# Integrating Memetics into a Category-Theoretic Ethical Ontology

## Introduction

In this revised ontology, we enrich the category-theoretic model of ethics with a new **memetic** dimension. Richard Dawkins famously defined a *meme* as "an element of a culture or system of behavior" that spreads via imitation. Memes are to culture what genes are to biology – replicators that undergo variation and selection. Eric Drexler later emphasized that ideas (memes) evolve under pressures analogous to natural selection, so *bad ideas must be eliminated for good ones to survive*. By integrating **Memetics** into our ontology, we can model how ethical principles propagate through culture as high-fitness memes. We will add a new category **Mem** to represent memetic processes, and define rigorous mappings from the ethical categories – **Eth_Deon** (deontology), **Eth_Teleo** (teleology), and **Eth_Arete** (virtue ethics) – into **Mem**. This approach begins from first principles in ethics (the nature of duties, consequences, virtues) and in memetics (replication, variation, selection), ensuring philosophical rigor. The result is a comprehensive ontology structured in category-theoretic terms (objects, morphisms, functors) that explains not only the logical structure of ethical concepts, but also their *epistemic resilience* and *cultural propagation* as memes.

## Recap: Category-Theoretic Ethical Ontology

The original ontology consisted of three interrelated categories capturing major ethical theories: **Eth_Deon**, **Eth_Teleo**, and **Eth_Arete**. Each category's **objects** are core ethical concepts in that framework, and **morphisms** represent logical or conceptual relationships between those concepts. For example:

- **Eth_Deon** (deontological ethics) might contain objects like *Duty*, *Obligation*, or *Rule*, with morphisms encoding implication or hierarchy (e.g. a specific duty morphs into a more general principle). Identity morphisms in Eth_Deon represent tautological rules (a duty that trivially implies itself), and composition might capture how following one rule leads to fulfilling another.

- **Eth_Teleo** (teleological or consequentialist ethics) includes objects such as *Goal*, *Outcome*, or *Utility*. A morphism could map a specific outcome to the higher-order goal it achieves (for instance, an act's outcome contributes to overall utility). Composition in Eth_Teleo allows chaining consequences (action → outcome → higher goal).

- **Eth_Arete** (virtue ethics) contains objects like *Virtue*, *Character Trait*, or *Ideal (Arete)* – e.g. *Good Will* or *Courage*. Morphisms might represent developmental relations (cultivating one virtue leads to another) or subsumption (good will is part of an ideal character). The identity morphism on a virtue indicates maintaining that virtue, and composition could model how virtues combine to yield complex moral excellences.

Each ethical category thus has a structured set of objects and morphisms, obeying category axioms (identities and associative composition). These subcategories reflect different "views" of the master category **Ethics**. We can imagine **Ethics** as a meta-category that integrates Eth_Deon, Eth_Teleo, Eth_Arete, for example via inclusion functors of each subcategory into **Ethics**. This provided a formal ontology of ethical concepts. However, by itself it did not explain *dynamics*: how these ethical ideas spread, persist, or evolve in societies. This is where the new **Mem** category comes in.

# Category Mem: Modeling Memetic Processes

**Mem** is a new category we introduce to model the **memetics** of ethical concepts. Its objects represent key stages or factors in meme propagation, and its morphisms represent the processes by which memes replicate, mutate, and endure. In line with Dawkins' and Drexler's insights, we treat an ethical idea as a *meme* – a replicating unit of culture – subject to variation and selection pressures. The **objects** in **Mem** (the memetic domain) include:

- **Replication Fidelity** – the accuracy with which a meme is copied. High fidelity means the idea is transmitted with little alteration; low fidelity means it mutates easily.

- **Transmission Pathway** – the medium or channel through which a meme spreads (e.g. oral tradition, text, social media). Different pathways affect how widely and accurately memes propagate.

- **Variation** – the diversity of a meme's copies; essentially the *mutations* or adaptations a meme undergoes. Variation is crucial for evolution: without it, selection has no choices. In memetics, variation might occur through reinterpretation or rephrasing of an idea.

- **Persistence** – the longevity or staying power of a meme. A meme that persists (in minds or records) for a long time can influence more people. Persistence corresponds to Dawkins' notion of longevity.

- **Selection Pressure** – the environmental or social pressures that favor certain memes over others. This is analogous to natural selection selecting fitter genes; for memes, selection might be driven by cognitive appeal, utility, or social reinforcement. Strong selection pressure means only memes with certain qualities survive (e.g. a complex idea might die out in a society that favors simple slogans).

Each object in **Mem** has an identity morphism (representing no change in that factor – e.g. an idea perfectly copying itself without modification is the identity on *Replication Fidelity*). The interesting behavior comes from **morphisms between these objects,** which model the processes of memetic replication and evolution:

- **Copying with Variation:** A morphism $m: \text{Replication Fidelity} \to \text{Variation}$ represents the act of replication introducing changes. For instance, a high-fidelity channel yields minimal variation (close to an identity transformation), whereas a low-fidelity transmission yields a morphism that produces significant *Variation* in the meme's content. In other words, this morphism captures that copying a meme can produce a slightly mutated meme.

- **Retention/Persistence:** A morphism $p: \text{Variation} \to \text{Persistence}$ denotes that some variants of the meme *retain their structure over time*. This is the process of a meme achieving longevity – despite variation, a core structure survives and continues to be propagated. (We will refine this below by incorporating selection.)

- **Selection (Filtering):** A morphism $s: \text{Selection Pressure} \dashrightarrow \text{Persistence}$ (a dashed arrow indicating an influence on the persistence process) represents how environmental pressures filter the variants, allowing only the "fitter" memes to persist. Selection isn't a standard single-arrow morphism from Variation (since it's an external parameter in evolution), but we can represent it as a **commutative effect**: under a given Selection Pressure, the morphism from Variation to Persistence realizes *"selects fitter versions"*. In other words, selection composes with the variation-to-persistence process to yield preferential survival of certain meme variants.

- **Re-transmission:** A morphism $r: \text{Persistence} \to \text{Transmission Pathway}$ indicates that a persistent meme (one that has endured) enables further transmission – e.g. an idea archived in a holy book (high persistence) can be transmitted repeatedly over generations. This closes the cycle, as the meme enters new transmissions again, potentially reaching new individuals.

The **composition** of morphisms in Mem captures full memetic life-cycles. For example, composing the **copying** morphism with the **selection** effect and then **retention** yields a direct morphism from *Replication Fidelity* to *Persistence* that represents *replication under selection leading to a lasting meme*. Identities and composition in **Mem** obey the category axioms, ensuring we can analyze successive memetic transformations formally. We can visualize **Mem** as a cyclic process graph of these objects and morphisms:

**Figure 1:** *Category **Mem** representing the memetic process.* Objects (ovals) are key factors: replication fidelity, variation, selection pressure, persistence, and transmission pathway. Solid arrows are morphisms capturing processes: e.g. a meme is copied with some **Variation**, variants that **retain structure over time** achieve **Persistence**, and persistent memes enable further **Transmission**. The dashed arrow indicates **Selection Pressure** acting on the

variation-to-persistence step, filtering which variants survive. This category-theoretic structure formalizes Dawkins' idea that successful replicators must be copied accurately, in great number, and endure long enough.

### Memetic Fitness Criteria

Within **Mem**, we can now rigorously define **memetic fitness** – the properties that make an ethical idea a "high-fitness" meme. Drawing on Dawkins' criteria of *longevity, fecundity,* and *fidelity* (and adding adaptability), a meme's fitness is determined by:

- **Transmissibility:** How easily and widely the meme spreads (analogous to fecundity or reproduction rate). A highly transmissible meme reaches many hosts via robust **Transmission Pathways** – e.g. a catchy slogan spreads on social media overnight.

- **Persistence:** How long the meme lasts in a population (analogous to longevity). A meme with high **Persistence** remains in cultural memory across generations (for example, a proverb or sacred teaching surviving centuries).

- **Adaptability:** The meme's capacity to **vary** in form yet maintain its core, allowing it to survive under different **Selection Pressures**. Adaptability means the idea can mutate or be reinterpreted to fit new contexts without losing its essential meaning – thus balancing fidelity with useful variation. *(This corresponds to having enough **Variation** to adapt, but not so much that the meme loses identity – avoiding what Dawkins called "error catastrophe" where excessive mutation destroys the idea.)*

A truly successful ethical meme finds an optimal mix: it is **simple and sharp** enough to spread widely (high transmissibility), **meaningful** enough to stick in people's minds or institutions (persistence), and **flexible** enough to adapt to new eras or cultures (adaptability through variation). In category **Mem**, such a meme would have morphisms showing strong performance across those objects: a reliable replication morphism (high-fidelity copying), a solid persistence morphism (identity maintained through time), and some degree of variation morphism that works with selection to keep it relevant. Natural selection in culture will favor ethical memes with these qualities, much as it favors genes with high fidelity, fecundity, and longevity. In fact, **natural selection will favor replicators** – genetic or memetic – that meet these criteria, as those are the ones that *don't go extinct* in their respective environments.

# Mapping Ethical Concepts into Mem (Ethics as Memes)

We now integrate the ethical categories with **Mem** by treating each ethical concept as a meme subject to replication. Formally, we can define a functor $F: \text{Ethics} \to \text{Mem}$ that maps an ethical object (principle, value, virtue) to its corresponding memetic object (the idea as a meme), and maps morphisms (ethical relations) to memetic morphisms (relations between memes). This functorial mapping shows how an ethical idea lives as a meme in culture. In

practical terms, **an ethical concept becomes an object in Mem** (a meme) endowed with properties like fidelity, variation, etc. We can illustrate this with an example from **Eth_Arete**:

**Figure 2:** *Cross-category mapping of an ethical concept into memetics.* Here the virtue **Good Will** (object in Eth_Arete) is mapped via a functor (dashed arrow) to the **"Good Will" meme** (object in Mem). The meme then exhibits memetic properties: **High fidelity** (it's faithfully taught as a core principle), **High persistence** (the idea of good will endures in ethical discourse), and **cultural transmission** (spread through education, religion, philosophy). In the Mem category, these are captured by morphisms from the "Good Will" meme to the **Replication Fidelity** object (indicating it's usually copied accurately), to **Persistence** (indicating it lasts through time), and to **Transmission Pathway** (indicating it finds channels for propagation).

This diagram shows how an abstract virtue enters the "meme pool." Once *Good Will* is a meme, it replicates: teachers, parents, and texts repeatedly communicate the importance of having a good will (high-fidelity copying through generations). Because it resonates with fundamental moral intuition (it's a *good idea* in a Kantian sense), it tends to be preserved intact – the concept of *good will* today is much the same as in Kant's era, demonstrating **retention** of structure. It also appears in different cultures under similar names (good heart, benevolence), showing some **variation** in expression but an adaptable core meaning. And whenever societies emphasize sincere intentions, that meme finds a favorable **selection environment**, further entrenching its persistence.

Let's detail how each ethical subcategory's concepts serve as high-fitness memes:

- **Deontological memes (Eth_Deon → Mem):** Deontological rules are often short, imperative, and emotionally compelling – ideal features for memes. For example, the rule *"Thou shalt not kill"* or *"Do not lie"* is easy to remember and transmit. It has been encoded in religious texts, legal systems, and proverbs across many cultures. As a meme, "do not kill" has **high transmissibility** (taught in almost every society to every child), and **high persistence** (it can be traced to ancient codes and persists in modern law). Its **replication fidelity** is high too: the core wording of this duty changes little over time because any major mutation (e.g. "sometimes kill") is strongly selected against in most cultures. Deontological memes often ride on strong **Transmission Pathways** like canonical scriptures or institutional norms, which ensure faithful copying. They also benefit from selection pressure: societies which uphold certain deontic norms (like truth-telling and promise-keeping) tend to prosper via increased trust, so those moral memes are "selected" by contributing to societal success. In category terms, an object like *Duty of Honesty* in Eth_Deon maps to an object *"Honesty" meme* in Mem. There would be a morphism (in Eth_Deon) from Honesty to Trust (honesty leads to social trust), and under the functor to Mem this might map to a morphism showing that spreading the honesty meme increases the spread of a trust meme – demonstrating compositional structure across domains.

- **Teleological memes (Eth_Teleo → Mem):** Teleological ethics often boil down to simple goals or slogans that can become catchy memes. *"The greatest good for the greatest*

*number,"* for instance, encapsulates utilitarianism in a memorable form. This phrase, or the idea of "maximizing happiness," has shown memetic success: it's widely cited in debates, appears in pop culture, and is intuitively grasped (it *transmits* well). Its **persistence** is evident – variants of this principle date back to ancient Greek philosophy and continue in modern discourse. However, teleological memes sometimes face **adaptability** challenges: they might be more abstract (requiring context to evaluate outcomes) and thus mutate into simpler heuristics. A notable memetic variant is *"the ends justify the means,"* a pithy (if controversial) teleological meme. That variant spreads easily as a saying (high transmissibility), though it distorts the ethical nuance (a mutation of the original idea). Under selection pressure (criticism for endorsing immoral means), this meme is often rejected in formal ethics but persists in colloquial use. In our category model, an object like *Utility Maximization* in Eth_Teleo maps to a *"Utility" meme* in Mem. If there's a morphism in Eth_Teleo from an action to the happiness it produces, in Mem this corresponds to a transformation of the meme "happiness is good" influencing the prevalence of that action's meme (e.g. the idea of charitable giving spreads alongside the idea that it increases overall good). Teleological concepts that align with common intuitions (e.g. *"help others to increase overall welfare"*) tend to become high-fitness memes – they are repeated in folk wisdom and stories (transmitted), remain part of cultural values (persistent), and can adapt (the notion of "the greater good" might be applied to public health, economics, etc., each adaptation reinforcing the core meme of utilitarian thinking).

- **Virtue ethical memes (Eth_Arete → Mem):** Virtues often survive through narratives and maxims that highlight their value – mechanisms perfectly suited for memetic transmission. For example, *"Patience is a virtue"* is literally a popular meme (proverb) encapsulating a virtue-ethical idea. It is short, rhymes, and is often quoted by elders to instill the value of patience – demonstrating high transmissibility. It has persisted since at least medieval times as a common saying (high persistence), and it adapts well (today it might be applied to patience in using technology, waiting in traffic, etc., showing the concept's relevance under new conditions). The virtue of **Good Will** (Kant's idea that a good will is intrinsically good) can become a meme by being abstracted to more everyday terms like *"good intentions matter"* or *"it's the thought that counts."* Indeed, the notion that having genuinely good intentions is valuable is a meme echoed in many cultures. While the philosophical term "good will" is specific, its essence – valuing benevolence or sincere intent – is transmitted via religious teachings (e.g. the idea of *loving kindness* in Buddhism or *charity* in Christianity) and folk morality. These incarnations show the meme's adaptability: the core ethical object (good will) appears in varied guises, increasing its reach. In category Mem, the *"Good Will" meme* would have a strong self-identity morphism (it retains its compassionate core) and arrows to **Persistence** (it has stood the test of time in moral thought) and **Replication Fidelity** (people consistently recognize and praise genuine good intent). The **selection pressure** on virtue memes often comes from social admiration – virtues that communities honor (like courage, generosity) get reinforced as memes, whereas those seen as vices are suppressed. Over centuries, cultures have *selected* virtue-memes by celebrating heroes

and saints (thus propagating memes of courage, justice, benevolence) while letting less appealing traits (like cowardice or greed) carry stigma and fade as laudable concepts.

It is notable that some ethical memes span **all three ethical categories** – a sign of extremely high fitness. The **Golden Rule** ("treat others as you want to be treated") is one such meme. It has a deontological flavor (a rule to follow), a teleological justification (it leads to mutual benefit), and a virtue aspect (cultivating empathy). The Golden Rule is *short, easily taught, and emotionally resonant*, which has made it one of the most successful ethical memes in history. It appears in the teachings of most major religions and cultures throughout history – clear evidence of its transmissibility and persistence. Its phrasing varies slightly (positive/negative forms, different languages) demonstrating adaptability while the core idea remains intact. Our ontology would map the Golden Rule from any of the Eth_* categories (or the overarching Ethics category) into Mem as an object "GoldenRule" meme. That object would connect to **Transmission Pathways** (it spread via religious texts, folklore, parenting), to **Persistence** (documented across millennia), and we observe it thriving under diverse selection pressures – from ancient pastoral societies to modern urban ones – because it carries interpersonal utility and appeals to a basic sense of fairness. The success of the Golden Rule meme, as our model shows, lies in meeting all the memetic fitness criteria: it's highly transmissible, persistent, and adaptable, truly a "universal moral meme."

# Integration via Functors and Diagrams

Formally, each ethical subcategory **Eth_X** can be linked to **Mem** by a functor that we might call $M: \text{Eth\_X} \to \text{Mem}$. This functor maps:

- **Objects:** An ethical concept (object in Eth_X) $o$ maps to a meme object $M(o)$ in Mem which represents that concept's memetic incarnation. For example, $M(\text{Good Will}) = \text{GoodWillMeme}$, as shown in Figure 2.

- **Morphisms:** Any morphism $f: o_1 \to o_2$ in the ethical category translates to a morphism between the corresponding memes $M(f): M(o_1) \to M(o_2)$ in Mem, if applicable. For instance, if in Eth_Arete we have a morphism "cultivation of good will leads to moral excellence," the functor M would map this to a memetic morphism "spread of the good will meme promotes spread of the moral excellence meme." This ensures structural relationships are preserved across domains.

Because it's a functor, identities map to identities (the identity of an ethical concept maps to the identity morphism of the meme, representing that the concept trivially "self-replicates" as itself), and composition is preserved (if an ethical relation $o_1 \to o_2 \to o_3$ composes to $o_1 \to o_3$), then the corresponding meme morphisms compose to yield $M(o_1) \to M(o_3)$, indicating that the indirect influence of concept1 on concept3 is mirrored by an indirect memetic influence). This functorial mapping provides a **diagrammatic integration**: we can draw

commutative diagrams where an ethical concept's journey in its native category and its journey through memetic propagation correspond. The earlier Figure 2 is a fragment of such a diagram, showing one object and its image; in a fuller picture, we'd have many ethical concepts each mapping into Mem, potentially with interactions (e.g., diagrams that show how a deontological rule meme and a virtue meme might interact in Mem if their source categories had a connection).

Crucially, **Mem** does not exist in isolation; it interacts with the ethical categories to explain *why certain ethical norms prevail*. The ontology now isn't just a static classification of ethical ideas – it's a dynamic, evolutionary model. We can chase an object through a composite functor from, say, Eth_Deon to Mem to itself (if we consider a functor that maps Mem back to Ethics by taking the most persistent variant as normative). Doing so might formalize an idea of *reflective equilibrium* reached culturally: the ethical concept as theorized, when propagated as a meme, influences what ethical concept the culture actually endorses. For example, the abstract principle of *justice* in philosophy (Ethics category) becomes various "justice" memes in society; those memes might evolve (some distortions, some improvements) and eventually feed back (through cultural influence on philosophers or lawmakers) to refine the formal principle of justice. Category theoretically, one could imagine a feedback functor or a natural transformation from $F \circ M$ (meme back to refined ethical concept) that yields a more resilient ethical concept. While we won't formalize that fully here, the ontology sets the stage for such analysis.

# Epistemic Resilience and Cultural Propagation of Ethical Norms

By incorporating memetics, our ethical ontology gains explanatory power about *why certain norms endure or spread*. An ethical system built solely on logical coherence might devise many possible principles, but memetics tells us which of those are likely to actually take hold in human minds and societies. This approach increases **epistemic resilience** in a few ways:

- **Robustness of Ethical Knowledge:** Ethical principles that become memes are continually tested in the arena of culture. Through memetic selection, as Drexler noted, inadequate ideas tend to be eliminated while resilient ones survive. This means the ethical concepts in our ontology are not just abstractly valid, but have proven resilient against oblivion and distortion. They have survived debates, reforms, and even attempts at suppression. Thus, the ontology preferentially contains norms that have endured scrutiny and competition – making the body of ethical knowledge more resistant to error. In Drexler's terms, society maintains a "critical attitude" towards ideas, letting them *"survive the elimination of inadequate hypotheses"*. Ethical memes that remain (e.g. opposition to murder, the virtue of honesty) have survived many rounds of criticism or challenge, implying a form of epistemic robustness.

- **Simplification and Memorability:** Memetic framing forces us to express ethics in concise, accessible forms (because those spread best). This doesn't trivialize ethics;

rather, it distills core insights into **portable knowledge units**. A complex theory like Kant's categorical imperative is hard to propagate directly, but its essence can be captured in simpler memetic forms ("universalize your actions" or the Golden Rule as an approximation). By mapping complex ethics to simpler memes, we make the knowledge more resilient – more likely to be retained by people who haven't studied Kant in depth. The ontology, therefore, isn't just academically rigorous; it's also packaged for **human cognitive networks**. Each object in category Ethics that is memetically realized gets a kind of "backup copy" in public consciousness. Even if academic knowledge is lost, the folk-saying version might persist and can be re-expanded. This redundancy increases the resilience of the ethical knowledge base.

- **Adaptation to New Challenges:** Because our Mem category explicitly includes **Variation** and **Selection**, the ontology accounts for adaptation. When new moral challenges arise (e.g. bioethics for new tech, AI ethics), ethical memes can mutate or new memes form, and undergo selection by how well they address the new context. Our category ontology can incorporate these as new objects or morphisms in Mem, which then link back to classical ethical objects. For example, the principle of "do no harm" (ancient Hippocratic ethic) has spawned new memetic variants in the context of data privacy ("do no harm with user data"). By modeling this within Mem, we see *adaptability*: the old ethic persisted but evolved in phrasing and application. Categorially, one might view this as the same object in Ethics spawning a family of related meme objects in Mem via Variation morphisms, which then perhaps converge (through selection) to a refined ethical concept again. This built-in adaptability means the ontology isn't static – it can respond to cultural evolution, thereby staying epistemically up-to-date and resilient.

In terms of **cultural propagation**, the memetic ontology makes it explicit how ethical norms travel through populations. Rather than assuming a top-down imposition of ethical truth, we see a bottom-up spread of ethical memes. For a norm to become *normative* in practice, it must win the memetic competition for minds. Our category **Mem** tracks this journey. We can identify, for any given ethical concept, whether it has the memetic requisites to become widespread. If not, our model might suggest it will remain an ideal on paper with little influence. This has practical implications: ethicists and policymakers can try to *engineer ethical memes* that are short, clear, and emotional (for transmission), while still embodying sound principle (for persistence). In effect, the ontology guides how to **communicate ethics effectively**. For example, framing an environmental duty as a snappy meme ("Leave no trace") greatly amplifies its propagation relative to a verbose ethical argument – yet it still conveys the essence. By ensuring ethical content is memetically strong, we propagate norms more broadly and deeply into culture.

Finally, the category-theoretic rigor ensures that in doing all this, we do not lose sight of structure and consistency. Every meme is anchored to an ethical concept, maintaining a **link between popular norm and philosophical principle**. Identities and compositions in the ethical categories correspond to identities and compositions in memetics, so cultural evolution does not derail logical coherence. If a meme drifts too far from its original ethical meaning (e.g. a virtue meme getting co-opted for something vicious), we would see that as a morphism in Mem that no

longer maps back cleanly via the functor to the Ethics category – indicating a need to correct course. Thus, the ontology can highlight when a culturally popular meme is a *corrupted morphism* of a noble ethical concept, prompting re-alignment (for instance, if "justice" as a meme turns into mere vengeance, the functor back to Ethics would map it to a very different object than *Justice*, alerting us to a distortion).

In summary, adding **Mem** to our ethical ontology provides a rigorous, scientific lens (thanks to Dawkins and Drexler) on why certain morals stick and spread. The category **Mem** has objects for replication fidelity, transmission, variation, persistence, and selection, and morphisms capturing copying, selection, and retention processes. Through functorial mappings, ethical principles in **Eth_Deon**, **Eth_Teleo**, and **Eth_Arete** become **memes** that replicate, mutate, and endure. We saw how deontological rules, teleological goals, and virtues can all serve as high-fitness memes – from the Ten Commandments to utilitarian slogans to proverbs about virtue – often attaining longevity by being packaged in transmissible forms. This memetic embedding makes the entire ontology **memetically robust**: it favors ethical ideas that are short, clear, and memorable without losing philosophical substance. The approach is **philosophically rigorous** (grounded in category theory and ethical theory) and simultaneously empirically informed (grounded in evolutionary dynamics of ideas). By uniting ethical first principles with memetic science, the ontology not only classifies what is morally important, but also predicts and explains what moral ideas humanity is likely to carry forward, thereby illuminating the path to a more ethically informed and culturally rich future.

# Sources


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3. Dawkins, Richard – discussions on RichardDawkins.net. (Clarifications on the importance of high-fidelity replication for memes to undergo meaningful selection.)

4. *Wikipedia*: "Meme" and "Golden Rule" articles. (General knowledge on memetics and examples of ethical memes; e.g. the Golden Rule found in most religions.)