

Meme

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The term "**meme**" ([IPA](#): /mi m/, not /mɛm/ or /mimi/, to rhyme with "theme"), coined in 1976 by the zoologist and evolutionary scientist [Richard Dawkins](#), refers to a unit of cultural [information](#) transferable from one mind to another. Dawkins said, *Examples of memes are tunes, catch-phrases, beliefs, clothes fashions, ways of making pots or of building arches.* A meme propagates itself as a unit of [cultural evolution](#) and [diffusion](#) — [analogous](#) in many ways to the behavior of the [gene](#) (the unit of [genetic](#) information). Often memes propagate as more-or-less integrated cooperative sets or groups, referred to as *memplexes* or [meme-complexes](#).

The idea of memes has proved a successful meme in its own right, achieving a degree of penetration into popular culture rare for a scientific theory.

Proponents of memes suggest that memes [evolve](#) via [natural selection](#) — in a way very similar to [Charles Darwin](#)'s ideas concerning [biological](#) evolution — on the premise that [variation](#), [mutation](#), [competition](#), and "inheritance" influence their replicative success. For example, while one idea may become [extinct](#), other ideas will survive, spread and [mutate](#) — for better or for worse — through modification.

Meme-theorists contend that memes most beneficial to their hosts will not necessarily survive; rather, those memes which replicate the most effectively spread best; which allows for the possibility that successful memes might prove detrimental to their hosts.



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[\[edit\]](#) Origins and concepts

Richard Dawkins coined the term *meme*, which first came into popular use with the publication of his book *The Selfish Gene* in 1976. Dawkins based the word on a shortening of the Greek "mimeme" (something imitated), making it sound similar to "[gene](#)". The concept received relatively little attention until the late 1980s when several academics took it up, most prominently American philosopher and cognitive scientist, [Daniel Dennett](#), who promoted the idea firstly in his book on the [philosophy of mind](#), *Consciousness Explained* (1991), and then in *Darwin's Dangerous Idea* (1995). Dawkins used the term to refer to any cultural entity (such as a song, an idea or a religion) that an observer might consider a replicator. He hypothesised that people could view many cultural entities as replicators, generally replicating through exposure to humans, who have evolved as efficient (though not perfect) copiers of information and behaviour. Memes do not always get copied perfectly, and might indeed become refined, combined

or otherwise modified with other ideas, resulting in new memes. These memes may themselves prove more (or less) efficient replicators than their predecessors, thus providing a framework for a theory of [cultural evolution](#), analogous to the theory of biological [evolution](#) based on genes.

Considerable controversy surrounds the term "meme" and its associated discipline, [memetics](#). In part this arises because a number of possible (though not mutually exclusive) interpretations of the nature of the concept have arisen:

1. The least controversial claim suggests that memes provide a useful philosophical perspective with which to examine cultural evolution. Proponents of this view argue that considering cultural developments from a meme's eye view — *as if* memes acted to maximise their own replication and survival — can lead to useful insights and yield valuable predictions into how culture develops over time. Dawkins himself seems to have favoured this approach.
2. Other theorists, such as [Francis Heylighen](#), have focused on the need to provide an empirical grounding for memetics in order for people to regard it as a real and useful [scientific discipline](#). Given the nebulous (and in many cases subjective) nature of many memes, providing such an empirical grounding has to date proved challenging.
3. A third approach, exemplified by Dennett and by [Susan Blackmore](#) in her book *The Meme Machine* (1999), seeks to place memes at the centre of a radical and counter-intuitive [naturalistic theory of mind](#) and of [personal identity](#).

[\[edit\]](#) Etymology

Historically, the notion of a unit of [social evolution](#), and a similar term (from Greek *mneme*, "memory"), first appeared in 1904 in a work by the German [evolutionary biologist Richard Semon](#) titled *Die Mnemische Empfindungen in ihren Beziehungen zu den Originalenempfindungen* (loosely translated as “Memory-feelings in relation to original feelings”). According to the [OED](#), the word *mneme* appears in [English](#) in 1921 in L. Simon's translation of Semon's book: *The Mneme*.

According to Dawkins, who coined the phrase and didn't know about *mneme*, *meme* represents a shortened form of *mimeme* (from Greek *mimos*, "mimic"). (Dawkins wanted "a monosyllable word that sounds a bit like *gene*".)

[\[edit\]](#) Dawkins' genetic analogy

Richard Dawkins introduced the term after writing that evolution depended not on the particular [chemical basis](#) of [genetics](#), but only on the existence of a [self-replicating](#) unit of transmission — in the case of biological evolution, the [gene](#). For Dawkins, the meme exemplifies another self-replicating unit, and most importantly, one which he thought would prove useful in explaining [human behavior](#) and cultural evolution.

This [analogy](#) suggests that the definition of a meme should refer to the physical structure, or abstract code representing that structure, representing a real idea as observed in situ. Genes do not depend upon their transfer for their current existence; they may need a definite, although not necessarily unique physical structure. Similarly, a book, play, song, or computer file might replicate a meme

[William H. Calvin](#) offers the concept of a Darwinian process in the generation of conscious thought, based on his theory of resonant electrochemistry in the [neocortex](#).

Dawkins (2006) himself, in a speech on the occasion of the 30th anniversary of the publication of *The Selfish Gene* described his motivation for postulating memes: he portrayed the idea not so much as an attempt at creating an account for cultural complexity, but rather as seeking something with which the selfish-genetic mechanism would still work with unreliable replicators:

Next question might be, does the information have to be molecular at all? Memes. This is not something that I've ever wanted to push as a theory of human culture, but I originally proposed it as a kind of... almost an anti-gene, to make the point that Darwinism requires accurate replicators with phenotypic power, but they don't necessarily have to be genes. What if they were computer viruses? They hadn't been invented when I wrote The Selfish Gene so I went straight for memes, units of cultural inheritance.

[\[edit\]](#) Memes as discrete units

Though Dawkins defined the meme as "a unit of cultural transmission, or a unit of imitation", memeticists vary in their definitions of *meme*. The lack of a consistent, rigorous and precise understanding of what typically makes up one unit of cultural transmission remains a problem in debates about memetics.

Although memeticists speak of memes as discrete units, this need not imply that thoughts somehow become [quantized](#) or that "[atomic](#)" ideas exist which one cannot break down into smaller pieces. The meme as a unit simply provides a convenient way of discussing "a piece of thought copied from person to person", regardless of whether that thought contains others inside it, or forms part of a larger meme. A meme could consist of a single word, or a meme could consist of the entire speech in which that word was first uttered. The "word itself" meme will most likely survive many more generations (after transmission alone or in other sentences) than the "speech in its entirety" meme will survive (due to errors of memory, abridged versions, etc.)

This forms an analogy to the idea of a gene as a self-replicating set of code. The gene in this definition does not consist of a set number of [nucleotides](#), but simply a collection of nucleotides (possibly in many different locations on the [DNA](#)) that replicate together and code for some set of behaviors or body parts.

In 1981 biologists [Charles J. Lumsden](#) and [Edward Osborne Wilson](#) published a theory of gene/culture co-evolution in the book *Genes, Mind, and Culture: The Coevolutionary Process*. They pointed out that the fundamental biological units of culture must correspond to neuronal networks that function as nodes of semantic [memory](#). Wilson later adopted the term 'meme' as the best existing name for the fundamental unit of cultural inheritance and elaborated upon the fundamental role of memes in unifying the [natural](#) and [social sciences](#) in his book *Consilience: The Unity of Knowledge*.

[\[edit\]](#) Memeplexes

Much of the study of memes focuses on groups of memes called "memeplexes", "meme complexes" or "memecomplexes" — such as religious, cultural, or political doctrines and systems. Memeplexes of religion provide a common example. In the case of Christianity (the theory suggests), the Christian memeplex evolved to form (among others) the Catholic church. Following the [schism](#) between the Catholic and the Eastern Orthodox churches, and later splits giving rise to various Protestant churches, various people have added and deleted individual memes, resulting in the formation of completely different memeplexes (religions/sects) within the basic umbrella of Christianity, as well as within (for example) the Catholic, Orthodox and Protestant traditions.

[\[edit\]](#) Transmission

Life forms transmit information vertically (from generation to generation) via replication of genes. Memes can also transmit information vertically by replication. Some life forms can spread from their host horizontally, within groups of contemporaries. Memes also spread from hosts in such a manner. They may also lie dormant for long periods of time: note that [Copernicus](#) re-discovered the ancient heliocentric views of [Aristarchus](#), but Aristarchian memes survive. One can view memeplexes as assisting the survival and transmission of memes in a symbiotic relationship.

In the absence of [telepathy](#), memes generally do not spread *directly* from one mind to another, but *via* the behaviors which they generate in their hosts. For example, the [fashion](#)-value that "less is more" spreads through the [behavior](#) of people dressing down in understated clothes and acting superior; this behavior then has the effect of showing others a real-life example of this fashion-value, thereby conveying to them the fashion statement that "less is more". Verbal transmission can supplement or replace this imitative method.

[\[edit\]](#) Memetics

Main article: [Memetics](#)

Memetics, the study of memes, remains a controversial field among many [scientists](#) and [skeptics](#). Memetics originated when Richard Dawkins reduced the process of biological genetic evolution to its most fundamental unit: the replicator (or gene). Dawkins, in a search for parallels and other things that he might classify as replicators, suggested that

the information and ideas in [brains](#) — [culture](#), for example — could function as replicators as well. [Computer software](#) may represent another form of replicator with which evolution may eventually build grand things, whether socially as in the [open source movement](#), or through the use of [evolutionary algorithms](#).

Memetics offers maximum explanatory value in cases where one cannot demonstrate the truth of the contents of the meme. For example, one can readily show that washing hands helps to prevent illness, so the best explanation for the widespread popularity of this practice is that "it works", though memetics still helps explain the rate of spread, and details such as why the practice of washing hands before [surgery](#) took so long to catch on. Memetics, however, excels in explaining the spread of certain value-judgements ("chastity is important"), preferences ("pork is repulsive"), [superstitions](#) ("black cats bring bad [luck](#)") and other scientifically unverifiable beliefs ("X' is the one true [God](#)"); since one cannot easily account for any of these phenomena in terms of their truth-value. Calling someone's ideas/beliefs/action a "meme", therefore, does not constitute an [insult](#), but dismissing it as "just a meme" does. Calling a belief a meme does not constitute an insult in that most people who believe in memes regard all beliefs as memes anyway. For example, an atheist who classified a given theist belief-system as a meme would likely also classify her own atheist belief-system as a meme.

[[edit](#)] Memetic methodology

Memetics often takes concepts from the theory of evolution (especially [population genetics](#)) and applies them to human [culture](#). Memetics also uses [mathematical models](#) to try to explain many very controversial subjects such as [religion](#) and [political systems](#). Principal criticisms of memetics include the claim that memetics ignores established advances in the fields (such as [sociology](#), [cognitive psychology](#), [social psychology](#), etc.) most relevant to the claims and methodologies of memetics.

Memeticists generate much memetic terminology by prepending 'mem(e)-' to an existing, usually biological, term or by putting 'mem(e)' in place of 'gen(e)' in various terms. Examples include: [meme pool](#), [memotype](#), [memetic engineer](#), [meme-complex](#).

[[edit](#)] Some concepts of memetics

The term *memetic association* refers to the idea that memes [herd](#). For example, a meme for [blue jeans](#) includes memes for [trouser-flies](#), riveted [clothing](#), blue [dye](#), [cotton](#) clothing, [belt-loops](#) and double-sewn [seams](#). In this way, groups of memes can operate [symbiotically](#) (to use a biological analogy) in the sense that they act for their mutual benefit/survival.

The phrase *memetic drift* (formed by analogy to [genetic drift](#)) refers to the process of a meme changing as it replicates between one person to another. Memetic drift increases when meme transmission occurs in an awkward way. Very few memes show strong *memetic inertia* (the characteristic of a meme to manifest in the same way and to have the same impact regardless of who receives or transmits the meme). Memetic inertia

increases when the meme transfers along with [mnemonic devices](#), such as a [rhyme](#), to preserve the memory of the meme prior to its transmission. See [Telephone \(game\)](#) for one example of memetic drift.

[\[edit\]](#) **Doubts about memetics**

In much the same way that the [selfish gene](#) concept offers a fruitful way of understanding and reasoning about aspects of biological evolution, the meme concept can conceivably assist in the better understanding of some otherwise puzzling aspects of human [culture](#) (and learned behaviors of other animals as well). However, if one cannot test for "better" empirically, the question will remain whether or not the meme concept counts as a [valid](#) scientific theory. Memetics thus remains a science in its infancy, a [protoscience](#) (to proponents) or a [pseudoscience](#) (to detractors).

[\[edit\]](#) **Applications of memetics**

[\[edit\]](#) **Memetic accounts of religion**

Memetics regards [religion](#) itself as memetic, and [Richard Dawkins](#) has often discussed religion.

Some [fundamentalist evangelical](#) religious movements act predominantly to swell the reach of their faith-meme. These movements devote a large amount of time to evangelical activity.

Many of the world's most successful religions demonstrate memetic modification over time — the theologies of the 21st century differ to a greater or lesser extent from the theologies of previous centuries. [Judaism](#), [Christianity](#), [Islam](#) and [Mormonism](#) (and their descendants) have all developed through variation, modification and memetic recombination from a shared [monotheistic](#) meme: [Zoroastrianism](#) appears to have functioned as an important and widely-shared religious ancestor (see Lawrence Mills, *Our Own Religion in Ancient Persia*, Chicago, 1913), contributing through Judaism to Christianity, Islam and their many derivative religions.

The [Religious Right](#) in the [United States of America](#) attaches conservative political views to Christian religious evangelism ("meme piggybacking"), and fundamentalist Christianity has associated a particular set of politico-social ideas/memplexes with a separate set of religious ideas/memplexes that have "replicated" very effectively for many centuries.^{[\[citation needed\]](#)} For other examples of piggybacking involving religious memes, note the conversion-histories of the [Hungarians](#) and of [Kievan Rus'](#): adoption of Catholicism and Orthodoxy respectively entailed perceived cultural, political and diplomatic benefits and adherence to perceived mainstream civilization.

A tendency exists in memetics to disparage religious memes^{[\[citation needed\]](#)}, beginning at least as early as Dawkins's openly-expressed atheism. (Dawkins in [The God Delusion](#) (2006) calls all religious memes "mind viruses".) Some speculate that traditional religions

act as mental [immune systems](#) to suppress new (and potentially harmful) memes ^{[[citation needed](#)]}. Some compare this process to a [scenario](#) where the action of a virus (here a religion or a "bundle" of religious memes) proves ineffective and maladaptive if it kills its host(s), or to where the presence of less-harmful bacteria on the skin prevent infection by more-harmful organisms ^{[[citation needed](#)]}. For example, popular [Christianity](#) forbids both [murder](#) and [suicide](#) (an idea from [Augustine of Hippo's](#) *The City of God*), and its precise definitions of [heresy](#) ensure that properly-educated Christians have difficulty in accepting new religions or new viewpoints which advocate such actions.

Susan Blackmore has made a [case](#) that the study of [Zen meditation](#) in itself comprises a process of meme "pruning", i.e., a means to remove experiential clichés that reduce the value of life. This has not exempted [Zen](#) itself from serving as a source of highly mobile memes, such as "the sound of one hand clapping" [koan](#) or exclaiming "[mu](#)".

[Daniel Dennett](#) used the idea of religion as a meme (or as a set of memes) as a basis for much of his analysis of religion in his book [*Breaking the Spell: Religion as a Natural Phenomenon*](#).

[[edit](#)] Memetic accounts of science

The [scientific method](#) offers a body of social and experimental techniques which, given certain preconditions — a free press for the circulation of information, a large number of people predisposed to see the world as a mechanism subject to general regularities which humans can observe, describe and model through repeatable experiments and/or observations — acts highly virulently, spreading quickly through an educated population as journals circulate and blogs proliferate. By demonstrating its success at making predictions, science as a practice can make itself more attractive to potential converts. Whether or not experimenters can necessarily verify them, ideas and attitudes — those which scientists tend to hold or those which "feel" aesthetically pleasing in combination with scientific discoveries — can propagate themselves in societies where science has a high status by the process of "meme piggybacking".

Furthermore, one can view the [scientific method](#) as a successful meta-memetic means of selecting those memplexes best suited for explaining observable physical processes, through its mechanism (parallel to the [evolutionary algorithm](#) used in computer science) of providing standardized methods for creating and evaluating competing populations of solutions to a given problem.

[[edit](#)] Memetic explanations of racism

When regarded as non-conscious replicators (much like viruses), individual memes generally lack moral goodness or badness. However, the behaviors that memes generate in individuals and groups can have moral implications. History furnishes many examples of the moral implications of racist/ethnic/class memes when they interact with politics, such as the [Rwandan Genocide](#) of 1994. [Racism](#) provides an example of a common meme: an ideology that has come to separate people, killing those who are either the

targets or practitioners of racism (the latter due to backlash) and threatening the lives of those who do not believe in it. Once introduced into a culture, memes evolve ([antisemitism](#) versus [xenophobia](#)) and spread through society, sometimes becoming both harmful and attractive so that they spread like a [virus](#).(Ref.: 1994 G. Burchett)

In *Cultural Software: A Theory of Ideology*, [Jack Balkin](#) argued that memetic processes can explain many of the most familiar features of [ideological](#) thought. His theory of "cultural software" maintained that memes form narratives, networks of cultural associations, metaphoric and metonymic models, and a variety of different mental structures. Some of these structures can help generate racist and anti-Semitic beliefs, by making this kind of belief spread fast and wide. Conversely, some memes can have moral implications that most observers might deem positive, such as the meme of anti-racism, which tends to generate behaviors of tolerance.

[[edit](#)] Memetic account of personality

Memetics often define an individual's [mind](#) as a "playground for memes" or as an "ecology of memes", where the different memes that have colonized that mind at different times interact with each other. For example, when a mind successfully infected by the memplex for religion X becomes exposed to the memplex for religion Y, memplex X may repulse memplex Y: X can block Y from infecting the mind (for instance through use of such memetic components as the meme that "all other religions besides X are [evil](#)").

In a person's history, [language](#) provides the first and most important memetic infection. Indeed, memeticians generally regard language as a memetically evolved phenomenon. For example, even at the level of animals, many species have evolved particular cries to convey different meanings, such as "danger", "hungry", "aroused", "go away" or "come here". Experiments can verify the memetic nature of the cries of these species, showing for example that the cries do not arise when humans raise the animals concerned: they do not generate the cries by instinct, but learn them from other animals. Human language, as a memetically evolved tool, can serve not only to communicate concepts between humans, but also to combine low-[abstraction](#) concepts into higher-abstraction ones. This combination/abstraction process, seen memetically, constitutes *creative breeding* of memes, where the interaction of several memes results in the birth of a new, combined meme. For example, the mind of Richard Dawkins saw the creative breeding of its memes for "replicator", "culture", and "mind", and this breeding gave birth to the new meme of "meme".

After humans become infected with the memplex for language — generally during babyhood — they get infected with a series of higher-abstraction memes, and especially values memes. Depending on the [education](#) received by the person, the lessons drawn from [experience](#), and the surrounding cultural materials (tales, songs, books, etc), a certain ecology and history of meme infection and interaction builds up within that person's mind. Memes generate behaviors in their host — either spoken or acted behaviors. Because each person has an individual memetic infection and interaction

history, there emerge [singular](#) behavior patterns. We conventionally refer to these meme-generated patterns of behavior as a person's [personality](#).

[edit] Memetic engineering

Main article: [Memetic engineering](#)

Memetic engineering consists of the process of developing memes, through [meme-splicing](#) and memetic [synthesis](#), with the intent of altering the behavior of others. It consists of the process of creating and developing theories or [ideologies](#) based on an analytical study of [societies](#), their ways of thinking and the evolution of the minds that comprise them. Attempts at [Artificial Meme-Phrase Creation](#) have met with limited success.^{[*[citation needed](#)*]}

Sometimes people modify and fabricate memes consciously, even intentionally (though some argue that the intention comes from the memes). This would help to explain how rapidly, extensively and usefully memetic evolution has functioned in and for culture. People apply many ever-evolving meme-based systems of analysis and error correction to all information flowing in and out. Just as genetic material has developed gene-based error-correction models, memetic systems have found it advantageous to associate with meme-based error-correction models. The entire process could appear as meme-based systemic complexes taking advantage (like a virus) of an extensive [computational](#) system (the human brain in this case), [programming](#) it to produce and modify memes, and thus to modify and expand the memotypic soup which largely dictates human thoughts and actions (and of course to build very useful - but still likely erroneous - memeplexes).

However, attempting to popularize a fabricated meme or an unproven theory often results in a backlash against said meme: the originators of a meme may appear to have a hidden agenda, as in the case of [intelligent design](#).^[1] Meme-intense societies may generally deride — then forget — such fabricated memes or theories.

[edit] Memetic evolution

Evolution requires not only [inheritance](#) and natural selection but also variation, and memes also exhibit this property. Ideas may undergo changes in transmission which accumulate over time. Generations of hosts pass on these changes in the "[phenotype](#)" (the information in brains or in retention systems). In other words, unlike genetic evolution, memetic evolution can show both [Darwinian](#) and [Lamarckian](#) traits. For example, [folk tales](#) and [myths](#) often become embellished in the retelling to make them more memorable or more appropriate and therefore more impressed listeners have a greater likelihood of retelling them, complete with accumulating embellishments that may serve to modify human behavior. More modern examples appear in the various [urban legends](#) and [hoaxes](#) — such as the [Goodtimes virus](#) warning — that circulate on the Internet.

Dawkins observed that [cultures](#) can evolve in much the same way that [populations](#) of [organisms](#) evolve. Various ideas pass from one [generation](#) to the next; such ideas may

either enhance or detract from the survival of the people who obtain those ideas, or influence the survival of the ideas themselves. This process affects which of those ideas will survive for passing on to future generations. For example, a certain culture may have unique designs and methods of [tool](#)-making that another culture may not have; therefore, the culture with the more effective methods may prosper more than the other culture, *ceteris paribus*. This leads to a higher proportion of the overall population adopting the more effective methods as time passes. Each tool-design thus acts somewhat similarly to a biological [gene](#) in that some populations have it and others do not, and the meme's function directly affects the presence of the design in future generations.

[\[edit\]](#) Propagation of memes

Memes have as an important characteristic their [propagation](#) through [imitation](#), a concept introduced by the French [sociologist Gabriel Tarde](#). Imitation involves copying the [observed](#) behaviour of another individual. Typically imitators copy behaviour from observing other humans, but they may also copy from an inanimate source, such as from a book or from a [musical score](#). Imitation may depend on brains sufficiently powerful to assess the key aspects of the imitated behavior (what to copy and why) as well as its potential benefits

Researchers have observed memetic copying in just a few species on [Earth](#), including [hominids](#), [dolphins](#) and [birds](#) (which learn how to [sing](#) by imitating their [parents](#)).

When imitation first evolved in the animal [ancestors](#) of humans, it proved itself a valuable [skill](#) for [learning](#), which increased an individual's ability to reproduce genetically. Some have speculated that [sexual selection](#) of the best imitators further drove a genetic increase in the ability of brains to imitate well.

Interestingly, memetics suggests that memes have the potential for a much more lasting effect than genes. Most organisms pass their genes on to their offspring sexually, but with every generation the genetic contribution of a given ancestor halves - so that a person only has a quarter of their grandfather's personal genes, for example (of course, populations inherit most genes in common). [Susan Blackmore](#) has poignantly evaluated the legacy of [Socrates](#). Since the 5th century BC Socrates' genes have become thoroughly diluted (dispersed); however, his memes still have a profound effect on modern thought and on contemporary [philosophical](#) discourse.

[\[edit\]](#) Evolutionary forces affecting memes

Even if one accepts the memetic description, it still remains to single out which memes have good potential for spreading. One can make an analogy with biology. To be able to say something about the spread of a gene in birds that affect their wings ornithologists need to know about both population genetics and aerodynamics. Similarly, memeticists need to complement the description of memes with a description of what makes a meme easily absorbable by people other than the original carrier.

Only the number of extant copies (and where those copies reside) determine the measurable success of a gene or of a meme. A strong (but not complete) correlation exists between genes that do well and genes that have a positive effect on the organism which contains those genes. And if we can restrict [attention](#) to memes normally interpreted as statements of [fact](#), then a correlation emerges between those memes that do well and those that reflect [reality](#). However, some genes and memes do survive which owe their success to other factors. Similarly, a correlation exists between successful memes of a [technological/economic](#) nature and those that help the [economy](#) (such as [slavery](#) and [free markets](#) (each in their day), for instance).

A gene's success in a body may stem from its attempt to bypass the normal sexual lottery by making itself present in more than 50% of [zygotes](#) in an organism. Some genes find other ways of having themselves transmitted between [cells](#). Hence multiple factors influence the evolution of genes — not just the success of the species as a whole. Similarly the evolutionary pressures on memes include much more than just [truth](#) and economic success. Evolutionary pressures may include the following:

1. *Experience*: If a meme does not correlate with an individual's [experience](#), then that individual has a reduced likelihood of remembering that meme.
2. *Pleasure/Pain*: If a meme results in more pleasure or less pain for its host then the host will have a greater likelihood of remembering it.
3. *Fear/Bribery*: If a meme constitutes a threat then people may become [frightened](#) into believing it. Similarly, if a meme promises some future benefit then people may incline to believe it. The memes "if you do X you will burn in hell" and "do Y and you will go to heaven" provide examples. Memes which pass on the fear of a threat, of the likelihood or effectiveness of a threat, that "something will happen if you do such and such a thing", have a high likelihood of success, and may therefore replicate and remain in the meme-pool. They may assist in this way in the survival of a thought, a theme or a philosophy within a [community](#).
4. *Censorship*: If an [organisation](#) destroys any retention-systems containing a particular meme or otherwise controls the usage of that meme, then that meme may suffer a selective disadvantage.
5. *Economics*: If people or organisations with economic influence exhibit a particular meme, then the meme has a greater likelihood of benefiting from a greater audience. If a meme tends to increase the riches of an individual holding it, then that meme may spread because of imitation. Such memes might include "Hard work is good" and "Put number one first".
6. *Distinction*: If the meme enables hearers to recognize and respect tellers (as [leaders](#), intelligent people, insightful, etc.), then the meme has a greater chance of spreading. The erstwhile receivers will want to become themselves tellers of the same meme (or of an evolved/mutated version). Thus elite knowledge can provide a promotion to elite status.

Memes, like genes, do not purposely do or want anything — they either get replicated or not. Some meme systems have negative effects on the host or on their host society, but humans generally have a symbiotic relationship with these abstract entities.

Memes do not mutate in an exclusively passive way. The brain inhabited by a meme system can carry out a sort of active modification of a meme. One could draw an analogy with a cell's error-correction systems, but they clearly function quite differently. In essence, people create and modify memes almost continuously. One can modify, manipulate, and create meme systems in thought, for instance through internal dialogue. As soon as one opens one's mouth and says something (or does something) that one has not copied (but that others can copy), one has unleashed a novel meme. Thus, one could conclude that we all perform the role of a memetic engineer to some degree (even if not consciously).

This seems especially evident in modern society, more notably in the scientific and philosophical realms and in the [entertainment industry](#). It has become standard practice for scientists and philosophers alike to assemble memetic systems and to question their philosophical and [empirical](#) integrity. On perceiving a flaw, one may seek [theoretical \(mathematical/thought experiments/logic/analysis\)](#) or [empirical \(experimental/observational\)](#) resolution. This happens in large part due to the influence of some of the more "modern" philosophers of the past. Over the last few hundred (or thousand) years, a "philosophy" or [paradigm](#) has evolved and developed which benefits the societies in which many embrace it. That philosophy includes the [ethical](#), [moral](#), and scientific obligation to take nothing for granted and always to question any new [information](#) one perceives. People following this tradition have transformed the memetic base of modern science and philosophy. These people include (just to name a scant few) [Socrates](#), [Aristotle](#), [Plato](#), [Galileo](#), [Newton](#), [Darwin](#), [Albert Einstein](#), [Karl Marx](#), [Benjamin Franklin](#) and [Karl Popper](#). Science accepts nothing as true unless empirical evidence and observation suggests such "truth" strongly and consistently. This entire procedure adheres to a meme system that has evolved to the point of rejecting almost any absolute truth. This meme system now includes such novel analytical [paradigms](#) as the [scientific method](#) and [Dewey's Decision-Making](#) model (among many other meme-based systems) to help distinguish useful (or truthful) meme systems from "bad" ones.

[Francis Heylighen](#) of the [Center Leo Apostel for Interdisciplinary Studies](#) has postulated what he calls "memetic selection criteria". These criteria opened the way to a specialized field of [applied memetics](#) to find out if these selection criteria could stand the test of [quantitative analyses](#). In 2003 Klaas Chielens carried out these tests in a Masters thesis project on the testability of the selection criteria.

[Cultural materialism](#) holds that the evolutionary pressures of economy and [ecology](#) explain many aspects of human culture. For example, the [food taboos](#) sometimes enshrined in religions - like the concepts of [sacred cows](#), [kosher](#) and [halal](#) - would have prospered because they allowed the believing population to (say) live more [hygienically](#) and thus survive longer than non-believers in environments possibly more hostile to survival. A migration or a change of the economic [infrastructure](#) could render the [taboo](#) neutral or even adverse.

[\[edit\]](#) **Meme-resistance**

[Karl Popper](#) advocated memetic caution in the strongest possible terms: "The survival value of [intelligence](#) is that it allows us to extinct a bad idea, before the idea extincts us."^{[[citation needed](#)]}

Resistance to violent and destructive courses of action has formed a common meme that can guide human cultural and [cognitive](#) evolution away from disastrous paths — for instance the [U.S.](#) and [USSR](#) stockpiled but did not use [nuclear weapons](#) in the [Cold War](#) period. Some cultures can consider [ignorance](#) a virtue — in particular, ignorance of certain temptations that the culture believes would prove disastrous if pursued by many individuals.

The [Internet](#), perhaps the ultimate meme-[vector](#), seems to host both sides of this debate. Opposition to use of the Internet can stem from any number of memes: from ethics to intent to ability to resist [hacking](#) or [pornography](#).

The [Principia Cybernetica](#) project maintains a [lexicon of memetics concepts](#), comprising a list of different types of memes. It also refers to an essay by [Jaron Lanier](#), *[The ideology of cybernetic totalist intellectuals](#)*, which very strongly criticises "[meme totalists](#)" who assert memes over bodies.

[[edit](#)] Memetic virus exchange

One controversial application of this "selfish meme" parallel (compare the [selfish gene](#)) results in the idea that certain collections of memes can act as "memetic viruses": collections of ideas that behave as independent [life-forms](#) which continue to get passed on — even at the expense of their hosts — simply because of their success at getting passed on. Some observers have suggested that [evangelical religions](#) and [cults](#) behave this way; so by including the act of passing on their [beliefs](#) as a moral [virtue](#), other beliefs of the religion also get passed along even if they do not provide particular benefits to the believer.^{[[citation needed](#)]}

Others maintain that the wide prevalence of human adoption of religious ideas provides evidence to suggest that such ideas offer some ecological, sexual, ethical or moral value; otherwise memetic evolution would long ago have selected against such ideas. For example, some religions urge [peace](#) and [co-operation](#) among their followers ("Thou shalt not kill") which may possibly tend to promote the biological survival of the social groups that carry these memes. However, the idea of group selection stands on shaky ground (to say the least) in the field of genetics. Accordingly, some consider the idea of selection of ideas beneficial to the group exclusively as unlikely.^{[[citation needed](#)]}

Dawkins notes that one can distinguish a biological virus from its host's normal genetic material by the fact that it can propagate alone, without the entire genetic corpus of the host being propagated — or half of it, in the case of [diploid sexual reproduction](#); thus, a virus can "sabotage" the host's other genes. This applies to memes in the sense that a meme that requires the success of its hosts has a greater likelihood of favouring the interests of these hosts than does a meme capable of succeeding even if each host quickly

dies. For example, the commonplace meme encouraging people to wash their hands after they use the toilet or before handling food, and to remind others to do the same, is not at all harmful. In contrast, a cultish meme telling people to quit their jobs, abandon their families, and run around spreading the meme seems quite [virulent](#).^[citation needed]

[edit] Reproductive isolation in meme "speciation"

In traditional [population genetics](#) the normal [genetic variation](#), [genetic selection](#), and [genetic drift](#) do not lead to the formation of a new species without some form of "reproductive isolation"; i.e., in order to split a single [species](#) into two species, the two subpopulations of the original species must ultimately lose their ability to interbreed, which would normally maintain their [heterogeneity](#). However, once separated, natural selection and/or just [genetic drift](#) acting on the normal genetic variation in the two subspecies will eventually change enough characteristics of the two subgroups that they can no longer interbreed, which by definition means that they will comprise two different species.^[citation needed] Examples of reproductive isolation include geographical isolation, where a [suddenly-appearing](#) mountain range or river separates two subgroups; temporal isolation (isolation by time), where one subgroup becomes entirely [diurnal](#) in its habits while the other becomes entirely [nocturnal](#); or even just 'behavioral' isolation, as seen in [wolves](#) and [domestic dogs](#): they *could* interbreed, biologically speaking, but normally they do not.^[citation needed]

A similar phenomenon can occur with memes. Normally, the population of individuals having a meme in their [consciousness](#) contains sufficient internal variation and mixes enough to keep a given meme relatively intact (although it covers a wide range of variations). Should that population become split, however, without sufficient contact for the two different subgroups of variations of the meme to [equilibrate](#), eventually each group will evolve its own version of that meme, each version differing sufficiently from that of the other group to appear as a distinct entity.^[citation needed]

The *Kellerman* meme provides an example of this occurring on the Internet. A search of the web and/or Usenet for the word 'Kellerman' will turn up many citations, describing at great length the behavior of a 'Dr. Arthur Kellerman', who, with the willing assistance of the [Centers for Disease Control](#) and the [public-health lobby](#), purportedly fabricated studies in order to implicate [firearms](#) (and by extension their owners) as a menace to [public safety](#), for the purposes of [statist](#) control of the population. The authors of these pages and postings describe purported machinations, "[junk science](#)," a subsequent recantation by Dr. 'Kellerman', and the use of his work by proponents of [gun control](#).^[citation needed]

In reality, no "Dr. Arthur Kellerman" exists, at least not in any connection with the above description. There is, however, a [Dr. Arthur Kellermann](#) (with *double n*), who has indeed published several papers estimating the overall impact on the public health of firearm availability and various aspects of firearm storage, as part of a career in public health and emergency and [trauma medicine](#). As in any such series of studies, Kellermann's work has strengths and weaknesses, which [pundits](#) rigorously debate both in the literature and

online. However, even after eliminating matters of opinion and statements which are not fully supported, the remaining verifiable facts of Kellermann's studies and career remain virtually unrecognizable in the negative descriptions of "Kellerman". ^[citation needed]

The original meme of Kellermann and his work on gun-related violent [injury](#) has generated a new meme ("Dr. Kellerman is an evil lying gun-grabbing enemy of [freedom](#)") by the classic genetic phenomenon of a [deletion mutation](#). The sub-population involved had strongly negative attitudes towards Kellermann's work as well as a lack of firsthand familiarity with his studies and [career](#). Because of the "reproductive isolation" caused by the total non-intersection of the results of searches for "Kellerman" and "Kellermann," the 'Kellerman' meme drifted even further in the direction of negativity, unchecked by facts related to the real Kellermann. As this group encounters new individuals of similar general outlook, they introduce new recruits to the 'Kellerman' lore only, and go on to produce their own websites and postings furthering the rapid progress of this meme. ^[citation needed]

(This phenomenon also demonstrates two other features of memes — the "meme-complex" (memeplex) as a set of mutually-assisting "co-memes" which have co-evolved a symbiotic relationship, and the "[Villain vs. Victim](#)" infection strategy.)

[\[edit\]](#) Debating the "meme" meme

[\[edit\]](#) Criticisms

[\[edit\]](#) Lack of philosophical appeal

One might regard the reduction of the highly complex nature of ideas (such as religion, politics, war, justice, and science itself) to a one-dimensional series of memes as an [abstraction](#) and, as such, a process which does not increase one's understanding. The highly interconnected, multi-layering of such ideas resists memetic simplification to an atomic or molecular form; as does the fact that each of our [lives](#) remains fully enmeshed and involved in such "memes". One cannot view memes through a microscope in the way one can detect genes — rather individuals battle and rage with their memetic heritage every day. The levelling-off of all such interesting "memes" down to some neutralized molecular "substance" such as "meme-substance" would introduce a bias toward scientism and abandon the very thing that makes ideas interesting, richly available, and worth studying. ^{[2][3]}

To see such an argument for holism as against the kind of atomic reductionism implied by memetics, see [Quine's "Two Dogmas of Empiricism"](#) ^[4]

This central problem with the possibility of memes has an illustration in the inability of such a meme-reductionist proposal to afford an explanation of how memetics itself qualifies as a meme, or, further, how one could describe biological genetics as a rather successful meme current in 20th-century science. Either way memes fail. Providing such an explanation would remove the ground from which the idea of memes themselves arose

and so empty memes of all meaning. Without such an explanation memes find themselves without reason, limited to cover all but science and memetics itself. ^[citation needed]

Another philosophical criticism sees memetics as re-introducing, or re-enforcing, the classic pre-20th-century form of [Cartesian dualism](#), that of mind versus body. Memetics seeks to include in the overall science of evolution such a dualism in the form of meme/gene. This dualism remains tenable ^[citation needed], but many prominent philosophers have criticised it widely and historians of philosophy often consider it on the wane. ^[citations needed] [Wittgenstein](#), in his critique of Cartesian dualism, *Philosophical Investigations*, argued for the absurdity of positing two parallel worlds, one of "body stuff", the other of "mind stuff" whose interaction one does not (and perhaps can not) know. (See also Wittgenstein's [private language argument](#)).

However, in response to such criticism one might add that memeticists have started to see memes not as atomic but as complex interactors in an environment of other memes and physical entities, a development pre-figured perhaps in the theory of the [association of ideas](#) in the eighteenth and nineteenth centuries ^[citation needed]. However, such a response would require memetics to prove it had some value to add to such complexity in order to prevent it falling into the same disuse as the theory of [association of ideas](#).

Memetics might counter the charge of dualism by noting [Leibniz's monadology](#). This provided a direct response to Cartesian dualism based on an indivisible unit, the monad. Memes resemble monads in that they lack physicality (not having shape, size, mass, charge or energy) and yet as a totality they account for reality. Taken together they form the sum of all experience at any given time. But this argument essentially becomes a [solipsistic](#) exercise.

Against the charge of dualism, memeticists might counter that memes in fact supersede genetics, science itself then becoming just another meme that aims, not at the "Truth", as such, but at the useful. ^[citation needed] However, memetics would then have undermined its own truth and the history of its own arrival on the scene, thus becoming yet another [ontotheology](#).

[edit] Explaining, or re-naming?

One important criticism of meme theory hinges on the following question:

"If memes are the solution, what is the problem?"

Critics in this vein point to a dearth of useful applications of meme theory in its two decades of existence. Beyond highly general explanations of highly complex phenomena (especially religion), meme theory has yet to produce, according to critics, a solid [case-study](#) of a concrete phenomenon that has gained acceptance among either scientists or social scientists. Rather, they contend, all memetic studies have done is translate

conventional social thinking into "meme language" — without adding new explanatory value. ^{[[citation needed](#)]}

This criticism continues by asserting that no reason exists for differentiating or discerning the word "meme" from the word "idea" or from the phrase "pattern of thought". ^{[[citation needed](#)]}

In response to these criticisms, a memeticist might characterize the initial question as misleading (the word "explanation" or "descriptor" might seem more apt than "solution"). ^{[[citation needed](#)]} The creation of the term "meme" — as opposed to "idea" or "pattern of thought" — allows for specific description and application of the meme as a phenomenon. Additionally, using a new term such as "meme" allows one to avoid semantic baggage associated with well-known terms such as "idea"; and conveys a (mistaken) connotation of novelty.

[[edit](#)] Alleged lack of rigor

[Evolutionary biology](#) has advanced in recent years in large part because scientists have distinguished rigorously between [phenotype](#) and [genotype](#) — between physical appearance and its biochemical basis. For example, [dwarfism](#) may come about through any one of several genetic mechanisms. An animal population undergoing selection for smaller size might develop a predominance of any one of these genetic traits, or several in parallel, or a bundle of them. Identifying the particular genetic mechanism makes the rigorous and precise science of [population genetics](#) possible.

Memetics, by contrast, has no such model for the storage and transmission of memes. Memeticists typically assume that memetic "phenotypes" equate with memetic "genotypes" — that every individual believing in one god, for example, carries the same "monotheism meme". This assumption seems like a serious — and to critics, fatal — weakness in memetics relative to its genetic model. ^{[[citation needed](#)]}

In response to these criticisms, memeticists might argue that as their discipline does not construe memes as atomic entities, they therefore parallel indirectly the entirety of existing evolutionary taxonomy. (For example, one would not preclude fish from the animal kingdom for their lack of lungs.) ^{[[citation needed](#)]}

The author [Evan Louis Sheehan](#), on the other hand, does portray memes as particulate (atomic-like) entities, captured in cortical hierarchies identical to what [Jeff Hawkins](#) proposes in his book *[On Intelligence](#)*. Each hierarchy expresses a pattern that the brain-owner has sensed and remembered. "Sensed patterns" can reflect anything from the shape of a tree to a commonly performed pattern of behavior that routinely propagates through mimicry. A cortical hierarchy consists of a "molecular" entity, constructed from sub-hierarchies, which are themselves ultimately constructed from atomic entities — sensory elements. Sheehan, in his book *[The Mocking Memes: A Basis for Automated Intelligence](#)* builds a model of creative thinking around a Darwinian process of combining and recombining various causal memes.

[edit] The problem of virus-analogies

Some critics attack proponents of memetics for what they see as severely flawed conceptions of one aspect of memetic theory: the intermittently applied analogy with viruses. Neither biological nor computational viruses (according to this line of thought) can serve for analogous purposes because they differ radically from thoughts; thus meme-proponents commit the fallacy of [false analogy](#). Once a biological virus has infected a cell, or once a digital microprocessor has started to execute a computational virus, the outcome becomes almost completely determined: an observer can attempt to identify that outcome by examining the order of amino-acids in the cell genome or the bit-pattern in the computer-memory. All possible configurations of such viruses are well-defined and get stored in digital form. — In contrast the [brain](#) consists of a massively parallel-executing mesh of neurons: we still do not know exactly how it stores and retrieves information. The senses provide continuous, noisy and highly different input (note deafness, blindness, and disorders of perception). Observations of witnesses suggest that similar experiences of different people may result in very varied interpretations. Misunderstandings occur. Some concepts appear so abstract or need so much mental capacity that the majority of people cannot understand or "grasp" them. This situation suggests the questions: How can proponents of memes know that a "transfer" of a meme actually occurs in the sense that it remains the same entity? If meme-proponents explain the result of such a transfer as a "new meme" or as an "imperfect copy", what core of the transmitted meme remains unchanged? If nothing remains unchanged, the claim of a transfer seems highly dubious. If we regard the transferred (but changed) entity as the same entity, how can one identify the transferred part?^[1]

Memeticists may then argue that various physical aids may ensure the correct transfer of the core of a meme. For instance, a sculpture of a [cross](#) or a physical hardcopy of the [qu'ran](#) may ensure that humans copy the cores of these memes (the symbolism of the cross and the words of the prophet respectively) with sufficient fidelity.

[edit] General Response to Criticisms

A number of criticisms of memetic theory stem from confusion over what the term "gene" refers to. In [microbiology](#), microbiologists see a "gene" as a [cistron](#), a specific region of [DNA](#). The analogy between memes and genes, however, relates to an [evolutionary biologist](#)'s gene, an abstract replicatory unit of information. People who think of a gene as an actual visible piece of DNA often criticise the memetic analogy because of this. An example of such an "abstract replicatory unit of information" might code for the color of one's hair or for the length of a digit.^[citation needed]

[edit] Historical antecedents of the meme concept

As [Neal Stephenson](#) notes in his *Snow Crash*, the ancient Sumerians believed in the propagation of information in compartmentalized memetic form, and developed several mythological accounts to explain how this operated. [Sumerian mythology](#) depicts its gods as holding onto sacred laws called *me*. These laws, never given a physical description,

represented the sum total of knowledge in a certain field (such as [farming](#) or [sex](#)), and the gods parceled them out in order to keep mankind under control. Without a *me* a person could not fathom a particular concept or make use of certain tools. Only when these *me*, stolen from the gods, become distributed freely among humankind, self-propagating like memes, can human civilization finally flourish. (Note that the words *me* and *meme*, though similar in sound, do not have the same origins.)

[Plato](#) used the term *eidōs* to speak of the immutable and eternal nature of an existing thing. The human mind acted upon this *eidōs*, according to Plato, when reasoning about the world around it. [Aristotle](#) rejected this notion in favor of an abstraction and categorization of the world as perceived by the observer.

Descriptions of meme-like concepts appear in [Sufi](#) teaching. [Muwakkals](#) rank as separate beings, elementals, that make up human thought (compare [Leibniz's monads](#)).

During the Enlightenment the terms "idea", "perception", and "impression" came into use. The essential meaning of the term "idea", as then used, involved some existent phenomena resulting from perception of a stimulus and cogitation on that stimulus.

[Charles Darwin](#) struggled with the concept in his early notebooks (M and N Notebooks) and never succeeded in adequately addressing the complexities of the human social and cognitive capabilities. While Darwin lacked proof for a biologically-inheritable element, he had postulated one and seemed quite comfortable with the concept of biologically-inherited social traits. (A modern biologist ignorant of the connotations of the term might characterize the latter concept as "[Social Darwinism](#)".) Darwin also wrote of selection of novelty and fashion and quoted [Max Müller](#) on the struggle amongst words and grammatical forms:

“ words are continually cropping up; but as there is a limit to the powers of the memory, single words, like whole languages, gradually become extinct. As Max Müller has well remarked: — "A struggle for life is constantly going on amongst the words and grammatical forms in each language. The better, the shorter, the easier forms are constantly gaining the upper hand, and they owe their success to their own inherent virtue." To these more important causes of the survival of certain words, mere novelty and fashion may be added; for there is in the mind of man a strong love for slight changes in all things. The survival or preservation of certain favoured words in the struggle for existence is natural selection. ”

[Gabriel Tarde](#) (1843 - 1904), a French sociologist, developed ideas of cultural transmission based on imitation and innovation of small psychological interactions. His sociology attempted to classify social phenomena by the generation and propagation of ideas, practices, and habits. Some have seen this work as an appealing historical and theoretical precursor to memetics.

[Bertrand Russell](#) repeated several times the phrase "beliefs are contagious" in his writing about human error.

[John Laurent](#) in *The Journal of Memetics* has suggested that the term 'meme' itself may have derived from the work of the little-known [German](#) biologist [Richard Semon](#). In 1904 Semon published *Die Mneme* (published in English as *The Mneme* in 1924). His book discussed the cultural transmission of experiences with insights parallel to those of Dawkins. Laurent found the use of the term *mneme* in *The Soul of the White Ant* (1927) by [Maurice Maeterlinck](#) (who allegedly plagiarised from Eugène N. Marais) and highlights its parallels to Dawkins's concept.

Maeterlinck, in discussing theories which attempt to explain '[memory](#)' in [termites](#) as well as amongst the other [social insects](#) ([ants](#), [bees](#) etc.), uses the phrase "engrammata upon the individual mneme" (Maeterlinck, 1927, p.198). Webster's Collegiate dictionary defines an [engram](#) as "a memory trace; specif.: a [protoplasmic](#) change in [neural tissue](#) hypothesized to account for persistence of memory". Note that Maeterlinck explains that he obtained his phrase from the "[German philosopher](#)" Richard Semon. [2]

Laurent suggests that the [etymological](#) roots of the term 'meme' may come from *mimneskesthai*, the Greek [verb](#) for 'to remember, to keep in mind' — rather than from the Dawkins-supplied root of Greek *mimeisthai*, "to imitate."

The old saying "Ideas have a life of their own" clearly encapsulates the "meme about memes". [Keith Henson](#) has traced this quote back to 1910 where an unknown interviewer of [G. K. Chesterton](#) used it - apparently as an old saying at that time.[3]

One could conceivably trace this idea back to at least 1831, when [Victor Hugo](#) wrote: "...every thought, either philosophical or religious, is interested in perpetuating itself..." in his book *Notre Dame de Paris* (translated into English as [The Hunchback of Notre Dame](#)) (Book Fifth, Chapter II).

[John Maynard Keynes](#) ended his "[The General Theory of Employment, Interest and Money](#)" (1935) with the following:

...the ideas of economists and political philosophers, both when they are right and when they are wrong are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually slaves of some defunct economist. ...I am sure the power of vested interests is vastly exaggerated compared with the gradual encroachment of ideas...But soon or late, it is ideas, not vested interests, which are dangerous for good or evil.[5]

[Everett Rogers](#) pioneered the "[Diffusion of innovations](#)" theory (formalised in 1962) which explains how and why people adopt new ideas. Rogers reflected some of the influence of [Gabriel Tarde](#) (1843 - 1904), who set out "laws of imitation" in his book of 1890 that explained how people decided whether to imitate [behavior](#).

The [concept](#) that ideas spread according to genetic rules predates the coining by Richard Dawkins in *The Selfish Gene*; for example [William S. Burroughs](#) asserted that "language is a virus."

Anthropological [cultural materialism](#) advanced the view that the evolutionary pressures of economy and [ecology](#) explain many aspects of human culture. According to this theory, the [food taboos](#) sometimes enshrined in religions - like the concepts of [sacred cows](#), [kosher](#) and [halal](#) - prospered because they allowed the believing population to (say) live more [hygienically](#) and thus survive longer than non-believers in environments possibly hostile to survival. A migration or a change of the economic [infrastructure](#) could render the [taboo](#) neutral or even adverse.

[[edit](#)] Examples of memes

Crudely-stated versions of some common memes include:

- [Technology](#) and technological artifacts: cars, paper-clips, etc. Technology clearly demonstrates mutation as well as transmission, which memetic (or genetic) progress requires. Many paper-clip designs have emerged throughout history, for example, with varying degrees of longevity, fecundity and copying fidelity (i.e., memetic "success"). An often-cited example of "technology as meme" involves the building of a fire.
- [Jingles](#): [advertising slogans](#) set to an engaging [melody](#)
- [Earworms](#): songs that one can't stop humming or thinking about.
- [Jokes](#) (or at least those jokes intended as funny).
- [Proverbs](#) and [aphorisms](#): for example: "You can't keep a good man down".
- Snippets of [gossip](#).
- [Nursery rhymes](#): propagated from parent to child over many generations (thus keeping otherwise obsolete words such as "tuffet" "pail" and "chamber" in use), sometimes with associated actions and movements.
- Children's culture: games, activities and chants (such as taunts) typical for different age-groups.
- [Epic poems](#): once important memes for preserving oral history; writing has largely superseded their oral transmission.
- [Conspiracy theories](#)
- [Factoids](#)
- [Fashions](#)
- Medical and safety advice: "Don't swim for an hour after eating" or "Steer in the direction of a skid".
- The material of video technology: very memetic given its mass replication — people tend to imitate scenes or repeat popular [catch phrases](#) such as "You can't handle the truth!" from *A Few Good Men* or "Alllllllrighty then!" from *Ace Ventura*, even if they have not seen a film or a television broadcast themselves.
- [Religions](#): complex memes, including [folk religious](#) beliefs, such as [The Prayer of Jabez](#).

- Popular concepts: these include [Freedom](#), [Justice](#), [Ownership](#), [Open Source](#), [Egoism](#), or [Altruism](#)
- [Viral marketing](#): A type of marketing based on memes and using [word of mouth](#) to advertise (see the recent example of [Snakes on a Plane](#)).
- Group-based biases: everything from [anti-semitism](#) and [racism](#) to [cargo cults](#).
- Longstanding political memes such as "mob rule", [national identity](#), [Yes Minister](#) and "republic, not a democracy".
- [Programming paradigms](#): from [structured programming](#) and [object-oriented programming](#) to [extreme programming](#).
- [Internet phenomena](#): [Internet slang](#)
- [Moore's Law](#): this meme has a particularly interesting form of self-replication. The conviction that "semiconductor complexity doubles every 18 months" became considerably more than a predictive observation; it became a performance-target for an entire industry once that industry extensively started to believe in the "law". Manufacturers now strive to make the next generation of semiconductor technology re-create the growth in performance of the previous generation, and so maintain belief in Moore's Law. Additionally, the evolution of this meme provides details of interest. The original law described growth in terms of the number of transistors on a chip, but people - more and more -- have (wrongly) understood it as describing an increase in terms of performance. This could exemplify how a meme can mutate slowly under the pressure of its environment (partial technical understanding and simplification for use in the mainstream media).
- [Consciousness](#) and the [self](#): [Susan Blackmore](#) theorized that a "self" merely comprises a collection of memetic stories which she calls the *selfplex*.
- [Metameme](#): The concept of memes itself comprises a meme.
- [Anecdotes](#): Short jokes or other stories.
- [phrases](#); A turn of phrase, or expression, like "Whassssap!" or "Where's the beef?"

The *Memetic Lexicon* lists meme-attributes compiled by Glenn Grant under a "share-alike" licence. The examples it offers may help to focus the concept. The Lexicon has circulated since the early 1990s, and evolved into its version 3.5 of its memplex (Memelex) in 2004: [A Memetic Lexicon](#). One should keep in mind that Glenn Grant has the background of a writer of fiction rather than of an authority on memetics: many of the terms in the lexicon he simply invented as an experiment in the spread of his own self-generated memes. [4]

[\[edit\]](#) See also

- | | | |
|--------------------------------------|--|------------------------------------|
| • Bandwagon effect | • Framing (communication theory) | • Paradigm shift |
| • Chain letter | • Groupthink | • Propaganda |
| • Consensus reality | • Herd behavior | • Rhetoric |
| • Constructivism | • Hive mind | • Rumor |
| • Cultural evolution | | • Self-replication |
| • Culture jamming | | • Semiotics |

- [Demagoguery](#)
- [Diffusion of innovations](#)
- [Dual inheritance theory](#)
- [Figure of speech](#)
- [Internet meme](#)
- [Memespace](#)
- [Memesphere](#)
- [Memetag](#)
- [Memetics](#)
- [Meme pool](#)
- [Trope](#)
- [Urban legend](#)
- [Zeitgeist](#)

[\[edit\]](#) Footnotes

1. [^] See for example Mooney, Criss. *The Republican War on Science*. NY: Basic Books, 2005.
2. [^] Dieter Lohmar - "Truth", in Lester Embree, "Encyclopedia of phenomenology", Dordrecht, Kluwer Academic Publishers, 1997
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18. [Principia Cybernetica](#) holds a [lexicon of memetics concepts](#), comprising a list of different types of memes.
19. A list of [memetics publications on the web](#)
20. *The Masculist Meme* by Alan Carr. Lulu Publishing, Content .58184 Examines [political correctness](#) as a mind-virus.
21. *Memeiosis* by [Steven Ericsson-Zenith](#), a formal characterization of memes.
22. *Culture as Complex Adaptive System* by [Hokky Situngkir](#), formal interplays between memetics and cultural analysis.
23. *The Viral Aspects of Language: A Quantitative Research of Memetic Selection Criteria* by Klaas Chielens
24. *The Selfish Meme: A Critical Reassessment* by Kate Distin, Cambridge University Press, 2005, [ISBN 0-521-60627-6](#)
25. *Notre Dame de Paris* (translated into English as *The Hunchback of Notre Dame*) by [Victor Hugo](#), 1831
26. *Breaking the Spell: Religion as a Natural Phenomenon* by [Daniel Dennett](#), 2006

[\[edit\]](#) External links

- [The Meme Machine, Interview of Susan Blackmore by Denis Failly](#)
- [Journal of Memetics](#)
- [The text of Dawkin's *Selfish Gene*, chapter 11, "Memes: the new replicators"](#)
- [The Mocking Memes: A Basis for Automated Intelligence](#), a 2006 book on a memetic theory of mind.
- *Cultural Software: A Theory of Ideology* by [Jack Balkin](#) which uses memes to explain the growth and spread of ideology.
- [Church of Virus lexicon](#)
- [MemeTank at dKosopedia](#)

- [Why did the chicken cross the road? The story of a meme](#)
- [MemeStreams](#), collaborative blog community founded by [Tom Cross](#)
- [A short piece](#) by [Mike Godwin](#) on memes in [Wired Magazine](#).
- [The Invasion of the Memes](#) - memes as an useful metaphor, nothing more.
- [memecentral.com](#)
- [What is a Meme?](#) by Brent Silby - an introductory article pitched at a general audience.
- [Memefest, international festival of radical communication](#)
- [A discussion of memes](#) by [Deepak Chopra](#)
- ["Life cycles of successful genes"](#), 2003, Robert Hoffmann
- [Memes.org](#)
- [The Selfish Meme](#)
- [Dawkins's speech on the 30th anniversary of the publication of *The Selfish Gene*](#), Dawkins 2006
- ["A Memetic Paradigm of Project Management"](#), Whitty 2005
- ["Zeitgeist Blog"](#) The day to day memes of the online world.
- [The Evolution of Technology](#) by Brent Silby - memetics used to explain human creativity.