

Cultural Evolutionary Forces

Social Learning Mechanisms (“How to Copy”)

Imitation

“a focus by the observer on the reproduction of the form of modeled actions rather than the result or goal of those actions”

(Berl & Hewlett 2015, p2)

- Contextual imitation

“observing a demonstrator performing an action in a specific context directly causes an observer to learn to perform that action in the same context”

(Rendell et al. 2011, p69)

- Production imitation

“observing a demonstrator performing a novel action, or action sequence, that is not in its own repertoire causes an observer to be more likely to perform that action or sequence”

(Rendell et al. 2011, p69)

- Overimitation

“the high-fidelity copying of causally irrelevant actions in the presence of clear causal information”

(Berl & Hewlett 2015, p2)

Emulation

“observation of a demonstrator interacting with objects in its environment causes an observer becomes more likely to perform any actions that bring about a similar effect on those objects”

(Rendell et al. 2011, p69)

“a focus on reaching the modeled outcome rather than on the details of the actions that accomplish that outcome”

(Berl & Hewlett 2015, p2)

Enhancement & Facilitation

- Stimulus enhancement

“a demonstrator exposes an observer to a single stimulus, which leads to a change in the probability that the observer will respond to stimuli of that type”

(Rendell et al. 2011, p69)

- Local enhancement

“a demonstrator attracts an observer to a specific location, which can lead to the observer learning about objects at that location”

(Rendell et al. 2011, p69)

- Observational conditioning

“the behaviour of the demonstrator exposes an observer to a relationship between stimuli, enabling the observer to form an association between them”

(Rendell et al. 2011, p69)

- Social enhancement
 - Social enhancement of food preferences

“exposure to a demonstrator carrying cues associated with a particular diet causes the observer to become more likely to consume that diet”

(Rendell et al. 2011, p69)

- Response facilitation

“a demonstrator performing an act increases the probability that an animal that sees it will do the same. This can result in the observer learning about the context in which to perform the act and the consequences of doing so”

(Rendell et al. 2011, p69)

- Social facilitation

“when the mere presence of a demonstrator affects the observer’s behaviour, which can influence the observer’s learning”

(Rendell et al. 2011, p69)

- Observational R-S learning
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“Observation of a demonstrator exposes the observer to a relationship between a response and a reinforcer, causing the observer to form an association between them”

(Rendell et al. 2011, p69)

- Opportunity providing

(Hoppitt & Laland 2013)

- Inadvertent coaching

(Hoppitt & Laland 2013)

Social Learning Strategies (“When/Where To Copy”)

“evolved psychological rule specifying under what circumstances an individual learns from others and/or from whom they learn”

(Rendell et al. 2011, p68)

- Copy if uncertain
- Copy if personal information outdated
 - Copy if new environment (?)
 - Copy if environmental conditions change (?)

- Copy if dissatisfied
- Copy depending on reproductive Strategies
- Copy if demonstrators consistent (“Copy if consensus?”)
- Copy if established behavior is unproductive
- Copy if asocial learning is costly

Transmission Biases (“Who/What To Copy”)

UNBIASED

“the adoption of variants in proportion to their frequency”

(Hoppitt and Laland 2013, p240)

GUIDED VARIATION

“nonrandom changes in cultural variants by individuals that are subsequently transmitted”

(Richerson and Boyd 2005, p69)

“a process by which individuals acquire information about any behavior from others and then modify the behavior based on their personal experience”

(Hoppitt and Laland 2013, p240)

- Prestige-biased guided variation

“[produced from the combination of] individual learning, infocopying, ranking abilities, and deference [at the population level]”

(Henrich and Gil-White 2001, p175)

CONTEXT

Model

“choice of trait based on the observable attributes of the individuals who exhibit the trait”

(Richerson and Boyd 2005, p69)

- Indirect

“naive individuals prefer some models over others based on [a character that affects the importance of the individual] and use such preferences to determine the attractiveness of that model for other characters”

(Boyd and Richerson 1985, p243)

- Prestige

“skilled or successful individuals in the immediate circumstances”

(Miller & Dollard 1941, via Henrich and Gil-White 2001, p183)

“standing or estimation in the eyes of people; weight or credit in general opinion; commanding position in people’s minds”

(Henrich and Gil-White 2001, p166)

“the amounts and kinds of deference different models receive [used by naive individuals] as cues of underlying skill”

(Henrich and McElreath 2003, p130)

“individuals adopt the behavior of successful individuals”

(Bell 2003)

“cross-domain success”

“because more direct cues of success and skill may be noisy, unreliable or unavailable, learners should also weight perceived success or prestige in other locally valued domains”

(Henrich & Broesch 2011)

- Status

“the amount of deference received”

(Henrich and Gil-White 2001, p166)

- Dominance

(Henrich and Gil-White 2001)

- Success

“a potential indicator of the adaptive value of cultural variants

possessed by an individual”

(Henrich & Broesch 2011, p1140)

- Familiarity
 - Affiliation/Friendship

(Hoppitt & Laland 2003, p225)

- Kinship
- Knowledge

“a potential indicator of the adaptive value of cultural variants possessed by an individual”

(Henrich & Broesch 2011, p1140)

- Size
- Age

“First, older individuals have had more years to acquire know-how through both social learning and experience. Second, merely by getting to be old, individuals have passed through a selective filter... Third, children may focus on somewhat older models as a way of scaffolding themselves up to increasingly complex skills”

(Henrich & Broesch 2011, p1141)

“children may find a ‘copy adult over child’ strategy relatively easy to implement compared to a ‘copy task-knowledgeable individual’ strategy”

(Wood et al. 2012, p388)

- Gender

“if there are divisions in the skills or specializations of community members based on individual-level factors (e.g. sex), learners should target their attention using cues related to these factors”

(Henrich & Broesch 2011, p1141)

- Health

“Healthier individuals in ancestral environments could have more children and invest more heavily in their offspring. If being healthy reveals itself in appearance or activity, learners ought to be sensitive to this...”

(Henrich & Broesch 2011, supp.)

- Happiness

“since positive affect, or more simply happiness, correlates with health outcomes... learners may use positive affect as a cue of whom to learn from”

(Henrich & Broesch 2011)

- Self-Similarity

- Gender

“if there has been a division of labor between males and females during much of human history, then humans should have evolved a tendency to learn from people of their same sex”

(Henrich & Broesch 2011, supp.)

- Ethnicity

“learners should focus their learning efforts on models who share their ‘ethnic markers’ (cues of dialect, language, dress) because this gives them the best chance to acquire the mental representations (social norms, values, and expectations) that will permit them to effectively coordinate, exchange and cooperate with others in their social group”

(Henrich & Broesch 2011, supp.)

- Personality

“provide cues that permit learners to select models likely to possess mental representations that are suited to the learners’ endowments”

(Henrich & Broesch 2011, supp.)

- Physical Attributes

“provide cues that permit learners to select models likely to possess mental representations that are suited to the learners’ endowments”

(Henrich & Broesch 2011, supp.)

- Access

“learners must balance the costs of accessing high-quality models against the quality of information available for transmission”

(Henrich & Broesch 2011, p1141)

- Network Centrality

“if there is a distribution in the perceived quality of potential models (e.g. variation in perceived success or suitability), the overall patterns of model selections for different kinds of cultural information should reflect this at the network or community level”

(Henrich & Broesch 2011, p1141)

- Narrative Ability

“a means of pursuing fitness interests by manipulating other individuals’ representations of their environment”

(Sugiyama 1996, p420)

Frequency

“the use of commonness or rarity of a cultural variant as a basis for choice”

(Richerson and Boyd 2005, p69)

“the commonness or rarity of a trait affects the probability of information transmission”

(Hoppitt and Laland 2013, p240)

- Conformity

(Boyd & Richerson 1985)

(Henrich & Boyd 1998)

“individuals are predisposed to adopt the most popular cultural trait in a group”

(Mesoudi et al. 2006a, p337)

“positive frequency-dependent social learning for which the probability of acquiring a trait increases disproportionately with the number of demonstrators performing it”

(Rendell et al. 2011, p68)

“positive frequency-dependent bias”

(Hoppitt and Laland 2013, p240)

- Anti-Conformity
- Increasing Frequency (“Popularity?”)

CONTENT (“Direct”)

“based on... judgments about the properties of the variants themselves”

“one cultural variant is simply more attractive than others”

(Richerson and Boyd 1985, p10;135)

“individuals are more likely to learn or remember some cultural variants based on their content”

(Richerson and Boyd 2005, p69)

“individuals choose one of two or more alternative traits to adopt according to some intrinsic quality of the trait”

(Hoppitt and Laland 2013, p240)

- Emotional

“emotional selection operates to select memes that strongly trigger specific emotions rather than generalized anxiety”

(Heath et al. 2001, p1032)

“...emotional responses will affect the cultural viability of norms as well as other cultural items... Norms prohibiting actions that elicit negative affect will... be more likely to survive than affectively neutral norms”

(Nichols 2002, p235)

- Entertainment

“people will value stories that produce favorable emotional reactions (especially positive and neutral emotions, e.g., interest, joy, or surprise) ... stories succeed when they are able to evoke strong emotion, but only because these stories are better crafted and more entertaining”

(Heath et al. 2001)

- Disgust

“people... would be willing to pass along legends that elicit greater levels of disgust”

(Heath et al. 2001)

“norms prohibiting “core-disgusting” actions (i.e., actions that are likely to elicit core disgust) will enjoy greater cultural fitness than norms prohibiting actions that are unlikely to elicit core disgust (or other emotions)”

(Nichols 2002)

- Fear
- Social

“information concerning interactions and relationships between a number of third parties”

(Mesoudi et al. 2006b, p407)

- Gossip

“[information concerning] particularly intense and salient social interactions and relationships”

(Mesoudi et al. 2006b, p407)

- Non-Social

“information concerning a single individual’s interactions with the physical environment”

(Mesoudi et al. 2006b, p407)

- Physical

“information solely concerning [the] physical environment”

(Mesoudi et al. 2006b, p407)

- Survival
 - Dietary

(Hoppitt & Laland 2003, p227)

- Functional

“people will be more likely to pass along information that is plausible and that contains some useful, practical information or a moral lesson”

(Heath et al. 2001, p1032)

- Moral

“people will be more likely to pass along information that is plausible and that contains some useful, practical information or a moral lesson”

(Heath et al. 2001, p1032)

- Cultural Attractiveness
- Minimally Counterintuitive

Macro(co)evolutionary Forces (“Why To Copy”)

Natural selection

“changes in the cultural composition of a population caused by the effects of holding one cultural variant rather than others... at individual or group levels”

(Richerson and Boyd 2005, p69)

RANDOM FORCES

Cultural mutation

“effects due to random individual-level processes”

(Richerson and Boyd 2005, p69)

Cultural drift

“effects caused by statistical anomalies in small populations”

(Richerson and Boyd 2005, p69)

“random, or unbiased, copying in which individuals acquire variants according to the frequency at which they are practiced”

(Rendell et al. 2011, p68)

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