

15 The evolution of semiotic systems: On Volkhard Krech's *Evolution der Religion* (2021)

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In: Stausberg M., *21st Century Theories of Religion*. Routledge 2024, p. 257-275.

Does religion evolve? About a century ago, many scholars would have answered the question in the affirmative. For most of them, as for many in the previous generations, the evolution of religion meant that advanced religions such as Buddhism, Islam, and Christianity evolved from primitive forms of religion, such as animism and shamanism. After all, Darwin's account of the evolution of species implied that life started with simple forms, such as amoebae from which evolutionary processes produced complex organisms, such as dinosaurs and humans. For the last half a century or so, such applications of Darwin to human culture have been rejected as being simplistic, Eurocentric, and even outright racist. The idea that religion evolves has also been squarely dismissed by many scholars in the cognitive science of religion, who suggested that religion pops up in any human society as a by-product of evolved cognitive structures. Meanwhile, the study of cultural evolution gained new impetus, incorporating neo-Darwinian concepts and engaging in a dialog with cultural theories of the twentieth century. Volkhard Krech's book, which we are discussing in the present chapter, offers a perspective on the evolution of religion that is different from all the above-mentioned traditions and attempts to navigate around the problems posed by other evolutionary approaches. For Krech, religion is akin to a living organism, which is best understood with the help of system theory and semiotics. In order to fully appreciate his theory, we will have to start our discussion by introducing, however briefly, the study of religious systems and Charles Peirce's semiotics.

Biographical notes

Volkhard Krech is professor of religious studies and director of the Center for Religious Studies (CERES) at Ruhr University Bochum. He earned his doctorate in sociology from the University of Bielefeld with a dissertation on Georg Simmel's (1858–1918) theory of religion (*Georg Simmels Religionstheorie*, 1998). He worked extensively on the sociology of religion, publishing *Religionssoziologie* (1999), *Wo bleibt die Religion* (2011), and a co-edited handbook of the sociology of religion (2018), among others. From 2008 to 2022, he directed an international research center (*Käte Hamburger Kolleg* of the German Research Foundation) on Dynamics in the History of Religions. His published work covers several aspects of religion, including religious art, experience, conversion, questions related to the place of religion in modern society, and the history of the academic study of religion. His *Evolution der Religion: Ein soziologischer Grundriss* (Krech 2021 [henceforth *ER*]), discussed in the present chapter, filled a void in recent German scholarship to present a book-length, systematic, and whole-sale theory of religion.

Religion as a system

Starting from the 1940s, the concept of systems gained currency in engineering and the natural sciences. A system has several parts that are functionally connected and displays one

or more of the phenomena of self-regulation, self-organization, complexity, and emergence.¹ The most famous among early suggestions to view religion as a system is the one of anthropologist Clifford Geertz (Geertz 1973 [1966]), who proposed that religion “is a system of symbols” (4), which establishes powerful motivations. He also elaborated on the analogy between DNA and “culture patterns” (pp. 6-8), which has been observed repeatedly since the structure of DNA was discovered. Sociologist and philosopher Niklas Luhmann (Luhmann 1977, 1998) understood religion as one of the psychological and social systems in the “medium” of meaning (Luhmann 1998, 16), which specializes on dealing with contingency (Luhmann 1977, 182–224) and interpreting the “indeterminable world” (*die unbestimmbare Welt*; (Luhmann 1977: 26)), a task that the system performs through communication (Luhmann 1977: 56). Luhmann applied various aspects of system theory (such as autopoiesis, see below) to describe how religion maintains itself and interacts with its environment (Luhmann 1977: 13–71). In his study of ritual and religion, Roy Rappaport included both organisms and groups of organisms among “living systems” (1992: 406) and described a formal model of the “cybernetics of the holy” (429–437). [See also chapter 2 in this volume.]

From the mid-1990s, scholars expressed skepticism about the idea that religion can be studied as a system. For example, Pascal Boyer suggested that taking connections among religious assumptions for granted was false ‘theologism’; Benson Saler argued that there are beliefs we can remove from the set of an individual’s or culture’s beliefs without affecting any other belief, thus beliefs do not constitute a system; finally, cognitive anthropologist Roy D’Andrade suggested that culture is a collection of units, rather than an ‘entity’ (see Czachesz 2013). Yet, the last two decades have seen renewed interest in the study of religious systems. Anthropologist Richard Sosis published a series of articles, some with collaborators, developing the idea of religion as an adaptive complex. Recently, Purzycki and Sosis (2022: 138–70) outlined a religious system that maintains cooperation and coordination and described its various systemic features, such as emergence, self-organization and regulatory mechanisms. In earlier publications (Czachesz 2007, 2013) I have described religion as a distributed, dynamical system, which consists of rituals, experience, beliefs, and texts (both written and oral), embedded in natural and social environments, and applied graph theoretical formalism and insights from dissipative physical systems to characterize its dynamics. Finally, Francisca Cho and Richard Squier (2013) offered a thorough discussion of system theory and its applicability to the study of religion.

Krech’s view of system theory can be summarized as follows (*ER* 40–43). A system is a network of functionally independent, yet interdependent and functionally interconnected, parts of an integrated whole. The system is complex, and its complexity results from non-trivial, non-linear interactions of its parts, such that the resulting dynamics cannot be understood as a sum of the individual parts. To this functional definition, the formal requirement is added that all elements of a system need to be able to influence each other at least in an indirect way.² Further, systems come to being by differentiating (*abgrenzen*) themselves from their environment; they build their own structures and generate information independently. The system does not simply take its elements (including components, processes, etc.) from the environment, but creates them, which is a feature called autopoiesis. However, the system is not independent of its relevant environment, either: the environment that is relevant for the system (its *Umwelt*) is represented within the system. Thus, the system contains two different sets of representations, that is, a self-referential and an other-referential set. Beyond the *Umwelt* (that is represented within the system), there is an amorphous environment (*Umgebung*), of which the system keeps no record. The system exists in “operative closure” (*operative Geschlossenheit*) insofar as it only deals with relevant

disturbances of the environment that are converted into manageable information (as argued by Luhmann 1998: 198). Thus, communication systems never communicate with their environment; they only communicate *about* it insofar as they refer to it in the form of signs. Proceeding from these principles (summarized here with some simplifications), Krech develops a semiotic model to describe the dynamics of the system.

The semiotic model

In this section, I briefly introduce Krech’s interpretation of Peircean semiotics and the model of religious communication constructed with its help. I will add more context and critical remarks in the final part of the chapter. Suppose you see a small mound on the lawn, and you identify it as a molehill based on its properties. Then the lawn is an *interpretant* of the mound, because the mound has been found in the lawn and sets itself apart from it. The molehill is a *sign* of a mole as an *object*, and the sign and the object are mediated (*vermittelt*) through the *interpretant*, the lawn. The semiotic triad just established can be depicted as in Figure 1.

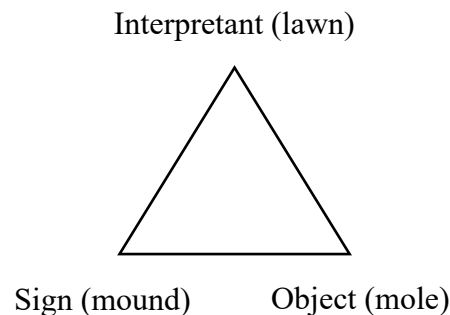


Figure 15.1. The molehill as a sign (adapted from ER 47)

In semiotic parlance, the mound can also be called the *representamen*, as the entire triad is collectively a sign. In sum, “a sign stands for an object in some respect to some interpretant” (ER 46, citing Parmentier 1994: 16). The same thing (let us say, a mole) can occupy a different position in a different semiotic triad. Also, the elements of a triad mutually determine each other, so that a particular object becomes the object of the triad because of the given sign and interpretant, and so on. Moreover, the interpretant of the triad itself can be re-used as a sign and, together with the object, invite a new interpretant. In Krech’s example, the lawn itself becomes a sign that brings in the garden as a new interpretant. Theoretically speaking, the process can go on infinitely, but in practice there is always a *final interpretant*, “the context of a system, which itself consists of sign systems” (ER 56).

Before turning to Krech’s semiotic model of religious communication, we also need to introduce the Peircean categories of firstness, secondness, and thirdness (ER 52). The category of *firstness* includes everything as it is, regardless of anything else. Examples are ‘the redness’ of a rose and ‘the religious’ in a concrete religion. The category of *secondness*, in turn, manifests itself in a relationship with a first. It is the category of experience in time and space, among others. An example of secondness is a red rose as distinguished from, and in relationship with, its natural environment, or a particular religion as distinct from, but connected to, its societal environment. Finally, *thirdness* is what brings a second into a relationship (*Bezug*) with a third. It is the category of mediation, remembering, custom, necessity, law-like regularity, and continuity, among others. Examples of thirdness are a red

rose as a symbol of love and passion, and “the usual understandings of religion”. Related to the three categories are three kinds of signs, corresponding to their respective relationships with the object. According to Krech, an *iconic sign* can simply replace its object, such as a ‘cross’ as a sign can be interchangeable with ‘Christianity’ (ER 45). If the cross, however, refers to a particular Christian group as a social-historical entity, it is already an *indexical sign*. Finally, a *symbolic sign* refers to an object by convention.³

Out of these building blocks (and some more, which we will introduce later as needed), Krech constructs a model of religious communication as shown in Figure 2. Let us now consider how the system functions (ER 54–91), using the example of sacrifice (ER 250–254).

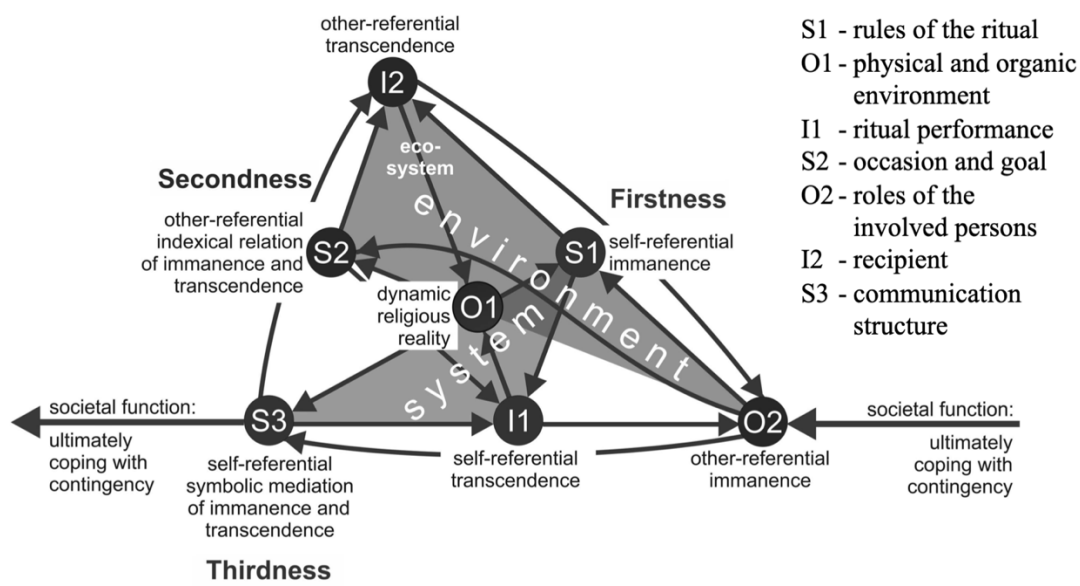


Figure 15.2. Semiotic model of the religious system (adapted from Krech 2020:211), with sacrifice as an example

The system consists of three signs (S1, S2, S3), two objects (O1, O2), and three interpretants (I1, I2, and the final interpretant). Some of the elements perform a self-referential function (representing the system itself), while others have an other-referential function (representing the system’s environment, *Umwelt*). As we can see on the diagram, S1, S3, and I1 are self-referential, while S2, O2, and I2 are other-referential. Further, some of the elements are related to immanence, while others to transcendence (see below). The function of the religious system is to cope with undetermined contingency by using the known immanent to refer to the unknown transcendent, which Krech also calls the “immanent-transcendent code”. At the core of the system is the first triad (S1, O1, I1), let us call it *TI*, which is comparable to the example of the molehill. This is called the self-referential system. In this case, S1 consists of ritual rules, which are available orally or in writing and do not refer to anything beyond themselves, which puts them into the category of firstness. In the religious system, S1 is an iconic sign, which always belongs to firstness (in mysticism, for example, it can be identified as raw experience) and occupies the position of self-referential immanence (the rules are obviously immanent). S1 is connected to O1, which is called the dynamical

object. A dynamical object is a piece of reality that determines the sign (*ER* 220), as opposed to an immediate object, which is the object as represented by a sign. Thus, the rules of the ritual refer to pieces of physical and organic reality and are activated at the performance of the sacrifice (I1). The ritual performance is self-referential and transcendent. It is self-referential insofar as it is pure performance; it is transcendent because it “produces and reproduces” *meaning* that consists in the meaningful connection of its elements as well as their reference to the recipient of the sacrifice. In this way, the relationship between the rules and the performance reproduces the religious code of immanent/transcendent.

The next triad, which we will call *T2*, includes S2, O1, and I2. The sign S2 is the occasion and goal of the sacrifice, which is connected to pieces of the dynamical object O1, the latter itself comprising physical and organic reality. S2 is an indexical sign (in the category of secondness) and establishes an indexical relationship between immanence and transcendence. In our example, it integrates the occasion of the sacrifice into the ritual and adds religious meaning to the sacrifice. It is other-referential (as part of the *Umwelt*). I2 is the recipient of the sacrifice, which is both other-referential (the recipient is part of the environment and lies outside the self-representation of the religious system) and transcendent (the recipient of the sacrifice transcends immediate perception). Further, *T2* brings in system-relevant information from the amorphous and undetermined environment (*Umgebung*) and converts it into system-relevant information, which is then represented as internally represented environment (*Umwelt*). The recipient (such as a deity) cannot be part of the communication system directly; however, it is embedded in myths, cosmologies, or theologies. (Although it is not shown in Figure 2 for the sake of conciseness, a full semiotic description of the recipient can include an iconic representation, such as in the form of a statue in the position of S1, and an indexical representation, such as in a myth in the position of S2.) In sum, *T2* generates religious meaning insofar as it makes the sacrificial procedure refer to a recipient that is part of other-referential transcendence.

The third triad that we will consider, *T3*, consists of S2, O2, and I2. The occasion of the sacrifice (S2) and the recipient (I2) bring the roles of the involved persons (O2) into the semiosis. The involved persons can be experts, onlookers, or patrons, among others. O2 is other-referential (the roles of the participants belong to the sacrifice’s *Umwelt*) and immanent. The relationship between the participants and the occasion is regulated by practical and mythical constraints. For example, one needs to sacrifice to a certain deity to secure a good harvest. Finally, S3 is a symbolic sign (in the category of thirdness) that is self-referential (part of the self-representation of the system) and establishes a symbolic relationship between immanence and transcendence. In our example, S3 is the communication structure of the sacrifice, which is connected to the final interpretant, the societal function of the sacrifice. The communication structure (S3), the roles of the involved persons (O2), and the recipient (I2) form the triad *T4*, which is the “system reference” that integrates the self-referential (S1, O1, I1) and other-referential (S2, O2, I2) parts of the system, including triads we have already talked about.

Krech’s theory of religion: distinctiveness, function, and structure

Krech’s systems model of religious communication is based on a synthesis of Niklas Luhmann’s extensive treatment of religion and society (see Krech 2018a, 2018b). Krech extends Luhmann’s theory in various directions, of which the application of Peircean semiotics is the most important one from a theoretical point of view. Krech’s aim (*ER* 62) is

to move beyond the mere retelling or paraphrasing of what religions say, yet avoid the reduction of religion to external factors, such as politics or economy. He defines his approach as “a sociology of religion informed by system theory” and considers religion as a societal subsystem that performs the function of “coping with indeterminable contingency (*unbestimmbare Kontingenz*) and communicating the not communicable” (ER 20).⁴ The term “contingency” means everything that is neither necessary nor impossible (ER 24), and “indeterminable contingency” is contingency that cannot be represented (*darstellen*) or named (ER 29). Religion copes with undetermined contingency by referring to transcendence, such that it relies on the known immanent to refer to the unknown transcendent (ER 29). Although Krech does not offer a substantive definition of transcendence, insisting that the two terms (immanence and transcendence) mutually determine each other (ER 24), a property of transcendence is the transcending (*überschreiten*) of a given experienced reality (ER 351 note 67).

The initial definition of religion is further elaborated at several points of the book as the underlying theory is being developed. Most importantly, Krech identifies four dimensions of religion (ER 94–167), that is, experience (which supplies evidence), embodiment (which supplies mediums in a broader sense), cognition (which supplies meaning), and regulation (which creates order out of the three other dimensions). The dimensions of religion are associated with the three Peircean categories. Experience, the first dimension, belongs to the category of firstness. Experience is pure attribute (*Eigenschaft*) without substance, which evokes communicative attention through some quality or property. It is associated with the iconic sign (S1) in the religious system (see above). Krech carefully distinguishes *Erlebnis* (raw experience) from *Erfahrung* (religious experience), which is socially and culturally “schematized” (ER 99). The transformation of raw experience into religious experience happens with the help of the immediate interpretant (I1), based on the code immanent/transcendent. Here Krech appears to take a position against the *sui generis* concept of religious experience and follow the “deeming” model of religious experience as formulated by Ann Taves (2009).⁵

Embodiment, the second dimension of religion, belongs to the category of secondness. Embodiment is connected to the objectivity (*Gegenständlichkeit*) of things. Such objects only enter the system through signs (as so-called “quasi-objects”). Embodiment is associated with the indexical sign (S2) of the system and mediates between the firstness of religious experience and the thirdness of religious communication (104). It includes the material form of religious signs and mediums, in which religion proceeds (*prozediert*), as well as the performative aspects of the human body that make it possible to act out religious narratives. Thus, Krech’s dimension of embodiment lumps together material entities of different kinds, living and non-living, ranging from “nature” and “spaces” to the human body and mediums of dissemination.

Cognition, the third dimension of religion, belongs to the semiotic category of thirdness. In the system it is associated with the two interpretants (I1 and I2). In Krech’s semiotic model, interpretants are “processors” or “coding apparatuses,” and are responsible for conveying religious meaning with the help of the code immanent/transcendent. The cognitive concepts of religion form “the otherworld” (*Anderwelt* [ER 129]). Krech criticizes cognitive science for confining cognition to the psyche and considering social and cultural reality as a mere

extension of the psychological.⁶ He finds a better alternative in Luhmann's work, who defined cognition as the processing of symbols in systems, such as artificial intelligence, cells, brains, consciously (*bewußt*) operating systems, and communication systems (*ER* 131). A communication system does not merely copy or represent information from the Umwelt, but rather generates knowledge internally, including redundancies, which saves the system the effort of processing information repeatedly. Examples of religious cognition discussed include animism, shamanism, magic, divination, myth, theology, mysticism, as well as metaphorical and metonymical processes.

The fourth dimension, regulation, wraps (*einfaßt*) the other three dimensions. The institutionalization of religion constrains the limitless possibilities of speculating about non-empirical reality (as suggested by Luhmann) and facilitates its social integration. The discussion of this dimension combines insights from ritual theory and the sociology of religion, including the discussion of roles, groups, movements, and organizations.

Hunters and shamans: the origin of religion

In the second part of the book, Krech outlines the origin and early history of religion against the backdrop of his systems model (see above) and his concept of evolution (see below). Only some of his examples can be mentioned here. Krech's earliest example is the burial site Q11 in the Qafzeh cave (near Nazareth, discovered in 1969), from 120–90 thousand years ago (Vandermeersch and Bar-Yosef 2019). A 12-13-year-old adolescent girl or boy was buried there in a pit in a fetal position, and a deer antler was placed next to his or her chest. In Krech's interpretation (*ER* 194–202), the meaningful sign complex of Q11 shows potential for the emergence of religion. First, although the choice of a cave as a burial site could be the result of natural constraints, it is quite possible that the people wanted to hide and protect the body (such as from animals).⁷ Second, the placing of the body in a fetal position could be seen as a sign of associating the beginning of life with its end, and as an indication of the conceptualization of various natural cycles. Third, even though the deer antler could end up next to the body later, if it was indeed placed there at the burial, it can be seen as a reference to some sort of journey of the soul or life after death. Krech further identifies the three observed elements respectively with experience (of death, indicated by the iconic sign of the fetal position), embodiment (indicated by the indexical sign of the burial in a cave), and cognition (indicated by the symbolic sign of the antler and its interpretation). Further, he dismisses the possibility that the burial could be seen as evidence of ritual practice. Nevertheless, he suggests that the above-mentioned observations warrant an interpretation of the site as evidence of a precursor of organized religious ritual and witnesses the communicative coping with mourning.⁸ In sum, Krech considers the experience of death as the first palpable step toward religion, a view that has been endorsed by many since Edward Tylor (see Torrey 2017: 110–117).

Krech (*ER* 202–245) considers hunting as the next major step toward religion, which brought about the connection of contingency with practical, technical, and organizational elements. His approach is based on the discussion of pre-historic art, especially cave paintings from southern France as well as northern and eastern Spain from the period of about 30 000 to 10 000 years ago, which overlaps with the latest glacial maximum ("ice age," from 22 000 to 14

000 years ago).⁹ One of the most complex paintings, and the most significant for Krech's argument, comes from the end of the indicated period (and after the ice). On this image from eastern Spain, dated to 9 000 to 8 000 years ago, Krech distinguishes three groups: (1) an animal standing on its hind legs, pointing to (2) a group of people shooting arrows at a second animal, as well as (3) a third group consisting of a hunter, apparently sitting on the ground with broken gear, and a wounded animal. Krech offers two possible interpretations of the composition. (A) According to the first interpretation, the composition is about the alternative outcomes of success and failure of the hunt. The animal on its hind legs is read as an anthropomorphic figure that both observes and influences (or directs) the hunt. The outcome of the hunt depends on how well the hunters align themselves with the behavior of the animals, as shown by the anthropomorphic animal. (B) According to the second interpretation, the animal standing on its hind legs is a therianthrope figure, half human, half animal, which refers to unity. The hunters and the animals are exposed to violence (as shown by the wounded animal and the man with the broken bow) and the hunters seek reconciliation.

Therianthrope figures are a recurring feature of cave art in the timeframe and area under consideration. Based on the interpretation of the hunting scene above, Krech offers two alternative explanations of their genesis. First, the therianthrope figure can be seen as a representation of the hunters' attempt to put themselves into the animals' position. This enables them to understand the animals' behavior (as well as to disguise themselves, see below). Second, therianthrope figures evidence the beginning of a "hunting cult," which is motivated by the guilt that humans feel for hunting animals. Here Krech refers to Walter Burkert's (1983 [1972]) hypothesis of the origins of animal sacrifice, who argued that paleolithic hunters saw their prey as human-like and felt such guilt about killing them as if they were killing conspecifics.

Furthermore, in the context of other images stemming from roughly the same period, Krech also connects the emergence of religious leadership to the supposed hunting cult. Various compositions depict humans in deer costume, which can be readily linked to archaeological finds of adapted deer antlers. In Krech's interpretation, the figures in the images had both pragmatic and figurative roles. In practical terms, the pictures probably show attempts of camouflaging a hunter to approach prey animals, which suggests the formation of an expert role in hunting. However, Krech goes on to interpret some of the figures as dancing and playing music, suggesting a ritualistic contribution to the hunt and a related expert role. He speculates that given the perceived closeness between humans and animals (see above), the figures in question were seen not simply as humans in a costume but as actual transitional beings between humans and animals. From such beginnings, Krech argues, expert roles in hunting and cult became differentiated from each other. Finally, the differentiation of religious cognition is visible in the role of the cultic expert as a shaman (a term used heuristically). The shaman can move between two forms of existence with the help of trance, dreams, and ecstasy. In sum, the experience of contingency in hunting led to the differentiation of cultic practices, roles, and cognition from other social domains.

While many arguments in this section of the book are intriguing and convincing to varying degrees, one cannot escape the impression that the interpretation of pre-historic cave art is

akin to taking a Rorschach test. For example, after removing the circles drawn on the reproduced figure of the hunting scene from eastern Spain (see above), the “sitting” hunter with the “broken” bow could be seen as a hunter running against the direction of the main group and chasing an animal he previously wounded. Other examples of alternative readings can be added. For example, the “musical instrument” in the hands of a camouflaged figure is probably just a bow as seen in countless other images. As Ida Wunn and Davina Grojnowski noted, “[c]learly, the beauty of individual images has seduced researchers into overloading the cave images of the Ice Ages with meaning” (Wunn and Grojnowski 2016: 90).¹⁰

The evolution of the system

Already toward the end of the nineteenth century, scholars such as David George Ritchie tried to explain the formation of social institutions in terms of Darwinian evolution (Hodgson 2005). The connections between Darwin’s general ideas, on the one hand, and social phenomena, on the other, appeared intuitively convincing, while the details and implications of his discussion have often been glossed over. Importantly, Darwin did not know about genes and had no good theory of how inheritance works, problems that scientists worked out gradually in the first decades of the twentieth century. The face of Darwinian theory changed considerably after the formation of the gene-centered, neo-Darwinian view of evolution. Richard Dawkins, who popularized the gene-centered view, also suggested its extensions to other fields, introducing the concept of the “meme” (Dawkins 1976) as a cultural replicator and advocating “universal Darwinism” (Dawkins 1983). Pioneers of neo-Darwinian social science include Luigi Cavalli-Sforza, as well as Peter Richerson and Richard Boyd. Attempts to apply a neo-Darwinian (generally speaking, “memetic”) perspective to religion include contributions by Susan Blackmore (1999), Hugh Pyper (1998), David Sloan Wilson (Hartberg and Wilson 2017; see Atkinson in this volume), and my articles (e.g., Czachesz 2017). Dan Sperber (1996) objected to the concept of the meme and its use in the study of religion has been criticized by Radek Kundt (2015). Their main objections are that (a) culture does not consist of small, independent (discrete) pieces of information, and (b) bits of culture almost never create exact copies of themselves, as do genes. Such objections have been echoed by scholars (e.g., Pascal Boyer, Ilkka Pyysiäinen) who consider religion as a side-effect (or by-product) of neo-Darwinian processes of human evolutionary history but deny that religion itself (and culture in general) would undergo such evolution. They often explain the spread of religious ideas with the help of Sperber’s model of cultural attraction. (See also Jensen in this volume.)

Many others, writing on the evolution of culture and society, preferred to stay away from the neo-Darwinian paradigm. On the one hand, this corresponds to the fact that sociology (almost by definition) looks at society as the proper level of explanation, which then accounts for the behavior of the individual, rather than starting with brains, genes, cultural packages, and so on; on the other hand, problems with the applicability of a gene-centered evolutionary theory motivated alternative solutions, as well. In historical accounts of social and cultural phenomena there is a tendency to use the term evolution in the sense of improvement or increase of complexity over time, a notion that pre-dates Darwinian theory. A major work on the evolution of religion that reflects the above-mentioned heritage is Robert Bellah’s

Religion in Human Evolution (Bellah 2011; see Abrutyn in this volume). Other scholars extended or complemented Darwinian evolutionary theory to improve its applicability to cultural and social phenomena. Most importantly, the notions of structures and systems have been combined with evolutionary principles. Niklas Luhmann (see above) was one of the pioneers of the latter approach, which has been picked up recently especially by German social scientists.

Krech (*ER* 354 note 86) references Donald T. Campbell, Talcott Parsons, and Niklas Luhmann as sources of his concept of evolution (*ER* 31–40). Evolution has no absolute starting point; it can only explain the appearance of something from something else that already existed; it is best understood as a retrospective, genealogical approach; and is blind to the future. Further, evolutionary theory involves an inherent circularity of improbability and probability, insofar as it brings about something improbable, yet it tends to preserve whatever is already there. The “general theory of evolution” (*ER* 34) explains the formation of structure (*Strukturbildung*), which creates durable connections between individual elements, so that they become meaningful entities (*sinnhafte Entitäten*). Evolution has three mechanisms: variation deals with individual processes, selection forms structures, and stabilization is responsible for the separation of the system from its environment. In the context of the evolution of society (including its religious subsystem), variation plays out in individual communication events; selection has to do with structures, that is, with compatibility (*Anschlussfähigkeit*) and the application of expectations; and stabilization with drawing the boundaries of the system against its environment. Krech clarifies that variation in communication is not to be understood as the spontaneous generation of novelty, but rather as the divergent reproduction of the elements of the communication system, such as the expression of dissenting opinions, the paraphrasing of a previous utterance, and conflict. Krech suggests analogies with neo-Darwinian evolutionary theory, suggesting that structural connections emerging from selection can be seen as the genotype of the communication system, while the varying semantic manifestation (*Erscheinungsbild*) of the communication system is analogous to the phenotype.

Krech postulates that the three above-mentioned evolutionary mechanisms can only function if selection is separated from variation, and stabilization is separated from selection (*ER* 34–38; see Luhmann 1998: 211–213). In terms of the first requirement, the mechanism that selects a variant cannot also cause the variant. In other words, if a mechanism creates a variant and then also selects it, we are dealing with goal-directed design rather than evolution. In Darwinian evolutionary theory, the randomness of mutation takes care of the separation between variation and selection. The second requirement is less obviously connected with Darwinism. Luhmann’s concept of stabilization (*Restabilisierung*) is related to the response of a system to perturbation, and thus presupposes a system-theoretical (cybernetic) rather than Darwinian conceptual framework. In the religious system, stabilization means the inclusion of a new element by interpreting it with the help of the immanent/transcendent code (*ER* 38). We will come back to the criteria in some detail below. The separation of evolutionary mechanisms along the above-mentioned lines takes place as society undergoes two types of differentiation processes. (1) The process of functional differentiation means the development of social subsystems that perform their respective social functions based on their own codes. For example, economy clarifies ownership structures with the help of codes, such as

possess/not possess or pay/not pay and regulates the selection criteria that govern the exchange of goods and services (instead of such processes being regulated by aesthetic criteria, for example). (2) Structural differentiation, in turn, means that interactions are embedded in formalized social contexts (*formalisierte Sozialformen*), such as rituals, groups, movements, networks, and organizations. The more formalized such a context becomes, the more strongly it is exposed to the selection principles of the social subsystem to which it belongs. Thus, a financial institution is more successful if it concentrates on financial transactions and views every other social process only from the perspective of finance.

The case studies from the origin of religion discussed in the previous section offer glimpses of the differentiation process of religion from other social subsystems (ER 180–191). The process starts with the externalization of themes (*Themendifferenzierung*), which are then addressed other-referentially and convey specific religious information. At this point, there is no systemic distinction between self- and other-reference. During this stage, religion relies on environmental conditions, such as psychological perception, physical and organic states of affairs mediated by psychological perception, and social events in the environment. When the perceptions are conceptualized (*vorstellbar gemacht*) as supernatural forces (especially with the help anthropomorphism and embodiment), they can be treated as other-referential. Another process in the early stage is situational differentiation (*Situationsdifferenzierung*), meaning that religious communication is located in particular time and space, such as rituals. Rituals are self-referential (see the analysis of sacrifice above) and are associated with the differentiation of expert roles (see the example of the hunting cult). Next, self-referentially established rituals invite the further development of other-reference, particularly in the form of narratives (myths), which assume other-referential relationships with distinctions such as chaos/cosmos, birth/death, female/male, and so forth. The systemic self-reference is responsible for selection (deciding what gets integrated into the system) and the other-referential environment (*Umwelt*) contributes variation (from changes in communication, see above).

The separation of selection and stabilization (retention) presupposes further developments. It is in this context that Krech (2021: 245–298) discusses sacrificial cult, axial age theory, writing, and the “ethicization” of religion, developments that underlie the institutional differentiation of religion. Further differentiation processes include social-structural, functional, and layered (*schichtförmig*) differentiation (ER 298–312), which can only play out in complex societies (a condition that is necessary but not sufficient).

Critical discussion

As the somewhat enigmatic title of the book suggests, Krech’s project has a twofold focus. On one hand, it offers a sociologically oriented theory of religion; on the other hand, it aims to account for the evolution of religion. The critical notes in the final part of this chapter will address both aspects of the project. Krech’s theory can be characterized as an integrative theory that connects a variety of auxiliary theories from different traditions and disciplines, with an emphasis on sociology. These auxiliary theories, in turn, seem to account for aspects of human (collective) behavior without being specifically about religious phenomena. In fact,

one would expect that the scope of validity of the overarching semiotic model is not restricted to religion. Since religion is defined as one of the sub-systems of society, dedicated to solving a particular problem (contingency), it would seem natural that other sub-systems of society (dealing with other problems) can be studied in terms of the same model. If this is so, however, the theory should be presented as a theory of human society (which was, in fact, Luhmann's ambition) that can be applied to religion as a particular case. Alternatively, it might be that different sub-systems of society (e.g., politics, law, economy, science, education, art, and healthcare, see *ER* 16) are constituted differently from each other. For example, the question can be raised whether replacing the code immanent/transcendent with some other code is sufficient to model the economic sub-system, or, alternatively, the respective structures of the two sub-systems (religion and economy) are also different. If the latter is the case, religion can be explained in terms of its specific, systemic features rather than (or in addition to) its specific target problem (contingency) and a theory of religion needs to account for such differences.

Additional remarks are due on the semiotic aspects of Krech's model of religious communication. In the long history of semiotics, different models of the sign have been developed, triads being among the most popular. A key notion of triadic models is *mediation*, an early form of which is already found in Medieval scholasticism (Nöth 2000: 140-141). According to the early concept of mediation, the ideas and concepts of the user of the sign mediate between the sign vehicle, on the one hand, and the thing to which the sign refers, on the other. Some modern thinkers, such as Charles Kay Ogden and I. A. Richards have a similar concept of mediation: the sign vehicle (which is equivalent to the "sign" or "representamen" in our discussion above) is the first instance of the semiotic process, and the object is its end point. This fully agrees with how Krech defines the triad and the semiotic process, which starts with the sign that invokes an interpretant, which, in turn, determines the context in which the sign refers to an object. The order of semiosis is thus from sign to interpretant to object.

However, Peirce's concept of mediation is different. In his triad, the sign mediates between the object and the interpretant. According to Nöth (2000: 141), the difference is rooted in the respective ways Peirce, on one hand, and Ogden and Richards, on the other hand, define the elements of the triad. In the tradition that Ogden and Richards represent, the semiosis starts with the reception of a sign vehicle that comes "from the outside," continues with the mental processing of the sign vehicle, which leads the interpretant to an object, which points to something in the world outside of the interpretant. For Peirce, in contrast, the object is an experience that is prior to the interpretation, while the interpretant is the stage of semiosis that follows the "growth of the sign." Since Peirce has never given a definitive account of his semiotics, there is room for different understandings of his ideas. That being said, the textbook definition of Peirce's triad (e.g., Atkin 2022) involves (1) a sign (representamen) that signifies (2) an object, and (3) an interpretant that is the understanding that we have a sign/object relation. The key difference from the traditional model is that Peirce's interpretant is a translation or development of the original sign, the ultimate point of the semiosis. For example, with reference to our discussion of sacrifice above, one can say that the rules of the ritual (S) point to aspects of a temple precinct (O), and the two combined give rise to the performance of the sacrifice (I). Further, the interpretant (performance) itself becomes a sign

and (still pointing to the same object) yields a further interpretant (e.g., the involvement of the recipient), and so on. In fact, Krech seems to combine the two models, insofar as his system has objects as inputs, interpretants as “processors,” and signs as outputs. It is not our task to follow through with such an alternative interpretation of the system, the results of which could be potentially enlightening.

Let us turn to the underlying concept of evolution now. Evolutionary theory (in the narrow sense of biological evolution) has changed its shape considerably since the neo-Darwinian paradigm emerged and the DNA has been described. Challenges presented themselves on multiple fronts, including the organization and interaction of genes and cellular mechanisms, the inheritance of non-genetic information, the question of the levels of selection, and so on. Some of these developments have already been taken into consideration in the evolutionary study of religion (see Czachesz 2018 for a survey). A broader, conceptual question seems to lurk behind many of the above-mentioned perspectives, that is, whether a bottom-up approach to evolution can explain the biological world (not to mention the social world) around us. What is the role of groups, niches, and ecosystems in evolution? Do they evolve, and can they be seen as units of selection? Can cells and bodies (rather than only genes) be viewed as replicators? As it turns out, many biologists are looking at higher levels of organization as a key to tackling these questions, and the notion of systems plays an important role in this new perspective (Newman 2011).

Krech follows the sociological tradition of taking social phenomena (communication, in particular) as the preferred level of analysis and finds that certain areas of biology offer helpful analogies. The living cell seems to be the master metaphor of his system. The analogy works well in some respects, if we consider the cell’s stable, yet selectively permeable, boundary, homeostasis (maintaining the cell’s internal conditions), the elaborate system of signaling to pick up relevant information from the environment as well as from within the cell, and some other aspects. There are many points, however, where the analogy breaks down. Importantly, the cell does not evolve the way Krech’s religious system does. It is true that cells respond to information gained from their local environment and pass on (during cell division) new settings to their daughter cells with the help of epigenetic inheritance. Yet, such inherited changes do not amount to anything like evolution, as the information the cell (that is, the somatic cell) passes on to its daughter cells eventually vanishes when the organism dies.

Putting the metaphor to one side, there seem to be two interrelated problems with evolution in Krech’s model. First, the system changes through time by incorporating new information (perhaps more precisely, by developing new elements in response to new information) selectively, based on how such information can be linked to the system’s existing structures. Such selection is widespread in other domains, as well. Memory works by incorporating new information with respect to existing schemata. Genetic mutations must meet system-internal expectations before they can be expressed and have a chance to change the phenotype. Employers hire (at least in part) based on the perceived compatibility of the candidate with the workplace. Generally speaking, existing structures do exert selective pressures on their constituting elements. But it would be difficult to argue that such “internal selection” is all there is to the evolution of the respective organisms (or quasi-organisms). Even ecosystems

respond to selective pressures from the outside (see Watson and Szathmáry 2016). One may ask whether religion would not be hopelessly dysfunctional if it only evolved by internal compatibility. Perhaps, the coping mechanism (responding to contingency) that developed at the dawn of human evolution was so robust to begin with that it continues to function satisfyingly without further adaptation to external pressures. If so, the origin of its superb functionality needs to be explained. The other option seems to be that religion just perpetuates itself even though it is ill-adapted to the world we live in today. Such an outcome would be welcomed by the “debunkers,” whom Krech disavows in his introduction.

The other problem with Krech’s model of evolution has to do with the diversity of religions. Linear evolutionary stories proposed by previous scholarship fail to explain why similarities as well as differences exist between religions worldwide. A natural and parsimonious explanation of the state of affairs is that religious traditions (and cultural traditions in general) came to be through a phylogenetic process. In fact, it is difficult to circumvent a phylogenetic concept of religion if one considers it a self-regulating subsystem of society. If religion were “evoked culture,” reproduced by evolved cognitive capacities in every society (a popular thesis in the cognitive science of religion, which Krech appears to reject in his discussion of cognition), it could easily crop up in ever new, yet also somewhat similar, forms in different places. If religion is self-regulated, however, and not a direct product of its environment (including evolved cognition), then it needs to be passed on from one group to the other as human populations move, split up, die out, conquer other groups, and so on. It seems evident that the countless religions of the Ancient Near East and the Mediterranean world, for example, moved both with and between populations, merging with other traditions, producing varieties, and allowing for some varieties to die away and for others to flourish. Variation, selection, and stabilization (to use Krech’s definition of evolution) certainly seem to have taken place between religions. (An alternative explanation could be to tie the success and failure of religions strictly to the fate of the human groups that practiced them.) In any case, the model as it is presented, especially due to its emphasis on internal selection, does not seem well-suited to explain long-term, historical processes of religious change in interacting populations.

Notes

- ¹ Contemporary research on systems combines multiple academic traditions, which, in turn, have focused on different problems and theories (cf. Dori and Sillitto 2017; Hofkirchner and Schafranek 2011).
- ² This is based on (Backlund 2000), a graph theoretical interpretation of systems, which is also the starting point of (Czachesz 2013). Krech also cites this criterion later at the construction of his semiotic model. Perhaps the requirement is too strict, as it makes it difficult to find the boundaries of real-life systems. A fuzzier approach, for example, based on network modularity, could be a viable alternative. Thus, tentatively, parts of the system are more densely connected with one another than with the rest of the network (the environment).
- ³ Peirce’s typical examples of the three types of signs are portraits (icon), weathercock (index), and the words “homme” and “man” (symbols). Later, Peirce recognized that icons and indices are always partly symbolic or conventional (Atkin 2022).
- ⁴ My rendering of *unbestimmbar* as “indeterminable” follows the English translation of Luhmann’s *Religion der Gesellschaft*.

- ⁵ The concept of “raw experience,” which goes back to William James’s theory of emotions, is not without its problems, either (Azari and Birnbacher 2004). Minimally, it can be said that some experiences lend themselves to be interpreted as religious more easily than others (Taves 2008).
- ⁶ Krech’s criticism of cognitive science, summarized here, seems a strawman argument, which does not reflect the state-of-art of cognitive science.
- ⁷ The cave in which Q11 was found is a burial site that belonged to a closely related, single group of foragers (Vandermeersch and Bar-Josef 2019). Burial behavior has also been observed in animals, see recently Kaswan and Roy 2024.
- ⁸ There seems to be a discrepancy between the dismissal of ritual practice, on the one hand, and the attribution of advanced, symbolic interpretation of death to the adolescent’s population, on the other. The widespread use of color symbolism at Qafzeh (Hovers *et al.* 2003) suggests the presence of ritual practice. The picture is even more complicated, however. Vandermeersch and Bar-Josef (2019, 268) note that the adolescent had suffered serious head injury from which he or she recovered, but which must have caused permanent neurological consequences. They speculate that the special treatment received at the burial could have been related to this injury.
- ⁹ Pike *et al.* (2012) dates many of the finds to as early as 40 000 years ago, which would suggest that the early art was in fact produced by Neanderthals rather than homo sapiens. The early dating and the Neanderthal hypothesis are debated, due to technical questions.
- ¹⁰ However, their own hypothesis that the images served to protect hunting grounds seems a “magic bullet” explanation that is just too simplistic.

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