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Perspectives on Cultural Evolution from Pioneers of the Field

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Abstract

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Studies of cultural evolution frequently analyse deep human history, but the modern science of cultural evolution has a surprisingly short past. After briefly reviewing the last two hundred years of cultural evolutionary thinking, we highlight the work of eight pioneering scholars in a set of interviews. Each scholar reflects on their definition of cultural evolution, their journey to studying cultural evolution, their perception of changes in cultural evolutionary science, and their vision for the future of the field. Interviews show the interdisciplinary breadth of cultural evolutionary science, and the diverse perspectives that have shaped the field's early development. We intersperse each scholar's reflections with our own perspective as early career researchers within cultural evolution science.

Key Words: Cultural Evolution; Qualitative Interviews; Metascience; History

51 Introduction

52 Many scholars today consider cultural evolution to be a new and provocative area of science—a
53 daring expedition to uncover how humans and other animals transmit cultural information across space
54 and time. A few years ago, when we were graduate students, we often faced incredulous reactions when
55 we spoke about our interest in cultural evolution. Some fellow psychologists told us that we were brave to
56 enter such a young discipline. By some metrics, they were right about the youth of the field. In the last 10
57 years, cultural evolution has gained an academic society, surging research interest (Gray & Watts, 2017),
58 and even a Wikipedia page. But this perspective misses the deep roots of our field and the scholars who
59 laid the groundwork for the current success of cultural evolution science.

60 Ideas about cultural evolution are arguably just as old as ideas about biological evolution. The
61 word “evolution” has never been exclusively biological. It descends from the Latin word *evolutio*, which
62 described a process of unrolling or unfurling in the 17th century, mostly in the context of a military
63 maneuver or the act of unfurling a scroll (OUPblog, 2015). In the following centuries, “evolution”
64 evolved into a general term for development via gradual change. In the early 19th century, astronomers
65 spoke about changes in the physical universe as a process of evolution, and Charles Lyell began to use the
66 word in geology to describe the development of rock formations (Lyell, 1830). Around the same time that
67 Darwin published his theory of natural selection, Herbert Spencer described the transformation of both
68 biological and cultural systems in terms of evolution (Spencer, 1864).

69 Darwin personally avoided using “evolution” to describe his theory, but his admiration for Lyell
70 may have inspired him to use it as the very last word in *On the Origin of Species* when he wrote, “From
71 so simple a beginning endless forms most beautiful and most wonderful have been, and are being,
72 evolved” (Darwin, 1859). But even as he laid out his theory of biological change in the *Origin*, Darwin
73 made sure to draw analogies between biological and cultural processes, noting a “curious parallel”
74 between the development of different languages and of distinct species. The biological phylogenies which

75 Darwin roughly drew in his notebook may also have been influenced by language phylogenies published
76 by August Schleicher (1873) and others (see Atkinson & Gray, 2005).

77 Throughout the 20th century, evolutionary thinking became foundational in biology, but faced an
78 uphill climb in the social sciences. In the 19th and early 20th centuries, many theories of cultural evolution
79 had a unilineal flavor with racist overtones. Theories from Spencer (1864) and Edward Tylor (1871)
80 pictured evolution as a ladder with White Christian Europeans at the top and non-Western indigenous
81 societies at the bottom. In the early and mid-20th century, scholars like Boas (1989), Campbell (1987), and
82 Washburn (1959), E. O. Wilson (1975), Lumsden (Lumsden & Wilson, 1981), and Dawkins (1976),
83 proposed more sophisticated evolutionary models of culture. But their ideas often faced stiff resistance,
84 most evident in the negative reaction to Wilson's final chapter of "Sociobiology" (Wilson, 1975).

85 The broader renaissance for cultural evolution came in the 1980s when two groups of academics
86 from California: Luca Cavalli-Sforza and Marcus Feldman, and Robert Boyd and Peter Richerson,
87 proposed groundbreaking mathematical models describing some of the ideas that continue to animate
88 cultural evolution today: cultural niche construction, culture-gene co-evolution, social transmission
89 biases, cultural group selection, and more (Boyd & Richerson, 1988; Cavalli-Sforza & Feldman, 1981).
90 Other major figures emerged around the same time. Ruth Mace used phylogenetic methods from
91 linguistics as a new paradigm to model and understand the history of cultural variation (Mace et al.,
92 1994). Monique Borgerhoff Mulder described economic, health, and social information across regions of
93 Tanzania using models of life history and cultural transmission (Mulder, 1998). Andrew Whiten
94 published groundbreaking research documenting culture in chimpanzees (Whiten et al., 1999). Cecilia
95 Heyes showed how core psychological processes like mindreading could be culturally learned (Heyes &
96 Galef Jr, 1996). Finally, Dan Sperber developed cognitive models of cultural evolution that he applied to
97 the development of story-telling, humor, and language (Sperber, 1996). All of these scholars, and many
98 other foundational scientists whom we were unable to interview, helped make cultural evolution into the
99 fully realized and interdisciplinary framework that it is today.

.24 Over the following pages, we present excerpts from these interviews, balancing a high-level
.25 overview of interviewee responses with direct quotes that showcase each scholar’s approach. Because of
.26 space constraints, we do not feature every interviewee in every section, but we strive to give equal
.27 attention to each scholar over the set of responses¹.

.28 **How Would You Define Cultural Evolution?**

.29 Definitions of cultural evolution have changed over the last two centuries. Some of the earliest
.30 definitions involved simplistic and racist “stage theories,” in which societies progress through fixed stages
.31 from savage and simple groups to civilized and complex groups (Spencer, 1864; Tylor, 1871). Modern
.32 cultural evolutionists reject these stage theories. More sophisticated early definitions of cultural evolution
.33 came from Durkheim (1893) and Weber (1904), who described how values and institutions could co-
.34 evolve over time. Years later, when Mesoudi, Whiten, and Laland (2006) proposed a unified science of
.35 cultural evolution, they used Richerson and Boyd’s (2008) definition of culture as “information capable of
.36 affecting individuals’ behavior that they acquire from other members of their species through teaching,
.37 imitation, and other forms of social transmission” and cultural evolution as “a Darwinian process
.38 comprising the selective retention of favorable culturally transmitted variants, as well as a variety of non-
.39 selective processes such as drift” (p. 331).

.40 The scholars we interviewed offered definitions of cultural evolution which offered different
.41 variations on the definition from Mesoudi and colleagues’ (2006) by way of Richerson and Boyd (2008).
.42 All the scholars mentioned Darwinian evolution, but their definitions varied widely in their breadth and
.43 similarity to Darwinian evolution.

.44 One of our scholars, Cecilia Heyes, offered three definitions that varied in their breadth:
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¹ One scholar’s responses (Monique Borgerhoff-Mulder) have been paraphrased since technical challenges prevented us from recording and transcribing the interview.

.46 “For me I like the ‘selectionist’ definition, so the really strong version of cultural evolution: the
.47 idea that it's a Darwinian process of variation and selective retention operating on socially learned
.48 variants or socially inherited variants. Of course, I recognize that not everybody's using it that
.49 way. Sometimes I will use it in the ‘populational sense’ or the ‘kinetic sense’ which is large-scale
.50 changes in a population produced by episodes of social learning between individuals, but I never
.51 use it in the incredibly liberal way which is any change in a broadly social phenomenon over
.52 time.”

.53

.54 Heyes added that “I think it's fine for there to be diversity as long as people signal the sense in
.55 which they use it,” signalling that there is still flexibility in how scientists characterize cultural evolution.

.56 In contrast to Heyes’ preference for a specific definition, Ruth Mace defined cultural evolution
.57 more broadly: “Cultural evolution is just changes in culture over time. Everyone is being defeated by how
.58 to define culture, but I would just say group-level norms or behaviors. I wouldn’t limit cultural evolution
.59 to any particular mechanism because I think it’s a family of processes.” Mace also argued that a more
.60 general approach is beneficial, saying “I think cultural evolution has become a very broad term and that’s
.61 OK.”

.62 Andrew Whiten also used multiple definitions of cultural evolution, nesting some definitions
.63 within others:

.64

.65 “There are two different meanings when we talk about culture evolving: the first meaning looking
.66 at cultural phenomena across the animal kingdom, so to the extent we get traditions and what we
.67 could call cultures in the animal kingdom, obviously they've evolved. The second meaning is the
.68 one I think is more allied to what most people in the field of cultural evolution are talking about:
.69 cultural evolution within a lineage that's happening through variation and differential transmission.
.70 Then I divide that into two: selectively neutral cultural evolutionary drift (so you might just simply

.71 describe that as cultural evolutionary change) and the most interesting other sub-category: cultural
.72 evolution through Darwinian selection. At the next level down there's also a dichotomy where
.73 you're getting some directional change through selection which can lead to the accumulation of
.74 characters which is cumulative culture but also the stabilizing selection which actually acts to keep
.75 traditions stable. This seems like a complicated answer but it's the one we need... what makes
.76 [cultural evolution] interesting is that there are all these different elements".

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.78 Whiten's quote alludes to a burgeoning study of culture in non-human animals, including
.79 chimpanzees, cranes, whales, and even fruit flies (Whiten, 2021). His nested definition also resembles
.80 Heyes: both scholars differentiate culture which is socially transmitted without any process of selection,
.81 from culture which emerges or stabilizes via selection processes because of its favorable qualities (e.g.,
.82 attractive content, or useful function). As Whiten points out, it is sometimes hard to distinguish between
.83 these forms of cultural evolution.

.84 Like Ruth Mace, Dan Sperber starts defining cultural evolution with the challenge of defining
.85 culture. However, unlike Mace, Sperber suggests that culture does not need to be associated with a
.86 particular social group:

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.88 "Some communications change the public environment based on our own cognitive states, even if
.89 most of our behaviours don't have much of a public impact... I think of culture as the flow of this
.90 public information in the population. What makes this information cultural is that it is part of an
.91 interactive chain of transmission. This definition of culture is slightly different from some of my
.92 contemporaries. They think of culture as separate from psychology... Cultural evolution is not the
.93 evolution of people—it is the evolution of ideas and behaviors."

.94

.95 Sperber's emphasis on the "evolution of ideas and behaviors" recalls the idea of memetics, an
.96 early theory of cultural evolution proposed by Richard Dawkins (1976). Sperber has spent much of his
.97 career proposing that cultural ideas, which Dawkins called "memes," are far less stable than Dawkins
.98 assumed. Sperber has argued that these cultural ideas are always evolving in systematic ways towards
.99 "attractors," and that we can predict this process of change if we understand human cognition.

:00 Peter Richerson defined cultural evolution not by defining culture, but by first defining evolution:

:01

:02 "Evolution in general [is] a process where something is inherited from one time period to the next,
:03 with potential transformations happening along the way. Cultural evolution is just one way of
:04 propagating information through time. You can also think of developmental time, learning and
:05 other such processes, where even if you don't go from one generation to the next, there is still kind
:06 of an evolution where the phenotype of a person or an organism is transforming over time".

:07

:08 Richerson and Sperber both suggest, in contrast to Cecilia Heyes, that all cultural evolutionists are
:09 populationists. According to Sperber, the major difference between definitions of cultural evolution is
:10 what population they focus on: "the population of hosts or the population of cultural information".

:11 Monique Borgerhoff Mulder described culture as "everything to do with how people behave, what
:12 they do and what they believe". In her view, the aim of cultural evolution research is therefore to explain
:13 how and why these things change over time using the Darwinian framework of variation, competition and
:14 transmission to account for these transformations. She further explained that the study of cultural
:15 evolution offers an evolutionary theory of social information, rather than genetic information, although
:16 she caveats that genetic and cultural transmission interact in the form of coevolution.

:17 Rob Boyd also emphasised the importance of co-evolution of cultural traits and genetic traits in
:18 shaping human existence and making modern humans such a comparatively "strange species"—a contrast
:19 to Whiten whose definition of cultural evolution explicitly included culture in non-human animals. Boyd

120 says of culture and cultural evolution: “Cultural evolution is about what happens to a population when
121 there are non-genetic pathways of transmitting important adaptive information, and other information too,
122 through time so then you end up with a dynamic process. ... Culture is special because it's informational
123 and little bits of information have hardly anything to them, in the sense that it's not like changing the
124 content of the atmosphere or having a lake turn into a meadow, you know you find out that if you wash
125 the cassava this way you can eat it if you don't wash it this way you get sick. That's just a little tiny bit of
126 information that can have tremendous consequences.”

127 **Could You Describe Your Pathway to Cultural Evolution Science?**

128 With a few recent exceptions, there are no departments of cultural evolution. Scholars of cultural
129 evolution have typically been trained within traditional disciplines like anthropology, biology, or
130 psychology, and discovered cultural evolution science through an interdisciplinary advisor or by reading
131 on their own. As early career scientists who recently made this discovery, we were curious about how
132 pioneers of the field made their own path, especially since cultural evolution science was not supported by
133 societies and granting agencies when these scholars were starting their careers.

134 Surveying each scholar's pathway to cultural evolution science revealed many different routes,
135 none of them straightforward. For example, Marcus Feldman, Rob Boyd and Peter Richerson did not so
136 much find a route into the study of cultural evolution, as invent the field themselves—also working
137 contemporaneously with scholars such as Bill Durham (1976). Marcus Feldman described his early work
138 which led to his seminal book with Luca Cavalli-Sforza (Cavalli-Sforza & Feldman, 1981):

139
140 “There wasn't such a quantitative subject until Cavalli [Sforza] and I invented it. Luca [Cavalli
141 Sforza] had had ideas about it since the early 70s since he started studying genetic variation in
142 Italy... In '72 he and I arrived at Stanford together from different places. ... What Cavalli and I
143 started to do was ask “how can you get high correlation between relatives without having genetic
144 transmission, through cultural transmission?” As far as I knew, there hadn't been papers written

!45 before which used that term. We wrote a paper on the rates of evolution of traits under individual
!46 and group transmission, and how much variation would be retained in populations under different
!47 rates of group transmission and individual transmission. I think this was the first paper that
!48 modelled conformity-transmission with a bias towards the mean of the population. Between then
!49 and 1979, we may have written 10-15 papers on cultural transmission, including the first paper on
!50 gene and culture coevolution in 1976. This was the origin of the field.”

!51

!52 Rob Boyd and Peter Richerson, who also played a founding role in cultural evolution science,
!53 came to the field from very different places. With backgrounds in environmental science and ecology
!54 respectively they taught an ‘Introduction to Environmental Studies’ course together as early career
!55 researchers. They reflected on how this partnership led them to starting a research project on cultural
!56 adaptations, which eventually became their seminal book *Culture and The Evolutionary Process* (Boyd &
!57 Richerson, 1988):

!58

!59 “I went to the library to look into materials to underpin a lecture [on cultural adaptations], not
!60 expecting this to be a research project, but it turned out that the account of what these
!61 anthropologists called a cultural adaptation was pretty primitive ... At the same time, I started
!62 talking with Rob Boyd about this problem ... One thing led to another and pretty soon we
!63 convinced ourselves that there was a potential research project there, and off we went.” (PR)

!64

!65 “I went to work for a state regulatory agency for 3 years out in California regulating nuclear power
!66 plants and Pete and I kept working [on the project]. It was a crazy strategy for a graduate career
!67 but that’s what I did. Pete and I would meet once a week and work on these cultural evolution
!68 ideas and after a while I decided it was a lot more interesting than the work I was doing
!69 [regulating power plants] and I dropped out and we spent a year working on the ‘85 book

!70 [published in 1988]. Eventually I got an academic job based on my environmental work and the
!71 book got published. It's not a strategy I'd recommend for any of my graduate students!" (RB)

!72

!73 Although Dan Sperber came from an anthropology background, he felt like an outsider when he
!74 began studying cultural evolution:

!75

!76 "I came from a really different background than a lot of early scholars. I didn't come from
!77 biology, or mathematics. I came from anthropology, doing fieldwork and reading about cognitive
!78 science and linguistics. My student Nicolas Claidière and I began developing simple models of
!79 [cultural] attraction². We weren't part of the mainstream voice at that time. If computational
!80 biology was the Microsoft, we were a startup. But we had a good product. This led to a semi-
!81 formal understanding of cultural attraction which became a larger part of the conversation."

!82

!83 For most of the rest of our scholars, the path to studying Cultural Evolution was just as indirect. A
!84 common thread amongst many of our interviewees was that they "aren't really cultural evolutionists," a
!85 view that may reflect the breadth and diversity of the field of Cultural Evolution Science.

!86

!87 Both Andrew Whiten and Ruth Mace came into the field of Cultural Evolution from a zoology
!88 background— Andrew Whiten joked "I'm coming out of evolutionary biology but then I got more and
!89 more interested in the mind, so now I masquerade as a professor of psychology"—but forged very
!90 different paths once they turned their attention to culture. Andrew Whiten began studying baboon
behavioural ecology, but his observations led to a lifelong career in primate social learning research, and

² Cultural Attraction described in Dan Sperber's own words: "My theory was that variation in information will tend to converge in systematic ways because of mental and psychological factors, and because of environmental affordances. These systematic convergences are called "attractors." The view I defended was that every step in transmission involves a transformation. Many transformations will lead information to disappear, but some transformations will lead information to gravitate to a particular point in the space of possibility, which are attractors."

ultimately in spearheading the field of non-human animal culture, including a groundbreaking study of Chimpanzee culture across the African continent (Whiten et al., 1999):

93

94 “What I managed to do was persuade all the leaders of the long-term [chimpanzee] study sites to
95 pool all their data and we agreed on a list of potential cultural differences and defined each of the
96 terms so we all knew what we were talking about in the same way. ... As the field really expanded
97 more recently, I’ve got into trying to see a bird's eye view of what culture looks like across the
98 animal kingdom”.

99

100 In contrast, Ruth Mace moved from animal ecology into human behavioural ecology:

101

102 “I did my whole PhD on bird behaviour but I could see that the models that we were building were
103 very general, and could certainly apply to human behaviour. I had started traveling to Northern
104 Kenya when I was studying birds, and started thinking about how I could use optimal foraging
105 models to try to understand human decision-making in the Gabra in Northern Kenya, so that was
106 where I did my very first bit of anthropology.”

107

108 Monique Borgerhoff Mulder was also interested in human behavioural ecology. She noticed that
109 human behavioural ecologists often relied on the “phenotypic gambit”—the tendency to ignore underlying
110 genetics and to study adaptive phenotypes in evolutionary game theory (Grafen, 1991). This approach
111 meant that human behavioural ecologists rarely studied the transmission mechanisms which give rise to
112 adaptive behavior, and Borgerhoff Mulder saw cultural evolution as a useful paradigm for studying some
113 of these mechanisms. Studying cultural evolution led her to appreciate the significance of culturally
114 transmitted values, norms and information. When she co-taught a course on Environmental Studies with
115 Peter Richerson, she initially aimed to distinguish human behavioural ecology from cultural evolution, but

ended up emphasizing the complementarity between the two. She remarks “human behavioural ecology was and is still a great tool for generating models about adaptation, but the whole story of human history needs cultural evolution.” This quote was an interesting insight for us. We view human behavioural ecology as a rare case in which a field has successfully mixed insights from evolutionary psychology and cultural evolution science. Borgerhoff Mulder seems partly responsible for this success.

Cecilia Heyes began her career in psychology with the intention of working on cultural evolution, inspired by Henry Plotkin and Donald Campbell. Incidentally, she began her Ph.D. under Plotkin at the same time as Kevin Lala (formerly Laland), another foundational figure in cultural evolution (Laland, 2004). However, she realised during this Ph.D. that the empirical study of cultural evolution had not yet caught up with her aspirations:

“What I concluded after that 5 years was that these were incredibly interesting ideas but there wasn’t a very good articulation between theories and evidence. There was modelling going on even at that time and that was very exciting ... but for a psychologist like me I thought ‘what can I do in the lab that has a bearing on [cultural evolution] ... How was I going to get a job?’”

However, after a 20-year career in social cognition, a job arose in Oxford as a “theoretical life scientist.” Heyes recalled that “it looked like this job was going to allow me to spend all my time combing through data and thinking about things and writing, and that was when I went back to cultural evolution.”

How Has Cultural Evolution Evolved?

In the last five decades, cultural evolution has transformed from a niche area of study for a handful of scholars to an established area of interdisciplinary science. When we asked our scholars to reflect on the evolution of cultural evolution, they all pointed out this growth. Peter Richerson and Robert Boyd were both excited about this proliferation of research and researchers:

141 “In 1985, you could put all the people who were serious about this in one small conference room.
142 By now, the cultural evolution society meetings attract hundreds.” (PR)

143

144 “There used to be maybe one [cultural evolution] paper a year and now there is a total avalanche!
145 And this is success! But it also means people are having to specialise because you can’t keep up
146 with everything.” (RB)

147

148 For context, the inaugural cultural evolution society meeting, in 2017, attracted over 300
149 attendees. Another positive change in the field is the increased communication between different
150 disciplines. Many of our scholars emphasised this point. For example, Dan Sperber said:

151

152 “Now the field has improved. Some people do fieldwork, whereas others study biology, evolution,
153 and don’t do as much fieldwork. And these people speak to each other more than they ever have.
154 Cognitive science, anthropology, and biology have come together more and more, which I think is
155 how the field has changed.”

156

157 Monique Borgerhoff Mulder made a similar point:

158

159 “It used to seem like cultural evolution was working in direct contrast to evolutionary psychology
160 and human behavioural ecology. Changes within the field of cultural evolution have helped, in
161 particular models showing things like payoff-biased transmission³ which fit better with what
162 biologists and human behavioural ecologists were already saying”.

163

³ Payoff-biased transmission describes a bias in cultural transmission in which models who have achieved high payoffs (i.e., resources of wealth) will be copied more than models that have achieved low payoffs.

164 This sentiment is echoed by Ruth Mace, who reflected that the term cultural evolution has grown
165 to encompass a broader range of fields:

166

167 “All of our papers were cultural evolution papers, but I wasn’t using those words at the time—I
168 was just calling it human evolutionary biology. We were studying cultural evolution before we
169 started using the term. Some of our early papers on lactose tolerance and matriliney may not have
170 been considered cultural evolution science at the time, but I think they would be considered
171 cultural evolutionary now.”

172

173 Both quotes touch on the relationship between evolutionary psychology and cultural evolution.
174 The two disciplines still have clear differences: Evolutionary psychology assumes that human behavior
175 and cognition reflect biological predispositions that helped human ancestors survive and reproduce
176 (Tooby et al., 1992). Cultural evolution assumes that human behavior and cognition draws on cultural
177 information that has its own process of transmission (see responses to the first question for different
178 variations on these assumptions) (Mesoudi et al., 2006). The two sets of assumptions are compatible, and
179 Mace and Borgerhoff Mulder have shown this compatibility as well as anyone in their research on human
180 behavioral ecology. But in psychology, the disciplines still clash in debates about whether culture is
181 “evoked” because a human group has a similar response to their ecology, or “transmitted” through a
182 Darwinian process. Young scholars in both disciplines, ourselves included, tend to see these debates as
183 unnecessary. It seems obvious, given the weight of evidence that ecology shapes how humans develop
184 culture (Botero et al., 2014), but also that humans can transmit culture through borrowing and inheritance
185 (Laland & Brown, 2011; Mesoudi & Whiten, 2008).

186 Rob Boyd highlighted the rise of empirical study, rather than purely theoretical work, as one of the
187 major ways the field has evolved over its history, citing Kevin Lala, Joe Henrich, Richard McElreath and
188 Alex Mesoudi who “turned this theoretical enterprise into an empirical enterprise”. Other scholars from

189 our interview list (e.g., Mace, Borgerhoff-Mulder, Heyes) and outside of this list (Rachel Kendal,
190 Christine Caldwell) have also contributed to this empirical wing of cultural evolution science. Peter
191 Richerson also noted “For a long time, people complained that there wasn’t any empirical work, that it
192 was all theory, but that has certainly been rectified.” It is interesting to hear about this evolution from an
193 early career perspective. When we entered cultural evolution science several years ago, it seemed like an
194 even balance of empirical vs. theoretical research, with slightly more empiricists than pure theorists.

195 The specific type of empirical work conducted by scientists under the banner of cultural evolution
196 has also changed over time. For Marcus Feldman, one of the most notable changes in the field is the
197 inclusion of animal behaviour researchers:

198

199 “People who do observational and experimental animal behaviour have seemed to accept that
100 these behavioural phenotypes can be learned, and if that’s the case, then the evolutionary
101 dynamics need to take into account new parameters related to social learning.”

102

103 As well as inclusion of non-human animal study (see chapters in the Animal Culture section of
104 this volume), empirical psychological study has also become a lot more important in the field of Cultural
105 Evolution. According to Rob Boyd “that is both a good thing and a bad thing. [Psychologists] bring with
106 them sophisticated experimental tools and that’s a good thing, the bad thing is you can do a billion
107 experiments in the amount of time if you want to do field work so we have more psychology experiments
108 relative to field measurements than would be optimal.” This was an interesting comment to hear as two
109 psychologists. On the one hand, we agree with Boyd’s point about the relative ease of running
110 experiments compared to field studies. However, experimental papers typically contain multiple studies,
111 whereas field experiments can be published as standalone contributions. We also see no reason to see the
112 two paradigms as in competition. If anything, more interest in experimental studies of cultural evolution

l13 should draw attention and funding to field research on cultural evolution; the two paradigms have
l14 complementary strengths.

l15 The increasing diversity of approaches and methods as the field grows (see chapters in the
l16 [Approaches to Cultural Evolution section of this volume](#)) is what Andrew Whiten considers to be the best
l17 part of Cultural Evolution Science:

l18

l19 “The best thing about [the study of culture] is the huge diversity of methods and that they reveal
l20 such a diversity of results as well... Some studies now are able to combine methods and this is
l21 much more important than a golden method or a single discovery. It's an example in itself of
l22 cultural evolution through combination, so I think our science is constantly an example of the
l23 phenomena that we're actually studying.”

l24

l25 Although all of the founders we spoke to were very positive about the developments in the field of
l26 cultural evolution, some of them also were also cautionary about how changes in the field might affect the
l27 study of culture. Ruth Mace expressed concern that cultural evolution has become too diluted as its
l28 paradigms have diversified:

l29

l30 “I still feel like the phrase “cultural evolution” is a little diffuse. I prefer “evolutionary human
l31 sciences” because I think it’s more specific. ... I’m an empiricist, which means that I ultimately
l32 think we need a model that is clear enough to actually test.”

l33

l34 This perspective was interesting to us because “evolutionary human sciences” seems potentially
l35 more diffuse than cultural evolution. Whereas cultural evolution describes the evolution of cultural
l36 information, “evolutionary human sciences” seems to describe any cultural, genetic, or epigenetic process

137 that could affect human life. Cecilia Heyes expressed a similar concern, and suggested that more specific
138 conceptions of cultural evolution might move the field forward:

139

140 “In a way it's a noble ambition realised in the Cultural Evolution Society to make cultural
141 evolution an institution but to do that you need to have lots and lots of people and so you're
142 probably going to want to have a pretty vague and general definition of what cultural evolution is
143 in order to bring as many people as possible in. This has institutional advantages but it may not in
144 the long term be good for progress in the most radical area of the field that challenges what nearly
145 everybody has believed since the enlightenment - that the unusualness of human lives is due to
146 smart forward planning. Research on selection-based cultural evolution has the potential to
147 challenge that.”

148

149 Her comment reflects on challenges for the future of cultural evolution science, the perfect segue
150 to our final question.

151 **What are the Challenges for the Future of Cultural Evolution Science?**

152 As a young scholar, you often think about the future. What are the biggest problems for your field
153 to tackle? What questions would be most valuable to answer? These questions are signposts for early
154 career research, but the best group to answer these questions may be the pioneers who spent their careers
155 building the field that we now enter. We were more eager to hear our scholars answer this final question
156 than any other, and their answers did not disappoint. They illustrated a diverse set of experiences of, and
157 perspectives on, the future of cultural evolution science.

158

159 Ruth Mace noted the challenges for a field of study that is still in its relative infancy, and
160 expressed her hope that cultural evolution will be able to carve out its own space amongst related fields:

160

l61 “Even though cultural evolution has been around since the 70s, it is still very young compared to a
l62 discipline like economics or anthropology”. Most of the people in my [anthropology] department
l63 don’t think that evolution is a useful way of thinking of anything. But there are enough of us
l64 cultural evolutionists that we have our little corner.”

l65

l66 Dan Sperber mentioned the challenges of bringing different fields together:

l67

l68 “If I’m right about this vision of progress as bringing together macro questions about history and
l69 evolution with better and deeper understanding of cognition, the challenge will be to bring these
l70 groups together and incentivize collaboration between these groups.”

l71

l72 This sentiment was echoed by Cecilia Heyes, who hopes that the future of cultural evolution
l73 research is less “dynastic” and more collaborative, to allow proper empirical comparisons between
l74 different schools of thought: “I think as the discipline matures an attempt will be made to distinguish
l75 different vocabularies from contrasting hypotheses, and attempts will be made to test the hypotheses
l76 against each other; that's healthy science.”

l77 She also spoke about future opportunities made possible by the integration of cultural evolution
l78 and cognitive science:

l79

l80 “I think there will be a better integration between cultural evolution and cognitive science. The
l81 interest in AI is just massive, the funding for any kind of research which expands the capabilities
l82 of AI is going to explode, so I think that will also have an influence on the integration of cognitive
l83 science with cultural evolution”.

l84

185 We have also reflected on Heyes' point about the application of cultural evolutionary models to AI
186 development. While many current research programs use computational methods and AI to detect cultural
187 evolution in big data (Bouckaert et al., 2022; Charlesworth et al., 2022; Jackson et al., 2019), there is little
188 research applying cultural evolutionary principles to the development of AI systems. However, new
189 research is beginning to explore how insights from cultural evolution science can improve the
190 performance of social media algorithms (Brady et al., 2023).

191 Many others of the founders were extremely positive about the practical implications of cultural
192 evolution research, which have already been realized in domains such as sustainability, animal
193 conservation, and public health [see chapters in the Applications section of this volume]. Marcus Feldman
194 encouraged applying cultural evolutionary insights to a broader set of domains, including misinformation:
195

196 "There are real-world challenges that research on cultural transmission can address. The relevance
197 of cultural transmission studies is being made very obvious during the [coronavirus] pandemic,
198 and the idea of being able to transmit vaccine hesitancy and conspiracy theories like QAnon is
199 something worth studying. There is a new cultural niche emerging which encourages these
500 dangerous ideas. I think the field has a bright future. I think you will see more economists using it.
501 I think you'll see more political scientists and sociologists using it."

502
503 Peter Richerson also spoke about highly practical applications:

504
505 "It does seem to be that a lot of applications are possible. For example, Joe Henrich's application
506 of economic games to assay the ability of people to cooperate in different societies seems to be a
507 diagnostic tool. Almost all of transmissible diseases have some kind of cultural component. Even
508 politics can be like an infectious disease, which resembles runaway cultural evolution."
509

510 Richerson alludes to the fact that political opinions and policy proposals can sometimes gain
511 traction without being tethered to any concrete evidence. This resembles the process of “runaway cultural
512 evolution” that he proposed with Boyd, in which cultural learners copy the behavior of cultural models
513 based on tokens that are not actually tied to functionality (Boyd & Richerson, 1988). An example of
514 runaway cultural evolution might be copying the medical opinions of people with large followings on
515 social media, even though this large social media following is unrelated to their medical expertise.

516 Monique Borgerhoff Mulder was also optimistic about Cultural Evolution research’s ability to
517 address issues in conservation and foreign aid, by understanding more about the way cooperation and
518 incentives spread through groups. She also expressed optimism about bigger challenges, both academic
519 and practical “I believe that cultural evolutionary theory provides a strong framework across which to
520 integrate the social sciences – indeed we already see it with economists, political scientists,
521 anthropologists, psychologists, historians, and many more fields. We have made some significant steps
522 towards the “consilience,” for which EO Wilson advocated. We should probably not waste more time and
523 effort arguing with biologists whether or not our field is actually evolution or not, despite some admirable
524 attempts to do so, but rather get down to the business of using our approach to tackle the problems, both
525 persistent and novel, facing humanity.”

526 Rob Boyd didn’t predict the future trajectory of cultural evolution science (“The world is
527 complicated and chaotic. I hope it [the field] keeps going, we’ve had tremendous success so far but who
528 knows”) but he did offer up some burning questions he would love the field to answer. These related to
529 cumulative cultural evolution, and why it is “that human populations seemingly can’t help but
530 accumulate”. Secondly, he wants to know why humans are so cooperative, and whether cultural dynamics
531 affect cooperation. Lastly, he is curious about why humans moralise so many day-to-day actions:

532
533 “Lots of things are moralised, so there’s a ‘right’ way to do something and a ‘wrong’ way to do
534 something. [I’d like to know] how that works and what it’s got to do with social things. Do we

535 want people to be like ourselves because that makes things work better or because it makes it
536 easier for us, or does it act as a kind of filter if error rates in transmission are high?”

537

538 Boyd’s comment foreshadows a new integration of moral psychology with cultural evolution,
539 which explores how moralization may have played an adaptive function in promoting cooperation (Atari
540 et al., 2022; Curry et al., 2019; Jackson et al., 2023).

541 Other scholars also told us about the questions that they hope cultural evolution may be able to
542 solve. Ruth Mace’s ‘big question’ is related to the demographic transition: “I know that we will probably
543 never be able to properly answer this but if we could understand the demographic transition, it might open
544 all kinds of doors to other questions.” Dan Sperber commented “I don’t think we understand what we’re
545 talking about when we describe institutions. There have been interesting ideas and debates on the
546 evolution of the state, of religion, or of social norms, but the way cultural evolution produces institutions
547 which themselves affect cultural evolution is still quite poorly understood. I think this is an area where we
548 need more. I think one can do much better than what has been published so far. I hope to leave a bit of a
549 contribution to this area.” This comment called to mind an excellent theory paper from Smaldino (2014)
550 which proposes new hypotheses about the cultural evolution of emergent institutions.

551 Cecilia Heyes told us “It’s now easy for me to formulate the question that I would like to
552 contribute to answering but that’s only been the case for about the last 10 years; previously I think I was
553 still interested in the same question it just it hadn’t fallen into place in my mind - and that would be: to
554 what extent and in what ways does cultural evolution build human minds which make our lives so
555 different from those of other animals?”

556 The diverse range of backgrounds, careers and future aspirations, just of this small set of
557 ‘founders’ highlights the huge breadth and diversity of the field of cultural evolution. Andrew Whiten
558 summed up this sentiment perfectly, and his words seem fitting to end our chapter:

559

i60 “I would be a fool to predict [the future of the field] and really what's exciting is there's this whole
i61 new generation of people entering the field – it’s up to them. I wouldn't want to constrain it by
i62 saying ‘well I think they ought to go in this way’. The future is unknown except that you know it's
i63 going to be very exciting.”

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