

The Grammar of Culture

Dan Sperber's Epidemiology of Representations and the Closure Framework: How Cognitive Closures Shape What Cultures Can Stably Contain

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Cultural transmission is not a copying process but a reconstruction process. Every time a representation passes through a mind, it is transformed by that mind's cognitive architecture. Culture is the statistical distribution of these transformations across a population.

Dan Sperber, *Explaining Culture*, 1996

Every finite closure generates remainder. The remainder is not noise. It is the proof that the grammar is finite.

CF Dietz, *Consciousness, Closure, and the Cosmos*, 2026

Abstract

Dan Sperber is a French social and cognitive scientist, anthropologist, and philosopher, Emeritus Professor at Central European University and researcher at the Institut Nicod in Paris. His epidemiology of representations, developed across three decades, offers the most rigorously naturalistic account available of how cultural representations spread, stabilize, and transform across populations. His relevance theory, developed with Deirdre Wilson, provides the cognitive account of communication as ostensive-inferential reconstruction guided by the search for optimal relevance. These two frameworks together describe what the closure framework calls the population dynamics of shared cognitive closures: how representations are reconstructed by individual cognitive closures in systematic ways, how those systematic reconstructions produce cultural attractors at the population level, and how the search for relevance drives communication toward the cognitive organization of the receiver rather than the literal content of the sender. This paper argues that Sperber's epidemiology and the closure framework converge at the level of cultural dynamics: culture is not a set of representations faithfully copied from mind to mind but the statistical distribution of representations that a population of cognitive closures with shared architecture collectively constitutes from what it opens onto. Cultural attractors are the identity criteria of the shared cultural closure: the points in the space of possible representations toward which individual closures systematically reconstruct whatever they receive, reflecting the organization of the cognitive architecture shared by the population. Relevance is the criterion any closure uses to select among possible interpretations: the interpretation that produces the greatest cognitive effect, the most significant update to the closure's constituted world, relative to the processing resources available. And the transformation that occurs every time a representation passes through a mind is not a failure of fidelity but a consequence of what any finite closure must do: constitute a new version of what it receives, shaped by its own organizational structure, generating the specific remainder and recovery that the closure's identity criteria produce from the input.

1. The Story That Changed When It Traveled

Frederick Bartlett, the British psychologist, asked English students in the 1920s to read a Native American folktale called *The War of the Ghosts* and then recall it at intervals. The story was alien to their cultural framework: it featured unfamiliar concepts, a narrative structure that did not match English story grammar, and causal connections that presupposed beliefs the students did not share. As the students recalled and re-recalled the story, it changed. Details that did not fit their expectations were omitted or transformed. The narrative structure drifted toward conventional English story grammar. Supernatural elements were rationalized into natural ones or dropped. The story became shorter, more coherent from an English perspective, and less faithful to the original with each retelling.

Bartlett's finding is the empirical foundation of Dan Sperber's approach to culture. The students were not trying to change the story. They were trying to remember it accurately. But their cognitive architecture, their schema for what a story is, their expectations about causation and narrative, their prior knowledge about the world, shaped their reconstruction of the story in systematic ways. The transformation was not random noise. It was directional: the story moved toward what the students' cognitive architecture made natural and away from what it made strange.

Sperber generalizes this observation into a theory of cultural transmission. Every time a representation passes through a mind, it is reconstructed by that mind's cognitive architecture. The reconstruction is not a copy of the original. It is a new representation shaped by the receiver's schemas, expectations, prior knowledge, and cognitive biases. If many people share similar cognitive architecture, similar systematic transformations will occur across the population. The representations that are most easily reconstructed, most compatible with the cognitive architecture of the population's minds, will be more stable and more widely distributed than those that require difficult or unusual reconstructions. Culture is the statistical distribution of these reconstructions: what is common across a population is not what has been faithfully copied but what the population's shared cognitive architecture systematically produces from whatever it receives.

This is the epidemiology of representations, and it is the account the closure framework names as the population dynamics of shared cognitive closures. Every individual mind is a cognitive closure that reconstructs what it receives according to its organizational structure. When many closures share similar organizational structure, similar reconstructions produce cultural stability without faithful copying. The attractor that explains cultural stability is not a property of the representation but a property of the population's shared cognitive organization.

2. Sperber's Four Claims

Sperber's contribution to cognitive anthropology and philosophy of culture has four interconnected components.

2.1 Epidemiology of Representations: Culture as Statistical Distribution

The dominant models of cultural transmission treat culture as information transmitted from mind to mind, analogous to genetic inheritance or mechanical copying. Sperber challenges this model at its foundation. The human mind is not a passive storage and retrieval system. It is an active reconstructive device: it does not copy information but generates new representations from what it receives, using its prior knowledge, cognitive schemas, and domain-specific inferential capacities. The output of this reconstruction process is systematically related to the input but is not identical to it.

Sperber proposes that we study culture the way epidemiologists study disease: not by tracking the transmission of a fixed entity from host to host, but by tracking the causal chains through which representations influence the production of new representations in other minds and through the environment. The representation in one mind causes behavior or produces artifacts that cause a new representation to be constructed in another mind. That new representation is causally continuous with the first but is not the same representation. It has been reconstructed by a different mind with a different cognitive history and different contextual knowledge.

The epidemiological framework makes the key question not what is transmitted but what systematic transformations occur during reconstruction, and why those transformations produce relatively stable cultural distributions rather than either indefinite drift or chaotic variation. The answer is cognitive: the transformations are not random because the minds doing the reconstructing are not random. They share cognitive architecture that biases reconstructions in specific directions.

2.2 Cultural Attractors: Stability Through Convergent Transformation

Sperber's most innovative concept is the cultural attractor: a point or region in the space of possible representations toward which individual reconstructions tend to converge, regardless of the particular variant from which they begin. An attractor is not a canonical version stored somewhere. It is a statistical regularity produced by the systematic biases of the cognitive architecture shared by a population.

The clearest example is the cognitive basis of color lexicons. Cultures carve up the color space in different ways, but not in completely arbitrary ways. The color categories that appear most frequently across cultures tend to cluster around the most cognitively salient regions of the color space: the regions that the human visual system and color memory system make most easily recognizable and memorable. When people reconstruct color terms, they systematically reconstruct them toward these cognitively salient regions. The result is that color lexicons across cultures tend to gravitate toward similar attractor points, even though no global mechanism ensures this convergence.

Sperber applies the attractor concept to a wide range of cultural phenomena: narrative structures, magical beliefs, concepts of agency, religious representations. In each case, the stability of cultural content is explained not by faithful replication but by the systematic convergence of individual reconstructions toward the attractor points defined by the shared cognitive architecture of the population. Different cognitive architectures, different populations, different ecologies produce different attractor landscapes and therefore different cultural distributions.

2.3 Relevance Theory: Communication as Inferential Reconstruction

With Deirdre Wilson, Sperber developed relevance theory as an account of linguistic communication. The standard view of communication, derived from Shannon and Weaver and embraced by most linguists, treats it as a coding-decoding system: the speaker encodes a message in a signal, the hearer decodes the signal to recover the message. Communication succeeds when the decoded message matches the encoded message.

Relevance theory rejects this model. What is communicated is not encoded in the signal and cannot be recovered from the signal alone. The signal is an ostensive act: a behavior designed to draw the hearer's attention and make it manifest that the speaker intends to produce certain effects in the hearer's mind. The hearer's task is not decoding but inference: constructing the most relevant interpretation of the speaker's ostensive act, given the hearer's contextual knowledge and cognitive state. Relevance is the criterion guiding this inference: the interpretation that achieves the greatest cognitive effect, the most significant update to the hearer's model of the world, for the least processing effort.

Communication on this account is always approximate: the representation the hearer constructs from the speaker's utterance is not the same as the representation the speaker intended to produce, but it is relevance-guided enough to be close in the ways that matter for the practical purposes of the interaction. The systematic relationship between what is said and what is understood is not maintained by faithful encoding but by the shared cognitive architecture that makes the same ostensive acts maximally relevant to both speaker and hearer.

2.4 Transformation Not Replication: The Departure from Memetics

Sperber's most important critical contribution is his rejection of memetics, the view developed by Richard Dawkins that cultural evolution is driven by the replication of memes, units of cultural information that copy themselves from mind to mind in the way genes copy themselves from generation to generation. Sperber argues that this view misunderstands the nature of cultural transmission.

Replication requires a mechanism that faithfully copies the unit of information. Genetic replication achieves extraordinarily high fidelity through the molecular machinery of DNA replication. Cultural transmission has no comparable mechanism: representations are not copied but reconstructed. The reconstruction process is systematically transformative, not faithfully replicative. To apply the replicator model to culture is to import a precision that cultural transmission does not have and to misidentify the mechanism by which cultural stability is achieved. Cultural stability is not the result of faithful replication but of convergent reconstruction toward attractor points defined by shared cognitive architecture.

This matters because it changes what needs to be explained. The replicator model asks: what makes some memes fitter for replication than others? The attractor model asks: what are the attractors toward which a population's shared cognitive architecture systematically reconstructs whatever it receives? These are different questions that point toward different research programs and different theoretical frameworks. Sperber argues that the attractor model is more faithful to what actually occurs in cultural transmission and more productive as a research program.

3. What Sperber Needs

Sperber's epidemiology of representations is the most rigorously naturalistic account of cultural dynamics available: it connects the micro-level processes of individual cognitive reconstruction to the macro-level patterns of cultural distribution in a way that is both empirically tractable and theoretically principled. His relevance theory provides one of the most productive research programs in pragmatics and cognitive science.

There are two questions Sperber's framework raises that the closure framework addresses. The first is the structural account of why cognitive architectures function as attractors. Sperber demonstrates empirically that they do and characterizes the statistical dynamics of the attractor process. But the structural account of why any cognitive system would systematically reconstruct representations toward specific attractor points, rather than processing representations in an arbitrary or fully flexible way, is not fully developed. The closure framework provides this: any finite closure draws distinctions according to its identity criteria and maintains lawful relationships among its elements. The attractor points are exactly the points in the space of possible representations that best fit the closure's existing organizational structure: the representations that can be constituted without generating significant mismatch against the closure's current organization.

The second question is the relationship between relevance and truth. Relevance theory explains how people construct interpretations of communication: the interpretation that achieves maximum cognitive effect relative to processing effort. But maximum relevance is not always maximum accuracy. The interpretation that is most easily processed given the hearer's current knowledge may not be the interpretation that corresponds most closely to what the speaker intended or to what the world contains. Sperber acknowledges this but does not fully develop the account of how relevance-guided reconstruction relates to the broader epistemic goals of getting things right. The closure framework's account of remainder provides the structural connection: relevance drives reconstruction toward what best fits the closure's current organizational structure, and the remainder that accumulates when the world presses back against relevance-driven reconstructions is the pressure that eventually drives update. Relevance is the criterion for immediate reconstruction; remainder is the pressure for eventual revision.

4. The Framework in Cultural Terms

The closure framework is introduced here in the minimum terms needed to ground Sperber's cultural dynamics.

4.1 Every Transmission Is a Passage Through a Closure

A closure regime is a system that stabilizes some content by drawing distinctions, establishing identity criteria, and maintaining lawful relationships among its elements. Every human mind is a cognitive closure: it draws distinctions between categories, maintains identity criteria for what counts as an instance of each category, and sustains lawful relationships among its constituted facts.

Every time a representation passes through a mind, it passes through a cognitive closure that reconstructs it according to its organizational structure. The reconstruction is not arbitrary: the closure constitutes a new representation from the input using the same identity criteria and distinctions that it uses to constitute everything else. If the input fits the closure's existing organizational structure well, the reconstruction closely matches the input: the closure has no difficulty constituting the representation. If the input poorly fits the closure's organizational structure, the reconstruction diverges from the input: the closure constitutes the most compatible version of the representation it can, shaped by its existing distinctions and identity criteria.

Sperber's systematic transformation is this closure-shaped reconstruction: the new representation reflects the closure's organizational structure as much as the original input. The transformation is directional because the closure is organized: it has specific identity criteria and distinctions that systematically shape what it can constitute from any input. The attractor is the region of representation space that requires the least transformation to constitute given the closure's current organizational structure: the representations that fit the closure best are the ones it constitutes most faithfully.

4.2 Cultural Attractors Are the Identity Criteria of Shared Closures

When a population shares similar cognitive architecture, it shares similar closure organization: similar identity criteria, similar distinctions, similar lawful relationships among constituted elements. Individual closures in such a population will systematically reconstruct representations toward the same regions of representation space, because those regions fit the shared organizational structure best. The attractor is not a property of any particular representation but a property of the shared closure organization of the population: the region of the representation space that the population's shared cognitive closure most easily constitutes.

This is why cultural attractors are abstract statistical constructs rather than concrete entities. They are properties of the shared cognitive architecture of a population, emerging from the systematic convergence of individual reconstructions. They change as the cognitive architecture of the population changes, as the population's ecological context changes, and as the accumulated cultural tradition of the population changes the resources available for reconstruction. Different populations with different cognitive architectures have different attractors and therefore different cultural distributions.

Boroditsky's work on linguistic relativity is directly connected here: different linguistic grammars establish different cognitive closures, and those different closures constitute different attractor landscapes for the representations that pass through them. Russian speakers who have the *sinii-goluboy* distinction in their cognitive closure have a different attractor landscape for color representations than English speakers who lack it. The color space is carved differently by the closure, and reconstructions of color representations will converge toward different attractor points.

5. Four Claims, One Structure

The vocabulary correspondence between Sperber's cognitive anthropology and the closure framework is among the most dynamic in the series, operating at the level of populations rather than individuals. What Sperber calls the reconstruction of representations in individual minds, the closure framework calls the constitutive activity of cognitive closures: each passage through a mind is a passage through a closure that constitutes a new version of the representation according to its organizational structure. What Sperber calls systematic transformation biases, the framework calls the identity criteria of individual closures: the organizational structure that determines which representations are most easily constituted and toward which reconstructions converge. What Sperber calls the cultural attractor, the framework calls the identity criteria of the shared cultural closure: the region of the representation space that the population's shared cognitive architecture most easily constitutes. What Sperber calls relevance, the framework calls the closure's optimization criterion: the interpretation that produces the greatest update to the closure's constituted world relative to processing resources. And what Sperber calls cultural stability through convergent transformation, the framework calls the population-level closure dynamics: the statistical distribution produced by many individual closures with shared organizational structure all reconstructing toward the same attractor points.

5.1 Cultural Transmission Is Closure-to-Closure Reconstruction

Sperber's departure from the copying model of cultural transmission is, in closure framework terms, the recognition that representations do not pass between minds intact but are reconstructed by each mind's closure as they pass through. The representation in mind A causes a behavior or artifact that mind B's closure uses to reconstruct a new representation. That representation is causally continuous with the original but is not the same representation: it has been constituted by B's closure using B's organizational structure.

This means that cultural transmission is not transmission of content but triggering of reconstruction. The speaker does not transmit a thought to the hearer. The speaker produces an ostensive act that triggers the hearer's closure to reconstruct the most relevant representation that could have motivated the act. What travels from mind to mind is not the representation itself but the causal signal that triggers each closure's reconstructive activity. The content is always locally produced.

5.2 The Attractor Is Where Multiple Closures Converge

A cultural attractor is where a population of cognitive closures with shared organizational structure all converge when they reconstruct representations from a given domain. It is not stored anywhere. It is the statistical consequence of many individual closures all drawing similar distinctions, maintaining similar identity criteria, and constituting representations from similar organizational structure.

The robustness of cultural attractors depends on the degree to which the population's closures share organizational structure. When cognitive architecture is strongly shared across a population, attractors are powerful: nearly any input from the relevant domain will be reconstructed toward the attractor, regardless of the specific variant received. When cognitive

architecture is more variable across a population, attractors are weaker: individual reconstructions converge less tightly and cultural distributions are more variable. This explains why some cultural phenomena, especially those tied to deep cognitive architecture that is shared across all humans, are found across all cultures, while others, tied to culturally specific knowledge or practices, vary more widely.

5.3 Relevance Is Closure's Optimization Criterion

Relevance theory's account of communication as the search for maximum cognitive effect relative to processing effort is, in closure framework terms, the account of how a cognitive closure selects among possible interpretations of an ostensive act. The closure constructs the interpretation that produces the greatest update to its constituted world, the most significant revision of its current organizational state, for the least expenditure of the organizational resources required for reconstruction.

This is why relevance is tied to cognitive effect rather than to fidelity to the speaker's intended meaning. The closure does not have direct access to the speaker's intended meaning: it has access only to the ostensive act and its own organizational resources for interpreting it. The interpretation it constructs is the one that most efficiently updates its current constituted world, which may or may not match the speaker's intention. Communication succeeds when speaker and hearer share enough organizational structure that the interpretation that is most relevant to the hearer is also the one the speaker intended.

The connection to Boroditsky is again direct. Different linguistic closures constitute different relevance landscapes: what is maximally relevant to a Mandarin speaker thinking about time may not be maximally relevant to an English speaker thinking about the same sequence of events. The closure's identity criteria for time, inherited from the linguistic grammar, shape what updates to the temporal model count as cognitively significant and how much processing they require.

5.4 Transformation Is Not Failure of Fidelity But Consequence of Finite Closure

Sperber's insistence that transformation is the norm of cultural transmission, not a failure to be corrected or minimized, is the closure framework's structural consequence made anthropological. Every finite closure generates remainder: it cannot constitute everything from the input it receives. What it cannot constitute is transformed: the closure produces the nearest constitutable version of the input given its current organizational structure. For representations well-fitted to the closure, the transformation is minimal. For representations poorly fitted, the transformation is large.

This is not a deficiency of cultural transmission. It is the consequence of what any finite organizational system must do when it encounters input that does not fully fit its current organization. The transformation reveals the structure of the closure: the systematic ways in which individual reconstructions diverge from the input reveal the identity criteria and distinctions of the cognitive architecture doing the reconstructing. Sperber's epidemiology is, from this perspective, the systematic study of cognitive closure structure through the analysis of the transformations it produces in the representations it processes.

6. Sperber, Boroditsky, and Jablonka: Culture at Three Scales

Sperber occupies a specific position in the series that connects three scales of cultural analysis. Boroditsky demonstrates how individual cognitive closures constituted by different linguistic grammars produce different cognitive worlds: different temporal architectures, different color spaces, different causal frameworks. She is working at the level of individual cognition and the closures that shape it.

Jablonka demonstrates how the symbolic inheritance system, the fourth and distinctively human inheritance system, transmits cultural information across generations through the behavioral and symbolic closures that language makes possible. She is working at the evolutionary timescale, tracing how the symbolic closure emerged and what it made possible for human cognition and culture.

Sperber bridges these two scales. He explains the population dynamics that connect individual cognitive reconstruction to cultural stability: how the cognitive closures that Boroditsky describes at the individual level produce the cultural distributions that Jablonka describes at the evolutionary level. The attractor dynamics that Sperber identifies are the mechanism by which individual cognitive closure organization produces population-level cultural stability, and by which population-level cultural traditions shape the cognitive closures of new members of the population.

For the closure framework, Sperber completes the cultural arc of the series. Boroditsky shows what individual linguistic closures do. Jablonka shows how symbolic closures evolved and accumulate across generations. Sperber shows how populations of closures produce and maintain cultures through the systematic convergence of individual reconstructions toward the attractors that their shared cognitive architecture defines.

7. The Grammar of Culture

Frederick Bartlett's students remembered *The War of the Ghosts* badly. They remembered it systematically: the story moved toward English story grammar, toward naturalistic causation, toward shorter and more coherent narratives. The transformation was not random. It was shaped by the cognitive architecture the students brought to their reconstruction. The story that emerged from many reconstructions was not the original. It was the version that the students' shared cognitive architecture most naturally produced from the alien input it received.

Dan Sperber has spent four decades showing that this is how culture works at every level. Representations are not copied from mind to mind but reconstructed by each mind according to its cognitive architecture. The systematic biases of that reconstruction produce cultural attractors: the stable points in the space of possible representations toward which the population's shared cognitive architecture converges regardless of the specific variant it receives. Communication is not encoding and decoding but the production and interpretation of ostensive acts that trigger the hearer's closure to reconstruct the most relevant representation that could have motivated the act. Culture is the statistical distribution that results from a population of cognitive closures all reconstructing from a shared attractor landscape.

The closure framework names the structural logic underlying all of these dynamics. Every passage of a representation through a mind is a passage through a cognitive closure that constitutes a new version of the representation according to its organizational structure. The transformation reflects the closure's organization: the attractor is where the shared organizational structure converges. Relevance is the closure's optimization criterion: the interpretation that most efficiently updates the closure's constituted world. And cultural stability through convergent transformation is the population dynamics of shared closures with similar organizational structure all reconstructing toward the same regions of representation space.

Culture is not a set of representations faithfully transmitted across generations. It is the ongoing product of a population of cognitive closures, each reconstructing what it receives according to its organizational structure, all converging toward the attractor points their shared architecture defines. The grammar of culture is the grammar of what a population of finite closures can stably contain: not what is copied but what is constituted, again and again, from the same shared cognitive ground.

References

- Sperber, D. (1985). Anthropology and psychology: towards an epidemiology of representations. *Man*, 20(1), 73-89.
- Sperber, D. (1996). *Explaining Culture: A Naturalistic Approach*. Blackwell.
- Sperber, D., and Wilson, D. (1986). *Relevance: Communication and Cognition*. Harvard University Press. (Second edition, 1995.)
- Sperber, D. (2000). An objection to the memetic approach to culture. In R. Aunger (Ed.), *Darwinizing Culture*. Oxford University Press.
- Claidière, N., and Sperber, D. (2007). The role of attraction in cultural evolution. *Journal of Cognition and Culture*, 7(1-2), 89-111.
- Bartlett, F. C. (1932). *Remembering: A Study in Experimental and Social Psychology*. Cambridge University Press.
- Dietz, C. F. (2026a). *Consciousness, Closure, and the Cosmos*. v3.3.
- Dietz, C. F. (2026b). *The Grammar of Knowing: What Conscious Knowers Actually Have*.
- Dietz, C. F. (2026d). *Semantic Remainder: The Language Uncertainty Principle as a Closure Theorem*.
- Dietz, C. F. (2026n). *The Grammar of Language: Boroditsky's Cross-Cultural Cognition and the Closure Framework*.
- Dietz, C. F. (2026m). *The Grammar of Inheritance: Jablonka's Four Dimensions and the Closure Framework*.

Dietz, C. F. (2026s). The Grammar of Inquiry: Longino's Critical Contextual Empiricism and the Closure Framework.

Dawkins, R. (1976). The Selfish Gene. Oxford University Press.

Grice, H. P. (1975). Logic and conversation. In P. Cole and J. Morgan (Eds.), Syntax and Semantics, Vol. 3. Academic Press.

Author's Note

*This paper is the twentieth and final paper in a series engaging thinkers whose work converges with the closure framework developed in *Consciousness, Closure, and the Cosmos*. Dan Sperber is Emeritus Professor at Central European University and researcher at the Institut Nicod in Paris. He is a Corresponding Fellow of the British Academy and recipient of the Rivers Memorial Medal of the Royal Anthropological Institute and the Silver Medal of the CNRS. His epidemiology of representations and relevance theory are among the most influential frameworks in cognitive anthropology and linguistic pragmatics, with more than 100,000 citations to his work. This paper is the last in the series and occupies a distinctive closing position: it is the paper that addresses what happens when many cognitive closures interact in a population across time. Every other paper in the series has addressed individual closures, or communities of inquiry, or the history of individual closures improving through iteration. Sperber addresses the emergent dynamics of cultural populations: what a population of closures with shared cognitive architecture can stably contain, why cultural stability does not require faithful copying, and how communication works when it is reconstruction all the way through. The connection to Boroditsky provides the bridge between individual cognitive closure and cultural population dynamics. The connection to Jablonka places Sperber's cultural dynamics within the evolutionary account of the four inheritance systems. And the connection to Longino places the epistemological account of knowledge communities alongside the anthropological account of cultural populations: both are populations of closures organized by shared structure, and both achieve stability through the convergence of individual reconstructions toward shared attractors. With Sperber, the series has traced the grammar of closure from the chemical origin of biological organization through the evolution of consciousness, the structure of individual cognition, the organization of scientific communities, and the population dynamics of human culture. The foundation is never indubitable. The iteration continues. The grammar generates its world, and the world presses back. The author welcomes engagement from Sperber directly and from cognitive anthropologists, evolutionary psychologists, pragmaticists, and philosophers of culture who find the convergence between the epidemiology of representations and the closure framework either illuminating or contestable.*