EpNet Day lectures
Acerbi et al : The Logic of Fashion Cycles

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Introduction

Aim of the article :

- Propose a new model of cultural evolution (*preference model*)
- compare this model to :
  - Neutral Model (random copy)
  - Status Model (copy of the people with higher social status)
- Evaluate the three models against real data

General idea of the study

Preference for a cultural traits is itself a cultural trait: analyse the co-evolution of those two kind traits :

- a cultural trait
- a preference to this cultural trait

One cultural trait

They first create a model with one cultural trait and a preference for that traits, so 4 types of individuals :

1. 0 no trait, no preference for it
2. T the trait but no preference
3. P the prefenrence but not possessing the trait
4. PT posses the trait and a preference for it.

Based on that agent interact and when meet on *observer* copies a *model*.

Transmission probability

	Model:			
Observer:	0	P	T	PT
0		u	u	u
P	u		$\boldsymbol{w}$	$\boldsymbol{w}$
T	$\boldsymbol{v}$	u		u
PT	u	u	$\boldsymbol{w}$	

Figure: From SI Acerbi et al 2012

assumption :

$v > u$ someone with preference for a traits is more likely to lose it and

$w > u$ someone with a preference for a traits is more likely to adopt it

Dynamic of the model

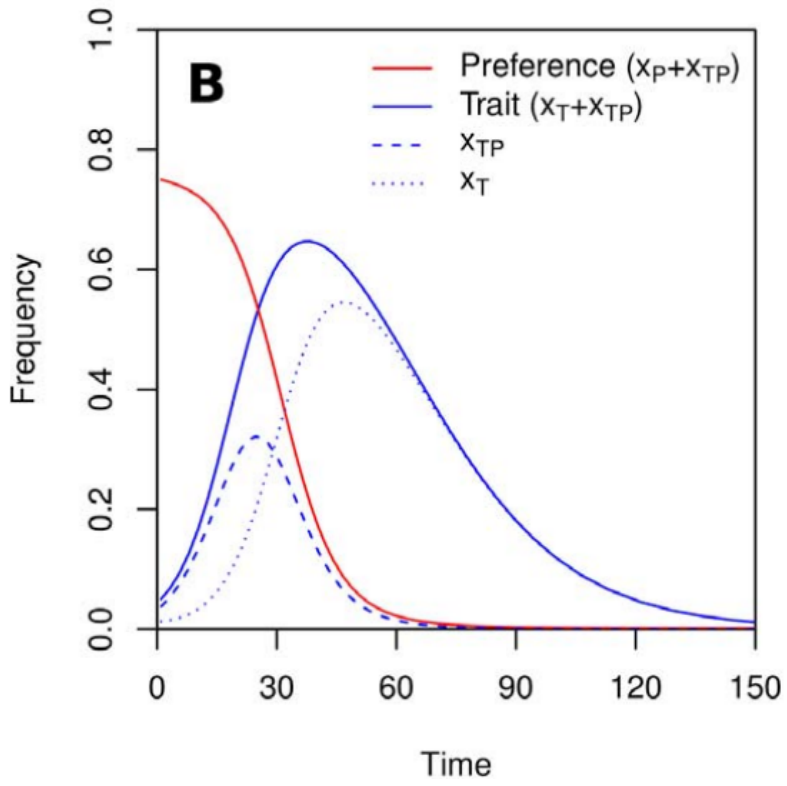


Figure: from acerbi et al 2012, p 3

Generalisatin of the model to n traits and preferences for that traits

q_i the possession of the ith traits ($q_i \in \{0, 1\}$)
p_i the preference for the ith traits ($q_i \in [-1, 1]$)

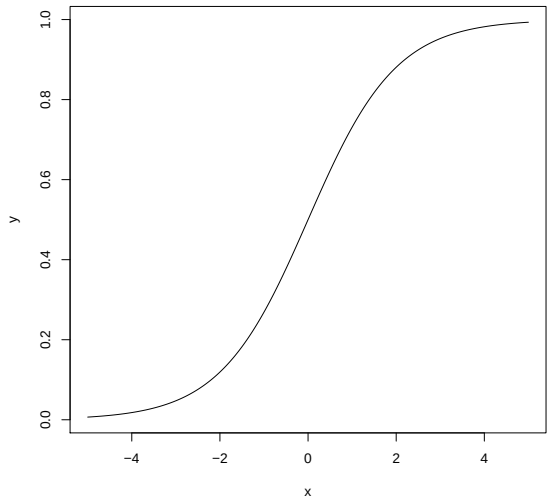
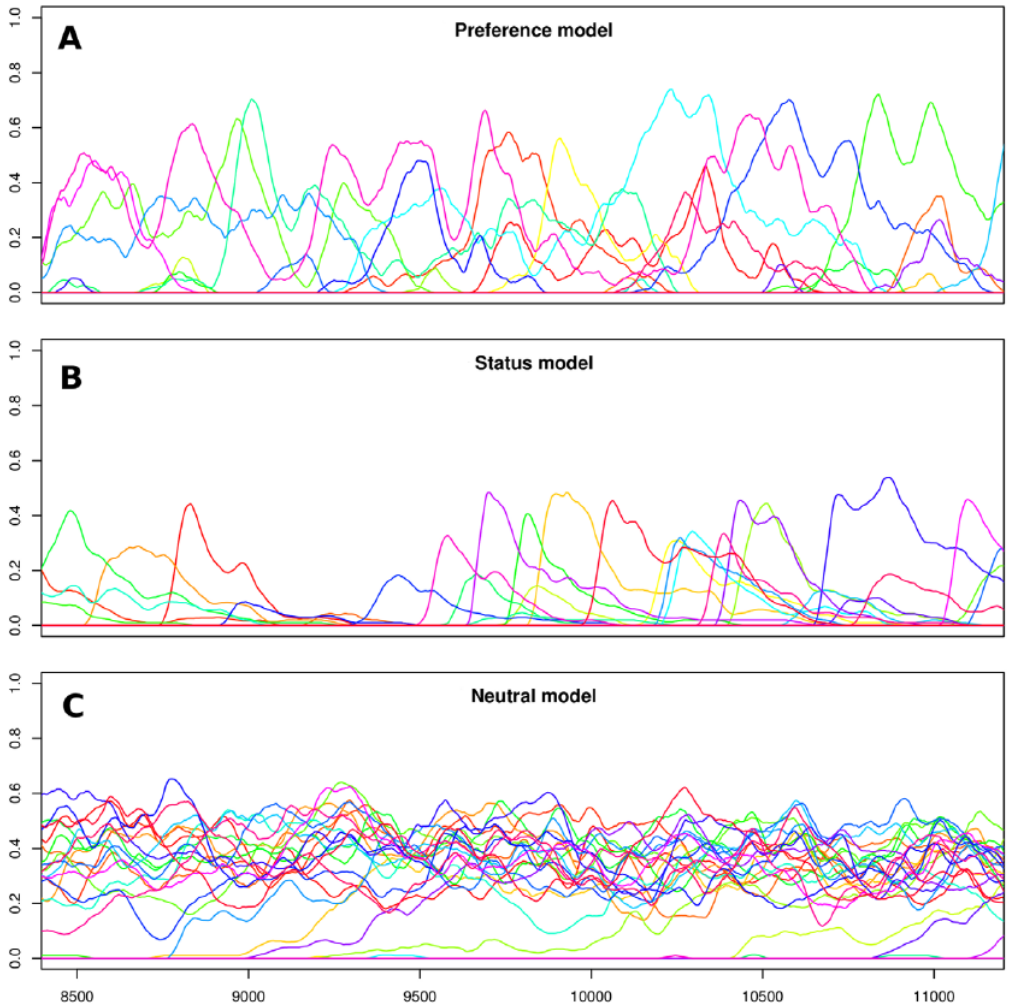


Figure: $x = \sum_{i=1}^{n} p_{oi} q_{mi}$ where o is the observer and m the model and y the proba of o to adop m

Simulation & comparison of the 3 models



Comparison and result