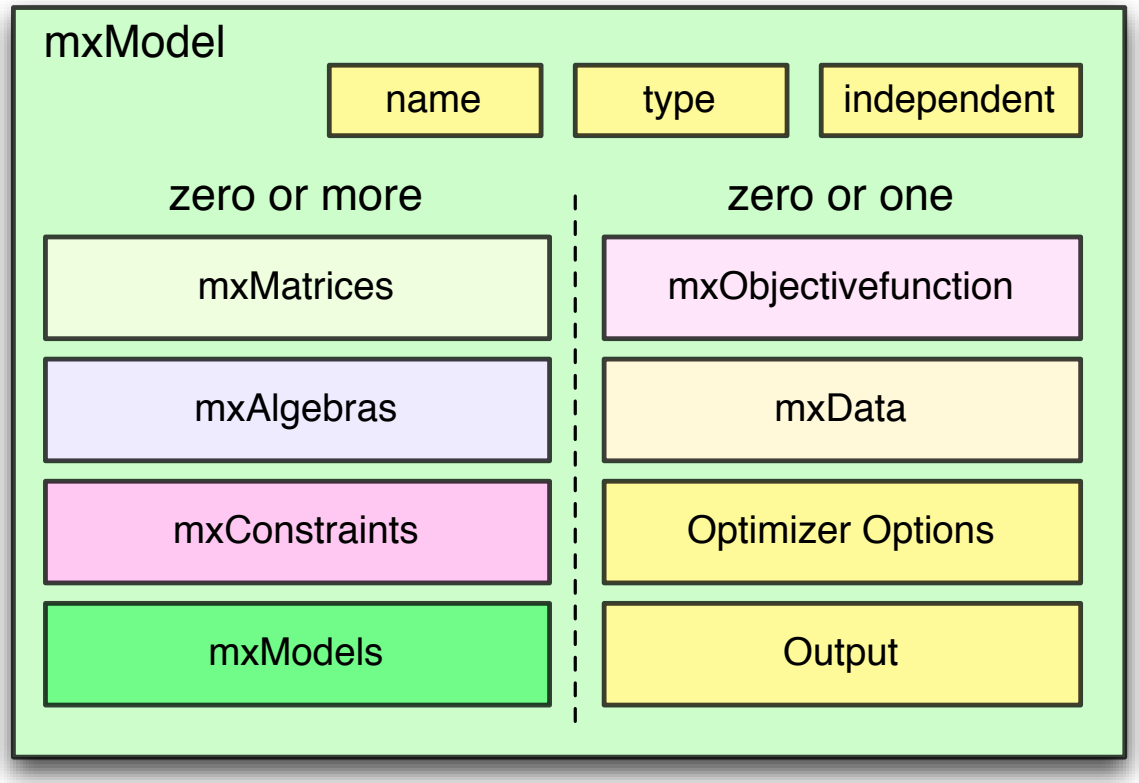
- OpenMx is
  1. A free, full–featured, open source SEM package.
  2. Runs on Windows, Mac OS-X, and Linux.
  3. Runs inside the R statistical programming environment.
- OpenMx features:
  1. A new approach to model specification.
  2. Allows both path-style and matrix-style scripting.
  3. Web–based forums, tutorials, and a wiki.

http://openmx.psyc.virginia.edu

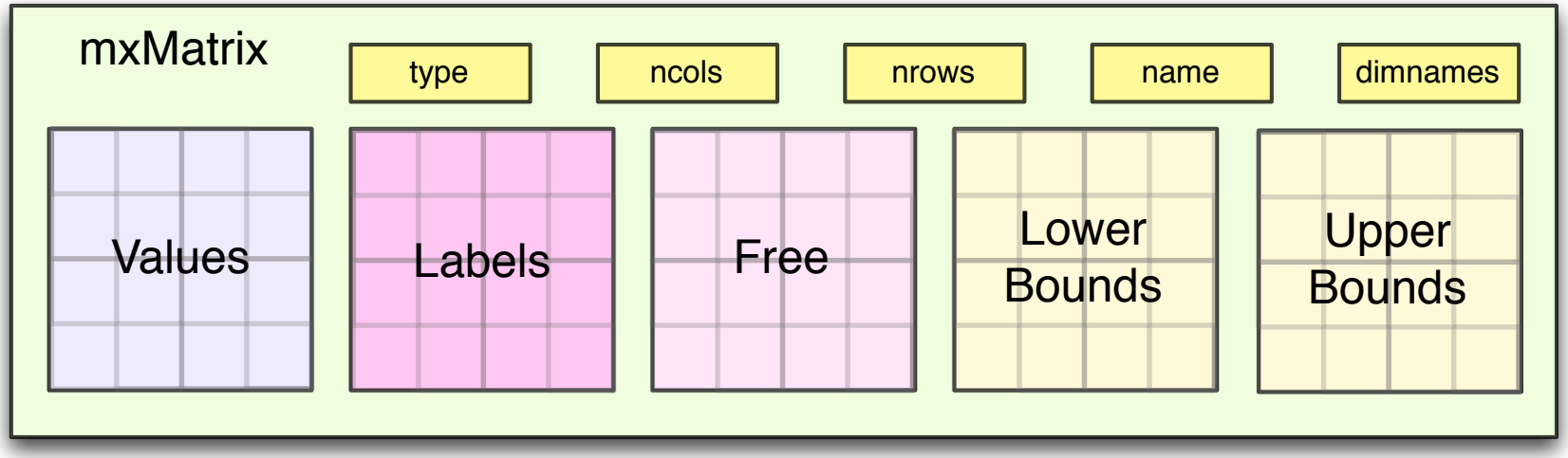
Why Open Source?

- Open source refers to a community–based approach to development of software.
- OpenMx is not a black box.
  - You can look at our code to see exactly how we calculate everything.
- OpenMx is built around the scientific model.
  - Acknowledgement of each other's work.
  - Contribution of one's own work to the benefit of all.
- We hope that OpenMx will provide quantitative graduate students a boost towards implementing their own ideas.
- You can use our code in your own projects!
  - Apache 2.0 License.

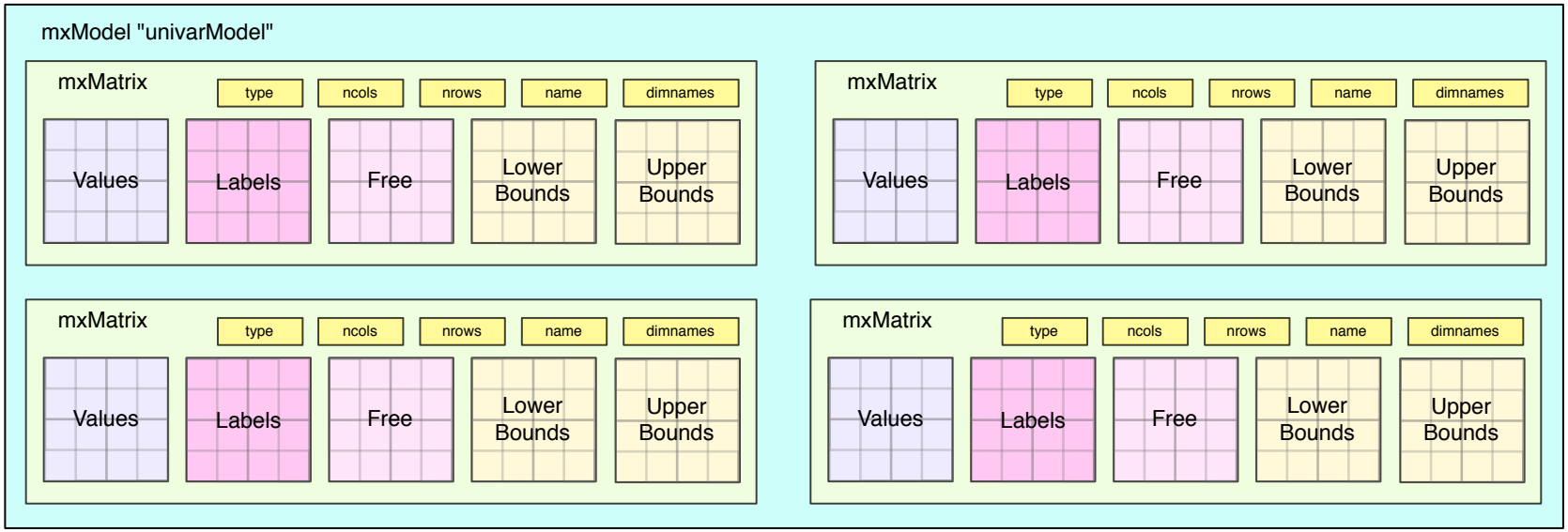
An MxModel Contains Objects and Other MxModels



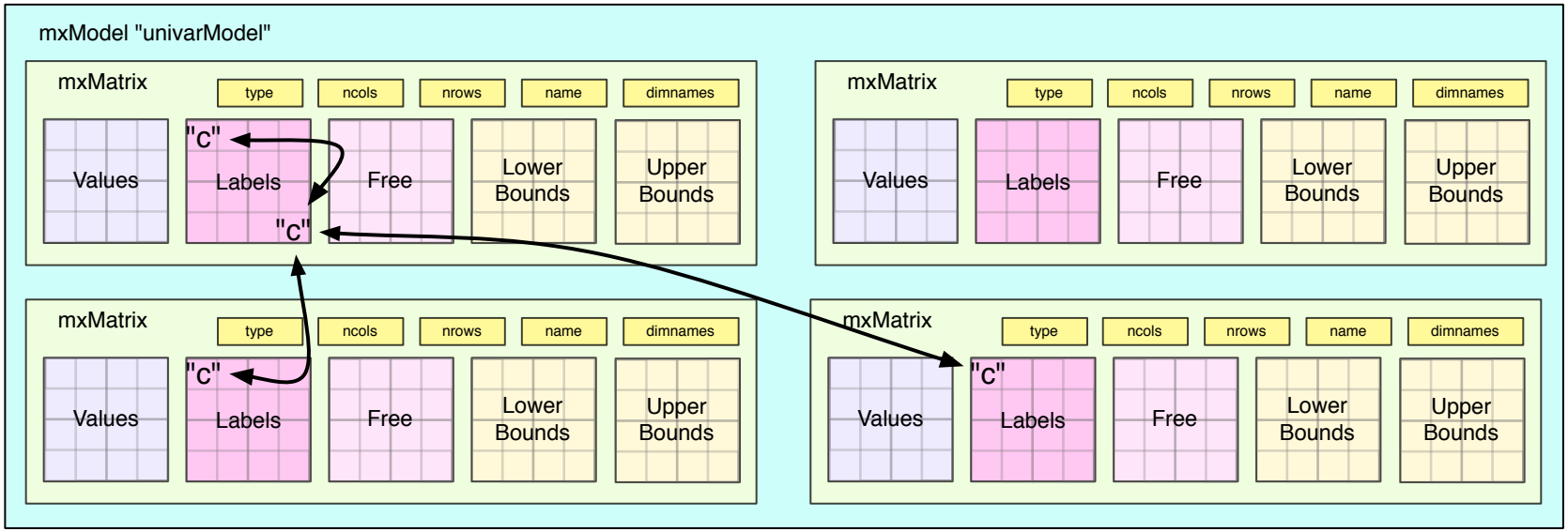
An MxMatrix Contains Values and Metainformation



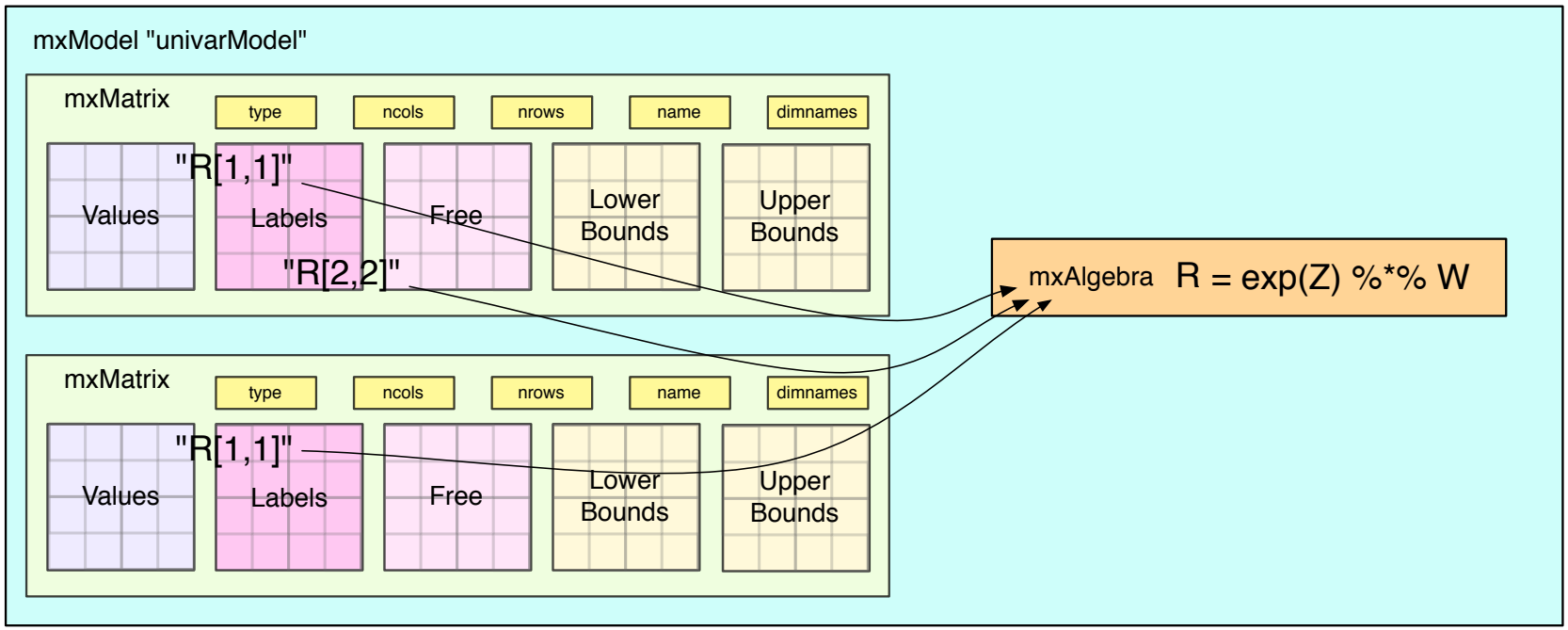
Many MxMatrices Can Be in an MxModel



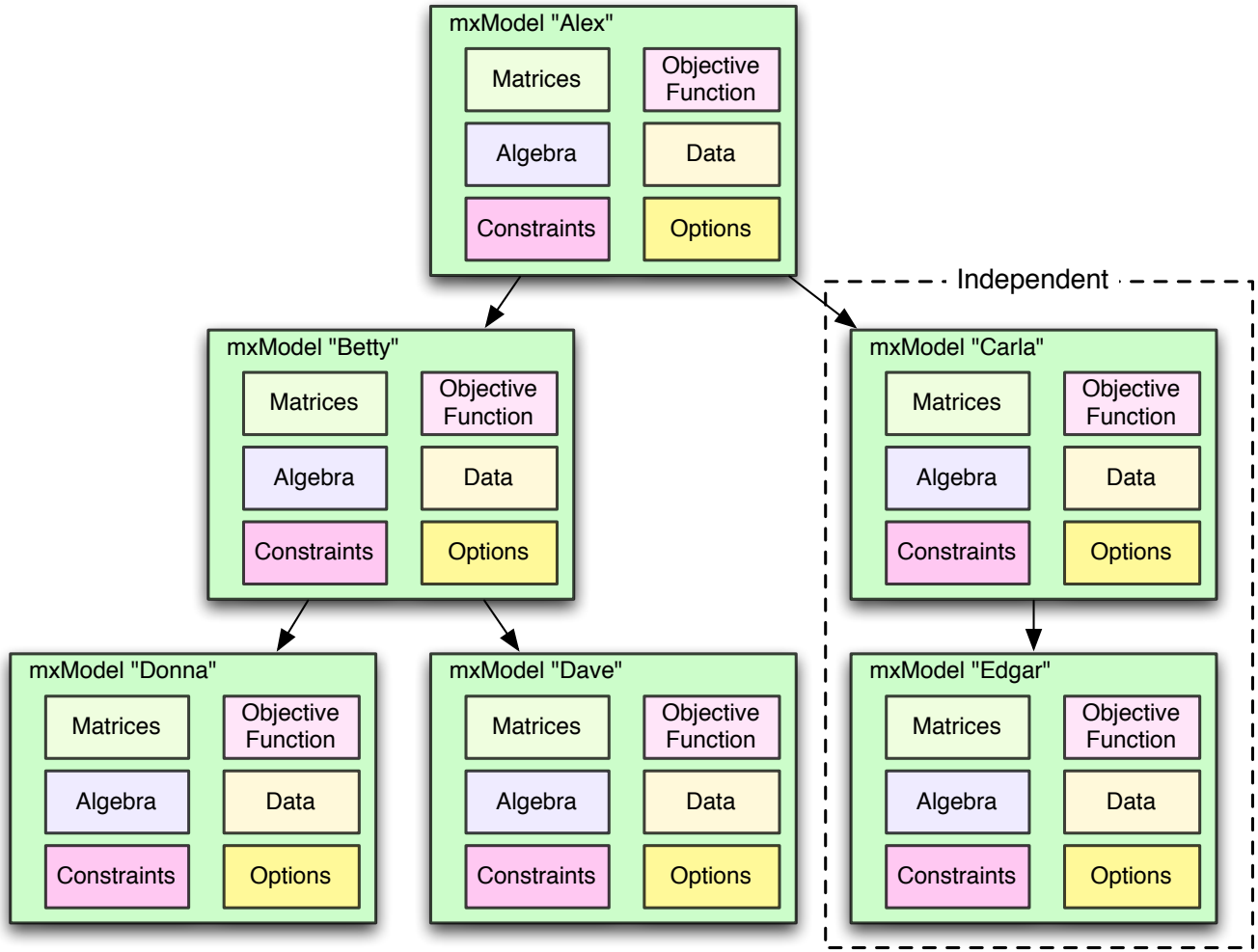
Labels Can Be Used For Equality Constraints



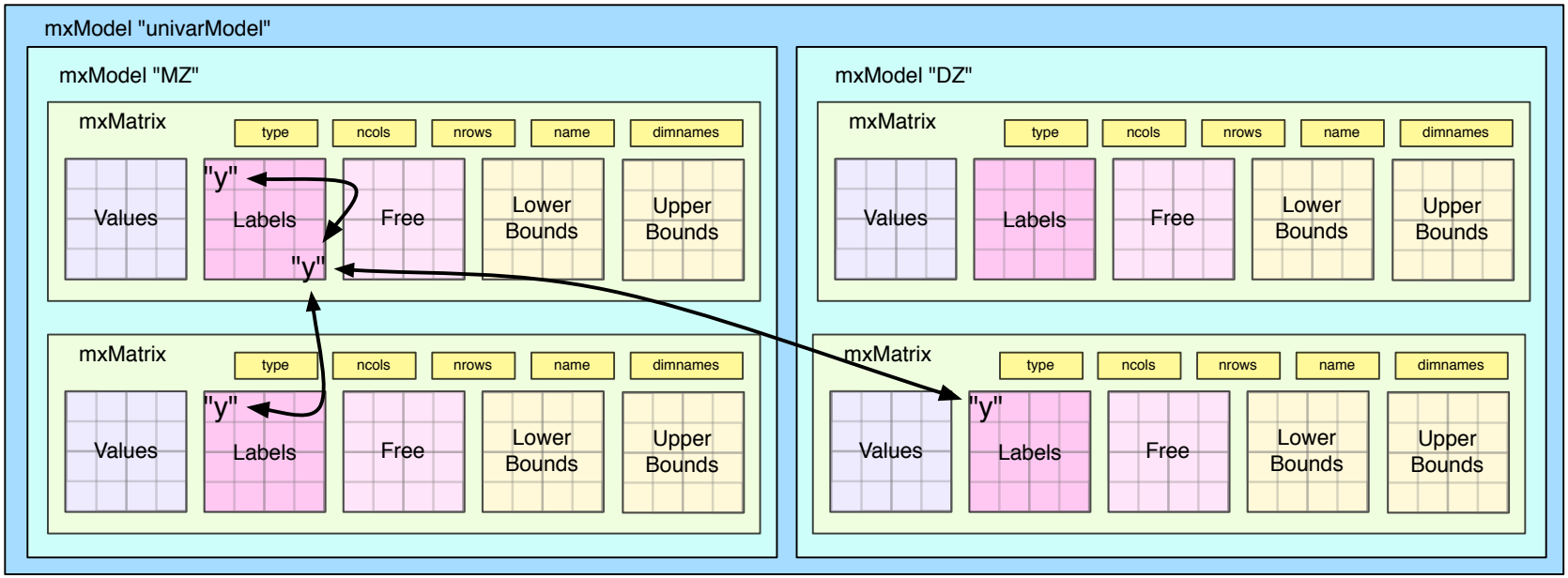
Labels Can Constrain to Algebraic Results



Models Can Be Hierarchically Structured

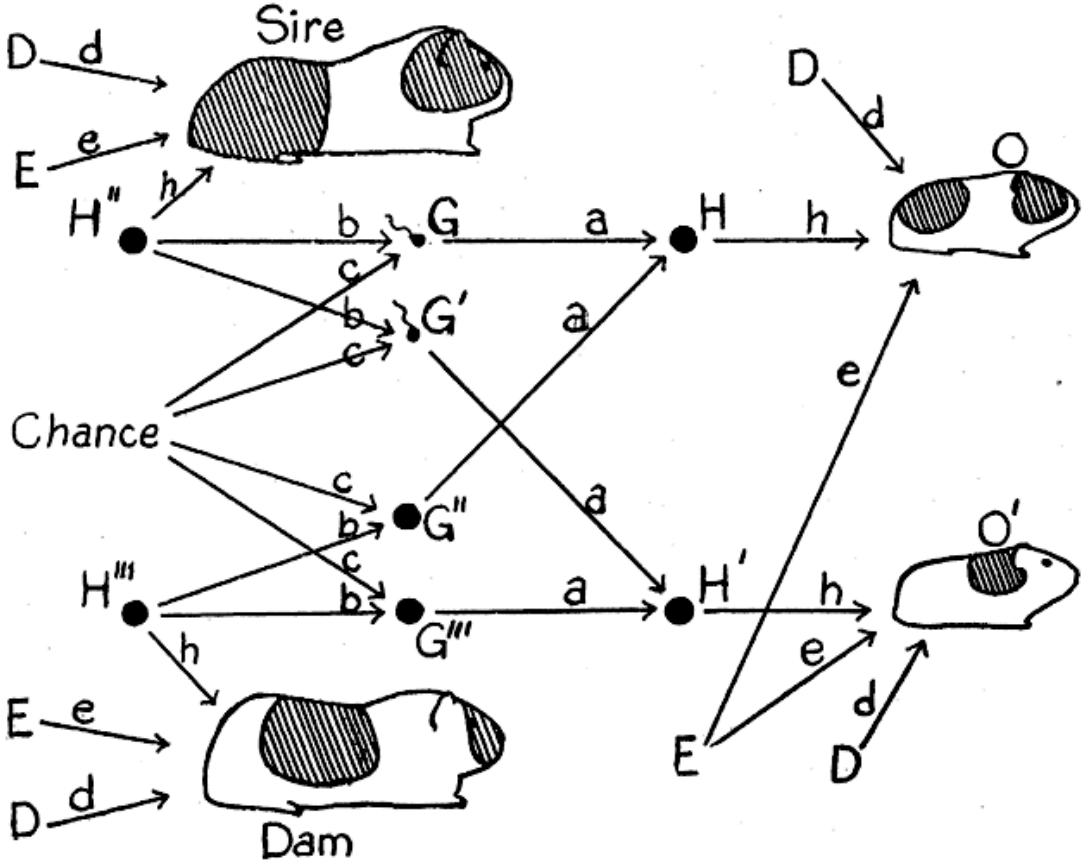


Equality Constraints between mxModels in a Hierarchy



Structure of a Univariate ACE mxModel

What's the Deal with the Guinea Pig?



The first published path diagram (Wright, 1920)

Wright, S. (1920). The relative importance of heredity and environment in determining the piebald pattern of guinea–pigs. *Proceedings of the National Academy of Sciences*, *6*, 320–332.