

AN EVOLUTIONARY EXPLANATION FOR CHANGE IN RELIGIOUS INSTITUTIONS

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Abstract. Many attempts have been made to explain the rise of religious phenomena based on evolutionary models, which attempt to account for the way in which religion can constitute a useful system to increase the fitness of both the individual and the group. These models implicitly mean that beliefs are simply effective adaptations to the environment and in this sense they cannot be truly accepted by those who adhere to the religions in question. In this paper, I use the evolution of culture model elaborated by Cavalli-Sforza to propose an approach that can explain the change of institutionalized religions over a more limited time frame than the long times of biological evolution. This model could be heuristically effective in the study of religious phenomena and could also be applicable in terms of theology and philosophy of religion. Given the limits of space, I will only try to take a few steps in this direction, trying to answer some of the major questions that arise about such an approach. In particular, one may ask whether, unlike others, the evolution of culture model applied to religions can make it possible to put into brackets — or to remain agnostic about — the value and the truth of the beliefs and precepts of the religion which is studied.

I. RELIGION AND DIFFERENT EVOLUTIONARY APPROACHES

As known, religions are generally skeptical of evolutionary theories. In this paper, I will mainly focus on Christianity, but much of what I will say can also apply, at least, to the other great monotheistic religions. Historically, the first and most immediate contrast between religions and evolutionary theories is that between creationism, namely God's direct and intentional act of creation, and the casual and gradual appearance of ever-changing forms of life. The other aspect that seems central to the diffidence of religions towards evolutionism is human exceptionalism. Are human beings the peak of the world of life? Do they have a special dignity in view of their mental life, which is qualitatively

different from that of all other animals? Historically, religions have tended to answer yes to these questions, while Darwinian evolutionism seems to lead to a different response, bringing the human being back to the animal kingdom.

In general, religions tend to see a certain finalism in the world, a more or less identifiable teleology, while evolutionary theories distrust the idea of finalism in the development of life and the environment. Between religion and science there has long been a strong dialogue-less opposition (even though not always and everywhere), but today there is a more in-depth and diversified confrontation going on, also depending on different Christian denominations. For example, in the encyclical *Humani generis* Pius XII recognized evolution as a hypothesis to be considered, and John Paul II defined evolution “something more than a hypothesis”.¹ However, as we know, there are still religious museums dedicated to creation in which everything that science has discovered in support of the Darwinian paradigm is radically denied. But, as I shall highlight later, in the framework explaining the development dynamics of the religious phenomenon, science is part of the environment in which religion finds itself. And it is in this evolutionary dynamic that science acts indirectly to push and direct change in the concrete manifestation of religion.

What I want to focus on here is a possible evolutionary interpretation of the development of religions. This view differs from the genetic hypotheses on religious belief, which explain why the religious phenomenon is so widespread and pervasive in all cultures. As is well known, the recent flourishing of theoretical and empirical research on the origin of religious belief and behaviour (which then gave rise to religious systems and institutions) based on the Darwinian paradigm has generated two main models. The first, called Standard Model², is based on the general idea that “religion is not an adaptive mechanism ‘designed’ for generating religious representations and their associated behaviours, but rather an evolutionary side effect of various cognitive adaptations such as those responsible for agency detection, theory of mind, folk ontology, and other domain-specific conceptual architectures that have well-understood functions outside of the religious domain. The SM purports

1 Cyril Vollert, “*Humani Generis* and the Limits of Theology”, *Theology* 12, no. 1 (1951).

2 Pascal Boyer, *Religion Explained: The Evolutionary Origins of Religious Thought* (Basic Books, 2002); Scott Atran, *In Gods We Trust: The Evolutionary Landscape of Religion* (Oxford Univ. Press, 2002); Justin L. Barrett and Jonathan A. Lanman, “The Science of Religious Beliefs”, *Religion* 38, no. 2 (2008).

to deliver a ‘deflationary’ evolutionary explanation of religion, in the sense that it takes religion to be wholly parasitic on other functional structures that would be present even if religion did not exist”.³

An alternative and equally well-established approach is the adaptationist one. It argues that at least *some* religious phenomena have arisen through genuinely adaptive mechanisms and that, in the course of human evolutionary history, religious traits have stabilized into a functional complex.⁴ One of the central tenets of the adaptationist program is the balance between costs and benefits of interpersonal and group cooperation, also in order to establish stable norms and commitments to be respected. With its expenditure of energy for rites, ceremonies and obedience aimed at ends that lead to an immediate adaptive advantage, the religious phenomenon may seem more harmful than useful, but according to adaptationists it is precisely its costs that make religion functional.⁵

In fact, the cost signalling theories hypothesize that reporting systems have developed rules and institutions that reduce the tendency to deceive or adopt a free-rider behaviour in the group. And the “expensive” adherence to a religion would provide the right framework to engage the individual and give benefits to the group. In the same vein, Sosis and Bressler⁶ found differences in duration between religious communities with different ritual costs and between religious communities and secular communities, to the advantage of religious communities with “expensive” rituals. Another advantage is given by supernatural beliefs, as they are capable of motivating participation

3 Russell Powell and Steve Clarke, “Religion as an Evolutionary Byproduct: A Critique of the Standard Model”, *The British Journal for the Philosophy of Science* 63, no. 3 (2012).

4 David S. Wilson, *Darwin’s Cathedral: Evolution, Religion, and the Nature of Society* (Univ. Of Chicago Press, 2002); Joseph Bulbulia, “Meme Infection or Religious Niche Construction? An Adaptationist Alternative to The Cultural Maladaptationist Hypothesis”, *Method & Theory in the Study of Religion* 20, no. 1 (2008); Stephen K. Sanderson, “Adaptation, Evolution, and Religion”, *Religion* 38 (2008); Benjamin G. Purzycki and Richard Sosis, “Religious Concepts as Necessary Components of the Adaptive Religious System”, in *The Nature of God: Evolution and Religion*, ed. Ulrich Frey (Tectum Verlag, 2010).

5 William Irons, “Religion as a Hard-to-fake Sign of Commitment”, in *Evolution and the capacity for commitment*, ed. Randolph M. Nesse (Russell Sage Foundation, 2001); Richard Sosis, “Does Religion Promote Trust? The Role of Signaling, Reputation, and Punishment”, *Interdisciplinary Journal of Research on Religion* 1 (2005).

6 Richard Sosis and Eric R. Bressler, “Cooperation and Commune Longevity: A Test of the Costly Signaling Theory of Religion”, *Cross-cultural Research* 37, no. 2 (2003).

in rituals, but also of inducing the fear of divine punishment, which favours respect for the rules and the limitation of selfish behaviour.⁷

Norenzayan and colleagues⁸ develop a cultural evolutionary theory of the origins of prosocial religions in order to explain the rise of large-scale cooperation among strangers and, simultaneously, the spread of prosocial religions in the last 10–12 millennia. They, too, purport that “religious beliefs and practices originally arose as nonadaptive by-products of innate cognitive functions”, but they recognize the complexity of the phenomenon to be explained. They claim that “a package of culturally evolved religious beliefs and practices characterized by increasingly potent, moralizing, supernatural agents, credible displays of faith, and other psychologically active elements conducive to social solidarity promoted high fertility rates and large-scale cooperation with co-religionists, often contributing to success in intergroup competition. In turn, prosocial religious beliefs and practices spread and aggregated as these successful groups expanded or were copied by less successful groups”.⁹ In their model, starting from non-adaptive by-products, “particular cultural variants were selected for their prosocial effects in a long-term, cultural evolutionary process”. This framework claims to be able to reconcile key aspects of the adaptationist and by-product approaches to the origins of religion.

A different perspective was recently proposed by Wood and Shaver.¹⁰ They “advance a novel model that centers on the ability of language to generate alternative worlds independent of immediate empirical facts, and thus highlight the similarities between religious belief and the modes of cognition that underlie institutions in general”. Their institutional cognition model of religion seeks to explain some of the shortcomings of extant approaches and focuses on the human ability to create non-empirical worlds; that is, worlds that are imaginary. Wood and Shaver contend that “both religious beliefs and institutional facts—such as jurisdictional borders—are non-empirical asser-

7 Dominic Johnson and Jesse Bering, “Hand of God, Mind of Man: Punishment and Cognition in the Evolution of Cooperation”, *Evolutionary Psychology* 4 (2006).

8 Ara Norenzayan et al., “The Cultural Evolution of Prosocial Religions”, *The Behavioral and Brain Sciences* 39, no. 1 (2016).

9 Ibid.

10 Connor Wood and John H. Shaver, “Religion, Evolution, and the Basis of Institutions: The Institutional Cognition Model of Religion”, *Evolutionary Studies in Imaginative Culture* 2, no. 2 (2018).

tions, yet they are socially accepted as truths and reified through ritual and behavior. One type of non-empirical, linguistically generated belief—supernatural agent belief—is particularly effective for stabilizing systems of arbitrary norms by rooting them in deontic rather than utilitarian reasoning”. The conclusion is therefore that “the evolutionary roots and continued persistence of religion are thus functions of the capacity for humans to generate cognitive alternatives to empirical reality, and the need to stably coordinate those alternative conceptions”.¹¹

The idea that I want to start exploring in this paper is a largely different perspective, even though it considers the evolutionary paradigm as a heuristic tool to explain a key aspect of the religious phenomenon, namely its change over time. I am not interested here in the origin of religion as such, but in the development over time of institutionalized religions, drawing on some examples related to Christianity. In particular, it is worth investigating whether an evolutionary approach can better account for the change in religion than others. This, in my opinion, implies neither an evaluation of the supernatural beliefs that religions maintain nor an evaluation of the role of a given religion in its environment.

In other words, the main evolutionary approaches that I have mentioned earlier aim at the scientific explanation of the rise of religious phenomena at the dawn of the cognitive-cultural history of the *homo sapiens* species. The adaptive aspects concern the role that religion plays in relation to the fitness of the species, in terms of efficiency both of intra-group dynamics and of inter-group relations. Religion is one of the tools that evolution has generated or exploited (depending on the perspective adopted) in its unfolding. This implies that religious prescriptions may be irrational but effective, at least for the environment in which they arose. Similarly, religious beliefs are generally false, in that they are produced by the innate tendencies of the human mind/brain (finalism, agency attribution, search for meaning) and are unrelated to empirical verification.

The approach I propose, on the other hand, has a more limited scope, because it is applied to the dynamics of mature religious institutions over more limited periods of time. If it is true that, by definition, every evolutionary approach entails the idea of a change in time linked to the dynamics of the environment, it is also true that the religious phenomenon often has the con-

11 Ibid.

notation of a knowledge based on tradition and conservation of a specific axiological and institutional heritage. My contribution is then to try to introduce the paradigm of cultural evolution as a heuristic tool to interpret and explain the change undergone by all religions. This implies neither a commitment to establish which genetic model of religion is most plausible nor a definitive judgment on the beliefs of the religion in question. But, certainly, thinking that religion was born according to the mechanisms suggested by the Standard Model or the adaptationist approach can also make a difference to the explanation of subsequent changes in the institutionalized phase of religion (for example, about its possible decline in terms of popularity in a context of widespread scientific mentality).¹²

Implicitly, the approach I advocate was already adopted by the most orthodox Catholic theologians in the 1930s. Indeed, it was then believed that accepting evolutionism as a new way of thinking and reasoning risked denying the existence of core parts of its theological thought, because the Church itself and the related religious phenomena (rites, moral rules and even some theological beliefs) would necessarily be subject to change under the evolutionary pressure of the environment. In the final part of my paper I will raise and address some questions directly related to this point, opening a path of research and reflection that will hopefully be followed in the future.

II. THE BASIC MECHANISMS OF EVOLUTION

It is undeniable that religions change over time, and in the first section I have already introduced several evolutionary approaches that try to account for the emergence of religious phenomena based on Darwinian models. These approaches, however, focus on the genetic stage (the birth of religion) and the general mechanisms that take place over time. For example, Purzycki and

12 If religion has really arisen because of the stable tendencies (which in turn result from the evolution of our species, and are now innate) of our cognitive architecture, one can think that the latter is in obvious opposition to the empirical scientific mindset and that, as the latter grows, there will be fewer people embracing supernatural or unproven beliefs. Conversely, when an irrationalist culture returns, it could come with a religious revival. This hypothesis lends itself to scientific verification, according to the model of religious studies as a life science proposed by Joseph Bulbulia and Edward Slingerland, "Religious Studies as a Life Science", *Numen* 59, no. 5–6 (2012).

Sosis¹³, argue that the religious system generates adaptive response patterns, which is accomplished by “(1) employing highly flexible cognitive mechanisms, (2) evoking emotional responses that provide reliable information concerning individual physical and psychological states, (3) supporting specialist who introduce religious ideas that endorse and sustain the social order, and (4) encouraging collective acceptance of these ideas with public displays, typically in the form of rituals, badges, and taboos”.

Instead, what I want to consider here is a medium-range approach that can help explain the change in religions as mature institutionalized systems within their environment, which creates the conditions for an adaptive response. However, I do not wish to neglect the endogenous elements of change either. It might be useful to evaluate whether these changes can be seen and interpreted within an evolutionary paradigm. In particular, a candidate for this attempt seems to be the paradigm of cultural evolution proposed by Luigi Luca Cavalli-Sforza. However, before going into the details of this view, it is worth summarizing the basic theoretical model of evolutionism for those unfamiliar with it.

Genetic mutations — random DNA copying errors that occur in the reproduction of a cell and that are transmitted to all descendants, which for this reason are also called hereditary changes — and natural selection are the main evolutionary engines in Darwin’s model. Many mutations occur, but most of them can be considered irrelevant; these mutations are called selectively neutral. Some mutations instead turn out to be advantageous in specific circumstances, as shown through natural selection: a mutation is beneficial if the mutant individual is more likely to survive in their environment and to have more offspring than those who do not present the mutation. Because the mutant and their offspring will be better nourished or better protected from predators, the mutation will then likely spread to the entire population over the next generations. The mutation will spread more rapidly the greater its reproductive advantage compared to the original genetic type.¹⁴

13 Benjamin G. Purzycki and Richard Sosis, “The Religious System as Adaptive: Cognitive Flexibility, Public Displays, and Acceptance”, in *The Biological Evolution of Religious Mind and Behavior*, ed. Eckart Voland and Wulf Schiefenhövel (Springer-Verlag, 2010), 243.

14 Brian Charlesworth and Deborah Charlesworth, *Evolution: A Very Short Introduction* (Oxford Univ. Press, 2017).

Obviously, the environment can also change, creating new challenges for the organisms that inhabit it and complicating the mechanism of natural selection. Furthermore, there are also harmful mutations, which cause hereditary diseases or reduce adaptation to the environment. This usually causes them to be gradually eliminated (not always, but the explanations of this phenomenon go beyond the purpose of this paper). In summary, mutations generate new types of individuals and some of these changes offer those who bear them a selective advantage in terms of survival and/or reproduction. The increase of mutant types in environments where this competitive advantage appears leads advantageous mutants to eventually replace the previous types.¹⁵

Another very important feature of this model, which is also relevant for its application to cultural evolution, is variability. Variability is a great advantage because whatever disaster may happen, at least *some* individuals in a population will probably have a better chance of surviving. The goal — from an external viewpoint, because the evolutionary model denies finalism — is for the species to go on: even a few surviving individuals may be sufficient to reconstitute it. It is a fact that every population tends to show a great genetic variability among the individuals that compose it. However, this is not an absolute guarantee that the number of its individuals will not drop significantly or that the whole species may not become extinct. Now, this is the basic Darwinian model, which of course has been enriched and made more complex over time, but whose foundations have never been questioned. However, when it comes to the evolution of culture it is useful to also refer to the Lamarckian model.¹⁶

The Darwinian model has long been considered incompatible with the Lamarckian model because the latter implied the hypothesis that the characters acquired by an organism in the course of its life can be inherited. If an organism develops a phenotypic adaptation, such as a specific physical resistance to prolonged motion, such adaptation is not passed on to its offspring. What is transmitted is only what is written in the germ line, where causal mutations occur (or are possibly induced, as we are trying to do today thanks to innovative techniques such as CRISPR-Cas 9)¹⁷. Actually, the new field of epigenetics is re-

15 Richard Dawkins, *The Selfish Gene* (Oxford Univ. Press, 1976).

16 Snait B. Gissis and Eva Jablonka, *Transformations of Lamarckism: From Subtle Fluids to Molecular Biology* (MIT Press, 2011).

17 Jennifer A. Doudna and Samuel H. Sternberg, *A Crack in Creation: Gene Editing and the Unthinkable Power to Control Evolution* (Houghton Mifflin Harcourt, 2017).

vealing mechanisms that allow for the transmission of acquired adaptations that are not contained in the germline.¹⁸ In any case, Lamarckian mechanisms are fundamental for cultural evolution. Innovations and inventions that are transmitted culturally, indeed, can be inherited not only by children, but also by other members of society unrelated to those who have developed such innovations.

Another aspect of Lamarck's theory that is relevant to the attempt to account for cultural evolution is the so-called "will to evolve". Cultural mutation, usually, is not independent of our will: often it cannot be considered a random phenomenon (we will soon have a closer look at this idea), but it almost always has the purpose of solving a specific problem. This is a clear difference between the purely biological model of evolution and the model of cultural evolution proposed by Cavalli-Sforza. In this regard it is necessary to mention the definition of culture that Cavalli-Sforza himself gives based on his research: culture is "a global accumulation of knowledge and innovation, deriving from the sum of individual contributions transmitted through the generations and disseminated to our social group, which continuously influences and changes our lives".¹⁹

III. THE EVOLUTION OF CULTURE

At this point it is necessary to make a fundamental clarification. The general model of evolution can help understand the dynamic of cultural change, and that of religion, but this perspective must not be confused with the idea that genes control culture (and possibly religion). For example, the social behaviors of some insects — even behaviors that we human observers may judge as extremely sophisticated — are determined by genes. These behaviors are the result of a long-running environmental adaptation and have remained unchanged for millions of years, which shows that they are the result of a genetic program.²⁰

18 David S. Moore, *The Developing Genome: An Introduction To Behavioral Epigenetics* (Oxford Univ. Press, 2015).

19 Luigi L. Cavalli-Sforza, *L'evoluzione della cultura* (Codice Edizioni, 2010); Luigi L. Cavalli-Sforza and M. W. Feldman, *Cultural Transmission and Evolution: A Quantitative Approach* (Princeton Univ. Press, 1981).

20 Bert Holldobler and Edward O. Wilson, *The Leafcutter Ants: Civilization by Instinct* (W W Norton & Co Inc, 2010).

However, it can be said that human genes control culture only in the sense that they control the organs that make culture possible: they are the enabling factors of cultural development, and as such they undoubtedly play an important role. But genes do not strictly determine human culture. At a certain stage, on the contrary, culture has become able to influence genetic evolution, both by acting on individuals and by acting on the environment. Two classic examples of this are medicine and air conditioning. So, DNA evolves biologically, ideas evolve culturally, but some mechanisms of mutation, selection and adaptation can also be found in cultural evolution and, as I will suggest, also in the evolution of religion.

According to Cavalli-Sforza²¹, the cultural evolution is given by the sum of the innovations that are produced and accepted by society. There are, of course, many more innovations than those that actually catch on and spread. There is always the possibility that an innovation will be recovered in the future, if it has been stored somewhere or someone proposes it again, but for the most part innovations are designed, created and accepted because they respond to a current need, allowing for a better adaptation to the environment as it appears at that moment. There is therefore a continuous change that can only be summarized statistically, because not all make the same choices and there is a tendency towards the preservation of well-established ideas, beliefs, procedures and institutions.

In this sense, Thomas Kuhn's theory of scientific revolutions could be subsumed under an evolutionary understanding of scientific progress.²² In fact, the theory posits a transition between normal science and the phase of revolution, based on the friction between the current theories and the environment understood as the set of data and observations available — which is the environment of experimental science. What makes the change of paradigm slower is the conservatism of the scientists who formed their beliefs based on the previous paradigm, and only the substitution of the individual carriers of the old mutant type, so to speak, can allow for the affirmation of the new mutant type bearing the new scientific paradigm.

There are relevant motivations to accept or reject an invention or an innovation; similarly, some psychological profiles are very open to novelties

21 Cavalli-Sforza, *L'evoluzione della cultura*.

22 Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Univ. Of Chicago Press, 1962).

while others are strongly conservative, certainly also due to a strong genetic component.²³ Also, a novelty is accepted differently depending on its object, its apparent usefulness and the general pleasure it can offer. Ultimately, the history of culture, for Cavalli-Sforza, aims to “identify the most important innovations in every age, place and situation in which they occurred, along with the motivations that pushed people to propose them, accept them or impose them and with the satisfaction that they have caused.”

There are two other important elements that influence biological evolution and can be incorporated into an evolutionary explanation of culture. The first is the so-called genetic drift that creates differences between groups based on chance, when groups are isolated from each other; the second is that of migrations, which lead to groups mixing up or separating. The biological effects of migrations at the phenotypic level are still evident today, while it has been widely clarified that the mix of genes is such that it makes no sense to draw any kind of distinction between people based on their so-called race.²⁴ In cultural evolution, what reproduces are ideas and not mutant genomes, but there are profound analogies between the transmission of DNA between parents and children and the transmission of knowledge in the form of teachings from parents to children. Instead, when knowledge is transmitted by peers, we are faced with phenomena similar to the contagion of diseases and epidemics, which can be described (and predicted) with statistical models.²⁵

In this sense, it is worth clarifying what it means that natural selection rewards the fittest. Fitness in the biological sense expresses the average degree of adaptation to one's environment, which is linked to two precisely quantifiable demographic dimensions: probability of survival and fertility. The adaptation of a given hereditary character can be measured according to Darwinian fitness, calculated indeed on these two demographic parameters. The value can be greater than or less than 1, that is to say that a mutation can be advantageous or disadvantageous compared to the average of the popula-

23 Cavalli-Sforza, *Levoluzione della cultura*; Cavalli-Sforza and Feldman, *Cultural Transmission and Evolution*.

24 L. L. Cavalli-Sforza and W. R. Bodmer, *The Genetics of Human Populations* (Dover Publications, 1999).

25 L. L. Cavalli-Sforza and M. W. Feldman, “Cultural versus biological inheritance: phenotypic transmission from parents to children. (A theory of the effect of parental phenotypes on children's phenotypes)”, *American Journal of Human Genetics* 25, no. 6 (1973).

tion. The numerical value of fitness makes it possible to calculate the speed, in terms of number of generations, with which the mutated character will spread in or disappear from the population.

Cultural transmission is the passage of an idea, which takes place when there are innovations / mutations. However, even if there is no cultural novelty there may still be a subtractive mutation, namely the loss of an idea, a procedure, or a habit. In general, an idea is communicated from a transmitter to a transmittee, and then the idea is understood and acquired. The reproduction of the idea occurs when it passes from one brain to another, with all the imaginable differences in the transmission and diffusion of a complex idea as opposed to the transmission and diffusion of a specific genetic character.

Cultural transmission, in accord to Cavalli-Sforza, is characterized by two main kinds of mechanisms: vertical ones and horizontal ones. The vertical mechanisms are those between parents and children: they have the same actors as those of genetic transmission and similar times, which are measured in generations. It is more conservative and, especially in traditional societies, it tends to reproduce the given culture (including religion, often following the mother's belief when the two parents don't share the same one). Horizontal transmission is much faster and can be distinguished between one-to-one communication, few to few, and one-to-many communication (that is, from leaders or teachers to followers or pupils). In this case, in addition to the content, what matters is the authoritativeness and persuasiveness of the communicator. Finally, an important element is the legacy of the ecological niche, which for humans is the social and environmental niche, made up of both the physical environment and social institutions. These elements generally have a long and stable life and can slow down cultural evolution. In short, if the genetic adaptation to the environment is slow and linked to the variability of characters made available by mutations, cultural adaptation is faster and is not only entrusted to chance but is the result of a conscious effort on the part of many people.

IV. EVOLUTIONARY MODEL AND CHANGE IN RELIGION

What can the model of cultural evolution tell us if applied to the study of religions? It may seem trivial, but it is not: the first point that the evolutionary model proposes is that we must focus on change. Religions may seem to be some of the most immutable cultural institutions and constructs, and

this makes us focus on their elements of continuity. The evolutionary model invites instead to take change as our main object of investigation. And the change we are dealing with that takes place according to specific dynamics.

This is the second very important preliminary point: the change does not only, or perhaps not so much, occur via transmission from one to many, for example with a papal pronouncement. Consider the recent apostolic exhortation of Pope Francis, *Amoris laetitia*: under certain conditions, it extends the Communion to divorced and remarried individuals. This opening towards the remarried certainly caused quite a stir. At a superficial level, it seems that the Pope has caused a sudden revolution in the doctrine of the Church in this matter. Hence the blame and the praise coming respectively from the critics and supporters of Pope Francis.

However, this is the classical, institutionalist perspective, which sees continuity unless there is an official rupture sanctioned by Church leaders. The evolutionary perspective, on the other hand, puts us in a position to show that this supposed “turn” has been around for a long time in the pastoral practice of many parish priests. Many priests have already been giving the Eucharist to divorced and remarried couples, and many remarried Christian couples do normally approach the Communion even if they do not explicitly receive permission from a priest.

How did this change take place, long before Pope Francis put it in writing in *Amoris Laetitia* in 2016? It was a mutation, if I may say so, which was somehow an adaptation to the environment. This expression should not be misunderstood. What I want to stress is that the cultural and social environment in which many priests operate is an environment in which the sexual and family morality of the Church is no longer easily accepted. Above all, many Christian couples separate and remarry without finding reproach in their context of life, contrary to how it was in the past.

Faced with this situation, the mutation — namely allowing the remarried to participate in the life of the Church and to access the sacraments — is already available. What is needed is selection by adaptation. To use evolutionary terms, what is the answer that leads to greater survival and reproduction chances? If the environment is a context of progressive Christian culture, not so strict about the rules of the doctrine, then the mutation will be beneficial, because it will attract believers and avoid losing old members of the given Christian community. If instead the environment is a conservative Christian

context, which rigorously follows the rules of the doctrine, then the mutation will be harmful and will tend to disappear. That is, the priest of that community will not admit remarried couples to Communion, because if he did so he would lose many members of his community, who would disagree with that choice and would be induced to go elsewhere.

This is just one of many examples that highlight how the model of cultural evolution can be used to understand change in historical religions. Another very interesting example is related to variability. We have already seen how genetic variability is extremely important for the preservation of the species. In fact, given that adaptation to a changing environment depends on the availability of beneficial mutations that can be useful to cope with new conditions of life of the organism, the more numerous the mutant types, the greater the chances of survival and reproduction of the species in question. The same can apply to a given religion.

The history of Christianity seems to be a clear proof of it. Both before the Reformation and the rise of new denominations, and subsequently also within Catholicism, the variety of religious orders has granted Christianity extraordinary evolutionary success for two millennia, thanks also, and perhaps above all, to its variability, understood as an available range of mutant types. A well-known theory was proposed by the sociologist of religion Rodney Stark²⁶: according to this view, there is almost a Darwinian competition between creeds and faiths, and those more capable of responding to the people's demand for religion obtain greater consensus. From an empirical point of view, this idea of an economy of religion — in which the more open and competitive the market is, with different actors competing for the demand for religion, the more people adhere to religions as such — would explain why in a country like the United States, where the thrust of modernity and scientific rationality is strong, there is nonetheless a high rate of people declaring a religious affiliation.

One can read in this same way the rise of monasticism, the turning point imprinted by Francis of Assisi, Luther's reforming drive, the counter-reformation of the Council of Trent, the rise of the Jesuits as well as more recent modernist tendencies, and many mystics and saints capable of giving a new

26 Rodney Stark, *The Triumph of Christianity: How the Jesus Movement Became the World's Largest Religion* (Harper Collins, 2011).

face to the Christian Catholic religion or of offering believers with a different spirituality an orientation in which they could identify.²⁷ In this vein, a certain tolerance towards a non-mainstream position — a certain pastoral pluralism, so to speak, of religious styles and doctrinal interpretations — can be considered advantageous to keep alive mutant types that in the future could prove useful to adapt to an altered external environment.

In this regard, considering the whole history of Christianity in an evolutionary perspective, one cannot help but reflect on the species-environment dynamic, when the species is a strong and widespread institution and the environment is society as a whole. There have certainly been situations in which the Church had a hegemonic position and contributed to shaping its environment more than the environment shaped the Church. However, one shouldn't underestimate either the dynamic of environmental pressure and adaptation or the endogenous change of the environment itself. There have been many other moments, in fact, where the environment has exerted pressure on the Christian religion and the latter has changed according to what we can define selection by adaptation.

It is important to underline here that, based on the evolutionary model, it is not that when the environment changes, the species modifies itself responding to environmental challenges with a voluntary choice specifically oriented to face the new challenges. The only answer that the species can give goes through the prevalence of the mutant type available which is most advantageous with regards to the change occurred in the environment. It may happen that in the face of a new predator, the species does not find any mutant type capable of survival and the species therefore ends up becoming extinct in that ecological niche.

In cultural evolution, the difference is that we can try to respond directly to the environmental challenge. But if the latter is rapid and unexpected, we must react with the innovations available, that is, with the mutant types that have already been created. This could be a key to understanding religion in the face of the challenges that the contemporary environment implies for religion itself. For example, if one of the key functions of religion is to give people tools to face the uncertainty and unexpected events of life, the techni-

27 Gerald S. J. O'Collins and Mario S. J. Farrugia, *Catholicism: The Story of Catholic Christianity* (Oxford Univ. Press, 2014).

cal progress that today promises horizons of immortality seems to take away space from religion thus understood. How can religion face the challenge of this new predator in its ecological niche?

Now, to give an example, if the only way to escape predators was the ability to fly, it is clear that an earthworm cannot turn into a fly over a few generations through random mutations. The same holds for religion: Christianity cannot radically change in a short time to face the challenge of technology. From the perspective of cultural evolution, we can then search for the mutant types of Christianity that could be more advantageous from the point of view of adaptation and could therefore take hold through the process of natural selection. For example, a candidate in this sense may be the Benedictine model of near-retirement from the world championed by Rod Dreher's book *The Benedict Option: A Strategy for Christians in a Post-Christian Nation*.²⁸ The book's thesis is that in a world like ours, very similar to the one that saw the end of the Roman Empire with the arrival of the barbarians, it is necessary to act like Benedict of Norcia and break away from the Empire in order to rediscover one's origins, roots and identity, within a "salt of the earth" perspective. The "Benedict Option" would be the idea of alienating oneself as much as possible from decadent modernity, so as to create islands where to live in line with one's faith together with one's family and in small homogeneous communities. One should found citadels, better if organized around monasteries or other spiritual poles, in which to conduct one's life and raise one's children and grandchildren, also establishing schools of Christian inspiration or practicing homeschooling, which is already widespread in the United States.

It is not definitely sure whether this will be the fittest mutant within Christianity, but since this book has been widely discussed internationally, it can be used as a clear example of what I am trying to say. In fact, one may wonder if the near-retirement strategy can be modelled precisely in relation to the new knowledge that emerges regarding the mechanisms at the origin of the religious phenomenon as such. If society becomes more and more rational and therefore keeps under control — with formal education, academic knowledge and widespread culture, social dynamics and political decisions — the innate tendencies towards an "irrationality" typical of a primitive environment, then

28 Rod Dreher, *The Benedict Option: A Strategy for Christians in a Post-Christian Nation* (Penguin, 2017).

it makes sense for religious leaders to try to create a closed environment that reproduces the best cognitive conditions for the flourishing of religion. Obviously, such procedures can be justified as the choice of true believers, aware of the difficulty of consistently living their faith in a society that has moved away from God, but the same procedures can be read in terms of the evolution of culture in the way mentioned earlier, without the two levels of explanation being in open contradiction.

V. WHAT ARE THE IMPLICATIONS OF THE PERSPECTIVE OF CULTURAL EVOLUTION?

Based on the previous arguments, some important issues arise: does the change induced by environmental pressures only affect a religious institution or even the content of belief? And, again, can the whole dynamic of a religion's internal change be reduced to adaptation and reproductive success? In other words, if we think about how Christianity has accepted — with a long process of adaptation to an environment that it had helped to shape — the concepts of tolerance, freedom of conscience and dialogue with other religions, we can ask ourselves if such a change has increased the capacity for survival and reproduction of the Christian religion and its denominations. Or if instead the choice was made because it was considered right, regardless of the success it could have in terms of believers' consensus.

Two different readings of the Second Vatican Council, widely discussed in theology and religious sociology, embody the two possible answers to this question. To use the interpretative model of cultural evolution, it should be said that in a counterfactual reconstruction of the Council, choices opposed to those made would have been non-adaptive choices, which would have fostered mutant types not beneficial in the environment of the Catholic Church. Or, on the contrary, it can be posited that those choices are in continuity with the Catholic tradition and are only an update of it. It also remains to be understood whether decisions of this type constitute a conscious strategy of "evolutionary defence" (whether in a positive view to ensure the future of religion, or in a negative view to maintain its perspective of cultural dominance) or are an elaboration of what must be considered just and true as opposed to the deformations that have occurred in religious thought (Catholic in this case) and in the corresponding lifestyles.

In this vein, one may wonder what kind of friction occurs when the finalistic perspective underlying the theological sphere is compared with the theories of the historical evolution of living beings. In a radical sense, does this clash cause a fall or a reformulation (via subsequent clarifications) of the finalistic perspective? In other words, is this an adaptation — in which the unexpressed potential of a model of theological understanding is brought to light (or cleansed of expressive modes that are no longer sustainable in the light of developments in scientific thought and current cultural challenges) — or does the evolutionary approach introduce a real novelty (a break) with what came before? Perhaps the most important test involves not only the beginning (creation), but above all the completion of history and the universe (eschatology). In this sense, to give an example that lies entirely within Catholic theology, does accepting the idea that the limbo (and perhaps purgatory itself) is a theological category far from the biblical perspective and revelation correspond to a real mutation of the theological substance, or to a better specification of it, with reference to something that maintains the substance of Catholic teaching while depriving it of elements that are no longer sustainable in the light of the current cultural context?

This consideration leads to one last question, which can be regarded as decisive. According to the model of cultural evolution, is it the case that evolution cannot ultimately be governed by individuals and by the institutions themselves, despite the efforts they might make? Is change an unavoidable, essentially unpredictable process of interaction between innovations, environmental pressures and selection with adaptation? But if it were a partly random and mostly non-governable process, would it make sense to judge it as good or bad? A recent example is provided by the pronouncements of Pope Francis on matrimonial pastoral care (see section IV) and on bioethical questions related to the beginning and end of life. Statements such as those proposed by Pope Francis (like some texts of the Congregation for the Doctrine of the Faith, such as the declaration on euthanasia in 1981) would have sounded incomprehensible perhaps even to the theologians who led Pius XII's magisterium, which was already relatively open to medical development. In this case, the strength of these arguments lies in the basic congruity of a thought that comes from tradition, but that presents a reactive (and only slightly proactive) perspective towards an evolving culture. It seems, however, that it is still difficult to see how the knowledge of tradition can inspire

a new mode of reflection, which requires us to understand that evolution has changed what cases to which to apply the moral rules that religion has developed over time.

VI. CONCLUSION

I have tried to offer only some suggestions for an innovative interpretation of religious phenomena. As mentioned, the evolutionary approach implies the idea of continuous change with respect to the change of the environment. Applying the model of cultural evolution proposed by Cavalli-Sforza, I have tried to show how in this way we can interpret change within institutionalized religious systems over shorter time intervals than the times of biological evolution. This approach is not an alternative to the genetic one, which aims to explain the rise of the religious phenomenon according to a Darwinian evolutionary scheme. The model of cultural evolution, as already pointed out, is not committed to linking religious beliefs to the way in which they are formed, and therefore it can also be compatible with a theological perspective that goes beyond the pure adaptive aspect of religion for the social life of human beings.

Introducing the model of cultural evolution allows one both to make the analysis of the change in religion more scientifically oriented and to introduce hypotheses of future development on the basis of the characteristics of the environment in which the given religion is located, as well as to obtain a precise scheme of the relations of mutual interaction between religion and environment. However, from the point of view of theology and also of philosophy of religion, the question arises of how to interpret the evolutionary approach with respect to the substantial contents of religion. It is true that in some ritual and organizational features change over time occurs and is accepted although it is often formally minimized or even denied. However, as regards beliefs and moral precepts, change can only be accepted as either a renewal of form or fundamental continuity. As can be seen with the papacy of Francis, resistance to change can be strong and explicit.²⁹ Here, too, however, the model of cultural evolution can come to the rescue to explain the trends

29 Ross Douhat, *To Change the Church: Pope Francis and the Future of Catholicism* (Simon & Schuster, 2018).

taking place. This does not mean that subjects are acted upon by environmental pressures, but rather that there is a complex interaction at play that must be understood with new heuristic tools. The model of cultural evolution can be one of them, although it certainly cannot replace all the perspectives and tools that we have used so far to interpret and understand change in religion.

Ultimately, what is proposed here is only the possible beginning of a research consisting in the attempt to explain the change of mature religions with a specific evolutionary tool. Much work is needed to refine this approach and test it also on an empirical level, so as to evaluate its real heuristic significance. In any case, a model that uses the evolutionary paradigm in a sense that is not deflationary with respect to religious beliefs and can also be used at the theological level within the religions themselves, seems worthy of consideration.³⁰

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