

Explaining unintended developments with cultural selection theory

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Abstract

Social scientists have criticized memetics and cultural selection theory for being nothing but a superfluous new way of describing human agency in a social context. This position is refuted as reductionist. Several misconceptions that have made cultural selection theory difficult to understand are clarified. Some weaknesses that limit the generality of various versions of cultural selection theory are pointed out, and a broader framework is proposed. Examples are given to illustrate the superior power of cultural selection theory for explaining irrational beliefs and unintended developments.

Introduction

Cultural selection theory is a theory that explains cultural change as a process resembling Darwinian evolution. This theory has less support among social scientists than among biologists. Among the critics of this theory is Theodore Schatzki who opposes the claim that cultural selection theory can provide explanations of non-intended social change. Schatzki says that this framework has nothing to offer beyond theories of situated human agency and rational choice (Schatzki, 2001). My book *Cultural Selection*, which Schatzki cites briefly, has the opposite conclusion, which I will defend here (Fog, 1999).

Before starting my argument, I will state the Popperian position that the value of a theory should be judged by its explanatory power and its ability to make falsifiable predictions (Popper, 1972; Lakatos, 1970; Toulmin, 1972).

Why is cultural selection theory needed?

The claim that social phenomena can be explained with reference to only individual human agency is a reductionist fallacy. A complex society has emergent structures, that cannot be accounted for by reference to individuals only, just like a computer has emergent properties, that cannot be accounted for by reference to the behavior of electrons in semiconductors only.

Talking about selection theory, we know that the evolution of biological species cannot be explained by reference to biochemistry alone. We need a model of natural selection, in one form or another, to account for the emergent effect on the total population of many selection events. Likewise, there are aspects of the evolution of societies, which cannot be accounted for by reference to individual actions alone. We need a selection model, in one form or another, to account for the emergent effect on the culture and social structure of many small events of personal choices.

Before going into examples of such emergent properties, I will clarify some issues that have often caused confusion and made cultural selection theory difficult to accept.

The non-anthropocentric perspective

Human action is a central element in many sociological theories. This anthropocentric perspective, as I call it, emanates from the wish to see ourselves as in control of our own lives. The fact that cultural selection theory is based on non-anthropocentric models gives rise to a communication barrier that makes the theory difficult to accept for many social scientists. To explain the difference between the anthropocentric and non-anthropocentric perspectives, I will present a simple example. Assume that we ask two different persons why a particular song has become popular. The first person answers, "*Because people like the melody*", and the second person answers, "*Because it has a catchy tune*". Both answers are perfectly acceptable, and in effect they are saying the same thing. The first answer represents the anthropocentric view, saying that people's tastes are matching the melody, while the second answer represents the non-anthropocentric view, saying that the melody is matching people's taste. Swapping subject and object here does not affect the truth of the statement, only the focus of attention.

This is the key to understanding cultural selection theory. By moving the focus of attention away from the supposedly rationally choosing person to the attributes of the thing being chosen, we make it easier to understand unintended consequences of the choice being made (Marsden, 1998). The words of the song may contain a political message and this message may have less influence than the tune on a radio host's decision to play the song. Any political consequence of people listening to the song is thus unintended by the radio host. This unintended consequence is most easily explained by reference to the catchy tune.

The effects of physical and social structures

A third possible perspective is the physical environment and the social structure that determine which choices are possible. Different environments make certain choices easier or more difficult to make. A theoretical focus on such structural constraints is another non-anthropocentric perspective that has importance in cultural selection models, as we shall see.

For example, the technical structure of communication media is determining the kinds of messages that can be sent, who can send messages, and who can receive them. The formative influences of different communication media can be traced all through the history of communication technology. The historical inventions of writing, papyrus, paper, and the printing press have all had profound influences on the developments of empires and the balances of power between different classes of people (Innis, 2007).

The emergence of mass communication media, such as newspapers, radio, and television, introduced new dynamics in opinion formation and voting patterns (Altheide, 2013; Wang, 2020). The economic conditions of the mass media have a profound influence on their contents. State sponsored monopoly media are vulnerable to political interference and propaganda (Sussman, 2011). Mass media with a secure and stable source of funding can produce news and public information of a high quality, while media that depend mainly on advertising and sponsoring are forced by fierce economic competition to avoid controversial issues and focus more on entertainment, celebrity gossip, scandals, sex, and crime. This has severe consequences for the general information level and for the democratic process (Altheide, 2013; Becker et al., 2009; Coleman et al., 2015; Fog, 2013).

The social media have added a new dimension to the communication landscape. Now everybody can afford to voice their point of view to a larger audience. This new freedom of expression is useful for social movements and dissidents, but it also makes the system vulnerable to manipulation because false messages can circulate widely (Chang et al., 2021). It is often difficult for the audience to judge the credibility of the messages they see, for

example in the area of health (Zhuravskaya et al., 2020). There is a strong tendency to the formation of echo chambers because social media users tend to follow groups and information channels that they already agree with. Automated filters and algorithms are only amplifying this tendency, which results in increased political polarization that can undermine the stability of a society (Cinelli et al., 2021; Pariser, 2011).

Can dead things have the power to choose?

It is often objected that all social phenomena are based on human agency. Opponents of cultural selection theory are unwilling to attribute causal power to inanimate objects, because such objects don't have a will to choose. However, cultural selectionists have never claimed that dead objects can have a free will. But seeing for example the song in the above example as a parasite or virus with the power to infect people may be a useful metaphor. Let me elaborate somewhat on the merit of this metaphorical thinking.

Bacteria are living organisms that can infect us and make us sick. Some bacteria have higher reproductive fitness than others in the sense that they are more likely to spread and infect us. Hence, there can be no doubt that bacteria are subject to natural selection according to the Darwinian mechanism. Viruses, on the other hand, are not considered living things because they do not include the means for their own reproduction. Nevertheless, viruses can spread and infect us in exactly the same way as bacteria can. Therefore, the principle of natural selection applies equally well to the non-living objects called viruses.

If we claim that only living things can have a will and make a choice, then we would have a hard time understanding why we are infected by viruses against our will. When we imagine viruses as living organisms with a will to spread, then this is nothing but a metaphor that is useful for explaining why we become infected. The fact that the dynamics of infection is independent of whether the reproduced entity is a living thing or not, means that we can draw valid conclusions based on this metaphor.

If you object that a virus is an almost-living thing, then think of a computer virus. A computer virus is certainly not a living thing. It is not even a material object. Nevertheless, a computer virus can spread from computer to computer and cause damage against the will of the computer operators. Seeing the computer virus as a living creature with the will to multiply is therefore an instructive metaphor.

Translating this metaphorical thinking to the realm of cultural transmission, we can say that seeing viruses as dead things corresponds to the anthropocentric view where people choose which cultural practices to adopt, while the idea of regarding the virus as a living organism corresponds to the non-anthropocentric view where different cultural practices have different catchiness or contagiousness.

Both points of view are well suited for explaining why beneficial practices spread, but the non-anthropocentric view is superior for explaining why irrational and disadvantageous practices spread. The metaphorical and non-anthropocentric thinking has turned out to be an efficient shortcut to understanding the spreading of certain beliefs and practices. The important point for the scientific use is that it is possible to make valid predictions based on this metaphorical thinking.

Memetics

A particularly popular branch of cultural selection theory is called memetics. As the name suggests, memetics takes the analogy to genetics quite far. A cultural practice, belief, or instruction is called a meme, which is seen as an information unit analogous to a gene in biology. What I above tentatively called catchiness or contagiousness is here called fitness –

a term borrowed from evolutionary genetics. Memetics has also borrowed several terms from virology, such as host, infection, and viral.

The basic tenet of memetics is as follows. New memes are created as inventions or as intended or unintended modifications of existing memes. Memes spread by cultural learning and imitation from person to person. Some memes spread more than others. When given a choice, a majority of persons may prefer one meme to another. The preferred meme is said to have the highest fitness. This model contains the three elements that are required for an evolutionary process to take place: variation, reproduction, and selection. Some versions of selection theory do not require reproduction but regard selective retention of a structure to be sufficient for the model to work (Cziko, 1995).

Memetics is useful for explaining the spreading of various practices, traditions, fashions, beliefs, stories, rumors, jokes, etc. Among the greatest successes of memetics is the explanation of the spreading of religious cults. A cult is seen as a complex of memes that spreads as a whole package. The success of the cult depends on the effective cooperation of these memes. One meme serves as an allure to make the cult look attractive to new potential converts. Other memes are practices that effectively brainwash new members with the whole meme complex. There are also memes that serve as defense against rivaling beliefs. There are memes that tell the members to proselytize and introduce new members. There are memes to punish defectors. And there are memes, which make the members devote all their time and money to the benefit of the sect. None of these memes would survive alone, but when propagating as a meme complex, the cult can be quite successful (Dawkins, 1993; Lynch, 1996; Brodie, 1996).

Just like the many genes of a living organism can adapt to each other and evolve into a perfect interplay making the organism a successful breeder, so can the memes of a meme complex evolve into a successful cult. The crucial point is that *this can happen without any of the cult members understanding why*. This is where selection theory has its greatest force. No other scientific theory has provided a similar insight into the evolution of cults.

Theories based on rational human agency cannot explain the efficiency of the abovementioned mechanisms without assuming that cults are skillfully constructed by crooked charlatans. While this may be true of some cults, it certainly does not apply to them all. Nobody starting a new cult will be able to invent such a successful meme complex without copying memes from existing cults – memes that have evolved and proven their fitness through a long history of development.

The limitations of memetics

Memetic theory has several shortcomings, which makes it vulnerable to criticism. The analogy with genetics is often taken too far, and this has given rise to a lot of debate (Aunger, 2001; Blackmore, 2009; Wimsatt, 2009). Another problem is that memetics theorists often fail to make the distinction between *knowing* a meme, *endorsing* a meme, and *practicing* a meme.

It does not make much sense to break down a social structure into atomic information units. Even less does it make sense to count the number of instances of this structure, as Schatzki rightly argues, when the structure has contiguous distribution in time and space (Schatzki, 2001). A social structure may nevertheless grow or shrink in importance due to competition from alternative structures. To make a model that accounts for this, we will have to ask not just whether the structure exists or not, but rather how much of it exists. This may be measured in terms of the number of people involved, the geographic extension, the level of activity, etc. The problem is that memetics can only account for dichotomous traits. In cases like this we need to replace the meme with quantitative measures.

A well-known and important selection process in modern society is economic competition. It has long been recognized that the competition between rivaling firms catering to the same market resembles a Darwinian struggle for existence. If we regard a firm as a social structure, then it is clear that we here have a selection process that can make one structure grow and another structure shrink. A general theory of cultural selection must be able to account for this kind of competition. To do so, the model must include some kind of quantitative measure of the success of each firm, such as production output, total profit, or market share (Fog, 1999). Economists have successfully constructed such models that enable us to predict the outcome of various forms of competition in quantitative measures.

A more general theory of selection

As we have seen, memetics has certain shortcomings that limit its generality. A selection theory with wider applicability must allow qualitative as well as quantitative measures to be selected. Henrich and Boyd (2002) have convincingly shown that discrete units are not necessary for adaptive evolution to take place. A general theory of cultural selection should allow qualitative as well as quantitative traits to be selected, and it should allow individuals as well as organizations or social structures to be regarded as the hosts for these traits. This will enable us to include the important processes of economic competition, political competition, competition for attention, etc. as selection processes.

Memeticists have often debated how to define the unit of selection and what the relationship is between the information unit, its physical manifestation, and its interactor or host (Rose, 1998; Gatherer, 1998). My contention is that there is no universal answer to these questions. It must be decided on a case-to-case basis how the selected entity should be defined. Likewise, it must be decided on a case-to-case basis whether the distinctions between information and physical manifestation, between replicator and interactor, etc. are important. In specific cases, it is usually quite obvious what the selected property is (Fog, 1999).

Likewise, there is no universal selection mechanism, but many different mechanisms, too numerous to list here. This has led to definitions so broad that Schatzki (2001) finds them useless. I agree that selection theory is occasionally defined in so general terms that it includes every physical process in the world (Fog, 1999:54), but as mentioned in the introduction, the value of a theory should be judged by its explanatory power, not by whether definitions are broad or narrow.

Other objections to cultural selection theory

Most criticisms of cultural selection theory focus on disanalogies between biological and cultural processes. Based on simplified accounts, many critics believe that a close analogy with biology is necessary for evolutionary processes to work (Henrich, Boyd and Richerson, 2008). Some of the most important disanalogies between the two processes are (Fog, 1999):

- The selection of genetic traits is tied to the birth and death of individuals, while cultural traits can change many times through the lifetime of an individual under the influence of many different selection mechanisms.
- Genetic traits can be inherited only from the two biological parents, while cultural traits can be transmitted from any person to any other person.

- Genetic mutations are blind, while cultural innovations may be the product of rational planning and goal-directed problem solving.
- A new gene usually replaces an old one, while cultural knowledge is most often cumulative, so that old ideas are still remembered after new ideas have been introduced.
- Culture does not have a universal information unit analogous to the gene. It is capable of storing many different types of information.

Many models of cultural evolution have rightly been criticized for ignoring some of these differences (Hallpike, 1985). The analogy between biological and cultural evolution is useful as a source of inspiration and as a metaphor in the study of cultural evolution, but no conclusion should be drawn on the basis of this analogy without taking the fundamental differences between the two processes into account. Critics of cultural selection theories often rely more on the analogy than do the scholars they criticize.

Schatzki (2001) argues that replication and resemblance are different phenomena, and others have argued that information is never copied from one brain to another, but translated, interpreted, or inferred. Furthermore, it has been shown that information may be transformed and altered while stored in memory under the influence of other memory traces (Heyes and Plotkin, 1989). However, Henrich and Boyd (2002) have shown mathematically that even very incomplete, inexact, and biased transmission of information is sufficient for an evolutionary process to take place under relevant conditions.

Schatzki (2001) makes a distinction between cultural practices and social structures which both evolve, but through different mechanisms. I will refrain from discussing the maintainability of this distinction which Schatzki himself challenges. Suffice it to mention that both can be covered by the more general theoretical framework outlined above. A meme does not, in itself, determine behavior, Schatzki argues. It needs interpretation, understanding, and an environment of social practices to work in. The solution to this problem is already known from biology. The genome and the inherited organic structure of a living organism includes means for interpreting the genes and for determining when it is appropriate to put a particular gene into action. All these means are, themselves, subject to evolution. Translating this observation to the cultural and social realm, we must understand that instructions, rules for interpreting instructions and for deciding when to use them, as well as the whole complex of social structure, are all interacting and subject to interdependent selection processes. Schatzki makes a similar conclusion, though with a slightly different terminology. An example involving selection at both the cultural level and the level of social structures, as well as the interplay between them, is given below.

Critics often argue that human action is guided by rational decisions quite unlike the blind trial-and-error of biological evolution. Therefore, they argue, we do not need a Darwinian model to describe cultural change. However, I will maintain that humans cannot predict all consequences of their decisions. And even if they could, they might still make egoistic choices that are detrimental to their society. Therefore, we need a theory to describe the emergent societal consequences of many people's actions. As the example below illustrates, detrimental developments may arise as the result of many people's actions, even when everybody behaves rationally with respect to the goals that are relevant to them.

Memeticists have explained the spreading of irrational beliefs by reference to selection processes. Percival (1994) challenges the claim that humans are likely to spread irrational beliefs. He argues that humans have a strong innate preference for truth and logic and that this will guide their choice of beliefs. However, this presupposes that false beliefs can easily

be disproved, and this is not always the case. True and false beliefs can spread equally fast if no proof or disproof is immediately available and if believers of true and false statements are equally successful. Unless dominating selective forces discriminate between true and false beliefs, the cultural selection of a belief is independent of whether it is true or false.

History shows that even severe logical inconsistencies in a set of beliefs can be covered up by auxiliary hypotheses (Lakatos, 1970) or by the belief that *blind faith is a virtue* (Dawkins, 1993; Brodie, 1996). Percival argues that a set of beliefs containing logical inconsistencies will eventually collapse under the weight of a growing number of such auxiliary hypotheses, and that the "*blind faith is a virtue*" meme makes the meme complex vulnerable to mutation. What Percival ignores, however, is that there may be other selective forces at work countering these effects. An irrational belief system will continue to propagate as long as the sum of selective forces supporting it exceeds the sum of selective forces countering it. A religious sect may have effective brain washing practices that counter the effect of logical thinking, or the irrational belief may confer psychological rewards upon the believer.

A further mechanism contributing to the spread of irrational beliefs has been explored by Barrett and Nyhof (2001). The human memory is not perfect. Notions that violate the laws of nature are remembered more effectively than more mundane notions. This means that stories containing non-natural and bizarre elements may be remembered and transmitted preferentially. Barrett and Nyhof propose that the high prevalence of supernatural events in folk mythology may be explained in part by this effect.

A complex example

The following example will illustrate the value of cultural selection theory and show some of the different aspects that the theory can include.

Imagine a democratic country with two major TV stations, X and Y, both of which rely on advertising and sponsoring as their sole source of funding. Millions of lazy TV viewers sit on their comfortable sofas with remote controls in their hands zapping between the TV channels. By choosing which TV channel to watch, they also choose which cultural and political influences they subject themselves to. This may ultimately affect their political opinions and their voting decisions.

The editor and journalists of channel X want to maintain high journalistic standards. Controversial issues are given a serious and thorough coverage where divergent opinions are given fair treatment. Channel Y relies on a more popular format where news stories are selected for their ability to attract viewers rather than for their societal relevance. Political news is more about personalities, gossip, and scandals than about ideologies.

TV viewers' choice are motivated more by their need to relax and be entertained after a hard day at work than by a desire to collect detailed information to base their voting decisions on. Listening to divergent opinions puts more workload on one's cognitive functions than does hearing simple slogans that nobody can disagree with.

A viewer's switch from channel X to channel Y now has at least the following four consequences. (1) The viewer can relax better. (2) The viewer is entertained rather than informed. (3) The viewer's political opinion is more influenced by simple populist ideas, which may influence his or her voting decisions. (4) Channel Y gets higher ratings and X gets lower ratings. This influences their economy and hence the quality of their programs. The viewers may not realize consequences (3) and (4), but the combined effect of millions of viewers making similar choices can be quite dramatic.

Assume now that the country has hostile relations with a neighboring country. Channel X wants to provide a detailed insight into the conflict and understand the motives of the enemy. Unfortunately, the deteriorating economic situation of channel X prevents them

from making this investigation as thorough as they would like to. Channel Y, on the other hand, relies on simplistic explanations that, in essence, are just saying, “*we are good and they are evil*”. News about danger and disaster are effective at attracting viewers, but it makes fearful people authoritarian and militant and less democratically minded (Fog, 2017).

At the next election, the majority of channel Y viewers are voting for a hard-line politician, Mr. Hawk, who himself is also watching only channel Y. Similar events in the neighbor country lead to a spiral of increased hostility between the two countries which ends in a bloody and devastating war. This war would not have taken place if more viewers had watched channel X.

Now, who is to blame for this unnecessary war? The TV viewers cannot be blamed because they cannot be expected to understand such far-reaching consequences of pushing a button on their remote control. You may put the blame on the editor of channel Y, but if channel Y had made the same type of programs as channel X, then some entrepreneurial investor would have found it profitable to start a new channel Z with a more popular format which could outcompete both X and Y. You may blame the advertisers for supporting channel Y, but a hypothetical advertising agency supporting only channel X would soon be forced out of business because of competition from less ethical advertising agencies, or the companies using the ethical advertising agency would dwindle due to poor sales. You may blame the bellicose politician, Mr. Hawk, but he also has his opinion because he is watching channel Y. If he did not present the hard-line policy then people would vote for somebody else who did.

The conclusion is that there is nobody to blame for this war. It is a logical, though unpredicted, consequence of the economic structure where the fates of mass media organizations are determined mainly by free market forces. The war could only have been prevented if alternative sources of media funding were available.

Traditional sociology, relying on agency and rational choice, involves the implicit assumption that there is always somebody to blame. Blaming Mr. Hawk and analyzing his motives gives only limited insight, because such an analysis misses the point that if Mr. Hawk had different opinions, then people would have elected somebody else. Blaming channel Y leads to a similar fallacy, because it misses the point that channel Y would be outcompeted by some other channel if it turned to higher journalistic standards. All in all, without selection theory, we would be unable to see the complex web of causalities and unintended macroscopic consequences of micro-level events that enables us to devise a way of preventing similar wars in the future.

It is clear from this example that a theory of cultural selection should recognize both qualitative and quantitative attributes to be selected. Among the qualitative entities selected in this example are political ideas, while the economic conditions of each media company must be expressed in quantitative measures. We must also recognize that selection can take place at multiple levels. If journalists at channel X make programming decisions based on criteria of fairness and professionalism rather than economy, then these decisions are overridden by selection at a higher level, that is, the economic survival or demise of their media organization. The same applies to advertising agencies and the companies that use them.

The theory needs to take both agency and structure into account. We could not have analyzed this example without understanding the actions and motives of TV viewers, voters, journalists, advertisers, and politicians. Neither could we understand this example without knowledge of the economic structure that makes media organizations as well as advertisers dependent on the market forces in a free competition.

We must recognize that a choice can have more than one effect, some of which are unanticipated and undesired. This makes the notion of rational choice muddy. The combined effect of many small choices, possibly over a long time, can have far-reaching macroscopic

consequences that nobody has anticipated. We also see that the theory can handle complicated chains and webs of causalities including structural causes and even cyclic causalities, as for example in the spiral of increasing mutual hostility.

The theory needs to integrate findings from many different disciplines, from psychology to economy, in order to account for the many links in this web of causalities. It is not the purpose of the present article to dig deeper into the various scientific disciplines to describe mechanisms like the ones outlined in this example. For now, we will be satisfied with discussing what kind of mechanisms selection theory is suitable for.

Conclusion

Many versions of cultural selection theory, including the tradition of memetics, have weaknesses that limit their generality. This does not, however, invalidate the basic tenet that many aspects of social change can be explained as the result of selection processes. The strong explanatory power of cultural selection models and a non-anthropocentric perspective has been demonstrated through many examples in the literature. In particular, it is concluded that cultural selection theory is superior for explaining irrational beliefs and unintended developments.

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