The lookdown representation of Donnelly-Kurtz (1999) is a method for defining family trees in a neutral population model (neutral meaning that all individuals are equally fit) that was originally devised for understanding genealogical relationships in so-called measure-valued population models, such as the Fleming-Viot process and super-Brownian motion. For finite population models, whose family trees can be represented by directed graphs, the representation, which is essentially based on ranking individuals and then forgetting that ranking, makes it easy to track the success – or failure – of individual lines of descent.

We give a gentle introduction to the lookdown representation, and address the question of identifiability of the ranking - whether, for a given neutral model, it is possible to uniquely infer the ranking of individuals based on the time of death, or failing this, on the asymptotic relative size of their family trees. In particular, we give a necessary and sufficient condition for identifiability in terms of the sequence of population sizes in the model.