

The Way We Imagine¹

In Ilona Roth, editor. 2007. *Imaginative Minds*. London: British Academy & Oxford University Press.

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Abstract

Conceptual integration is a basic mental operation, in which input conceptual arrays are 'blended' to produce compressed, memorable conceptual packets, congenial to human thought, often with emergent structure not available from the input conceptual arrays. The highest form of conceptual integration is "double-scope" integration. Double-scope integration is the hallmark of the distinctively human imagination. A double-scope integration network has input conceptual arrays with different, often clashing, organizing frames and an organizing frame for the blend that includes parts of each of those organizing frames and emergent structure of its own. In such networks, both organizing frames make central contributions to the blend, and their sharp differences offer the possibility of rich clashes. Far from blocking the construction of the network, such clashes offer conceptual challenges. The resulting blends can turn out to be highly imaginative. Fifty thousand years ago, more or less, during the Upper Paleolithic, unmistakable archeological evidence began to accumulate of a remarkable set of human singularities: art, science, religion, refined tool use, advanced music and dance, fashions of dress, language, and mathematics. Human beings began to demonstrate an unprecedented ability to be imaginative in whatever they encountered. Cognitively modern human beings throughout the world since that time have demonstrated this remarkable ability, as a routine part of what it means to be human.

In *The Way We Think*, Gilles Fauconnier and I proposed that this change happened in the following way (Fauconnier and Turner 2002). The basic mental operation of conceptual integration, also known as 'blending', has been present and evolving in various species for a long time. Modern human beings evolved not an entirely different kind of mind, but instead the capacity for the strongest form of conceptual integration, known as 'double-scope' blending. It is the engine of the human imagination.

Blending and the Human Mind

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¹ This chapter draws on Turner, M. 2004: 'The Origin of Selkies', *Journal of Consciousness Studies*, 11(5-6), 90-115.

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What is blending and why is it so important? (Technical introductions to the nature and mechanisms of blending can be found in Fauconnier 1997; Fauconnier and Turner 1998, 2002; Turner 2001, 2003. See also Goguen 1999.) Let us begin with an example. A man is participating in a wedding. He is consciously enacting a familiar mental story, with roles, participants, a plot and a goal. But while he is fulfilling his role in the wedding story, he is remembering a different story, which took place a month before off the Cycladic island of Despotico, where he and his girlfriend, who is not present at the wedding, went diving in the hopes of retrieving sunken archeological treasures from the newly discovered Temple of Apollo and Artemis. Why, cognitively, should he be able mentally to activate and interleave these two stories? There are rich possibilities for confusion, but in all the central ways, he remains unconfused. He does not mistake the bride for his girlfriend, for the treasure, for the fish, for the temple, or even for Artemis. He does not swim down the aisle or speak as if through a snorkel.

Human beings go beyond merely imagining stories or concepts that run counter to the present environment. We can also connect them and blend them to make a third mental array. The man at the wedding can make analogical connections between his girlfriend and the bride and between himself and the groom, and blend these counterparts into a daydream in which it is he and his girlfriend who are being married at this particular ceremony. This blended story is manifestly false, and he should not make the mistake, as he obediently discharges his duties at the real wedding, of thinking that he is in the process of marrying his girlfriend. But he can realize that he likes the blended story, and so formulate a plan of action to make it real. Or, in the blended story, when the bride is invited to say ‘I do’, she might say, ‘I would never marry you!’ Her response might reveal to him a truth he had sensed intuitively but not recognized.

Double-scope blending

The most imaginative blending networks are double-scope networks. In a double scope network, the two inputs have different (and often clashing) organizing frames, and the blend has an organizing frame that receives projections from each of those organizing frames. The blend also has emergent structure of its own that cannot be found in any of the inputs. Sharp differences between the organizing frames of the inputs offer the possibility of rich clashes. Far from blocking the construction of the network, such clashes offer challenges to the imagination. The resulting blends can turn out to be highly imaginative.

The imagination is not arbitrary or accidental. It has elaborate constitutive principles and governing principles (Fauconnier and Turner 2002). It cannot be explained as the sparks of crossed wires, the mere loss of separation between supposedly modular capacities. It is much too systematic for such an explanation to be plausible. In addition, imaginative blending operates with as much systematicity within individual conceptual domains as it does across domains.

The ability for highly imaginative double-scope blending seems to be available to children very early. For example, in Crockett Johnson's (1983) *Harold and the Purple Crayon*, written for 3-year-olds, Harold uses his purple crayon to draw, and whatever he draws is real, although the result is clearly a child's sketch.

His world is a blend of spatial reality and its representation. In the blend, the representation is fused with what it represents. When Harold wants light to go for a walk, he draws the moon, and so he has moonlight. The moon stays with him as he moves. This blend has two inputs. One input has elements of the real spatial world as we experience it and perceive it. One of those elements is the moon. The other input to the blend has conventional knowledge about drawing. In the input with the real moon, the moon cannot be created by drawing and it does not come into existence at someone's will. In the input with drawing, a drawn moon cannot emit moonlight or float along in the sky as the artist's companion. But in the blend, there is a special blended moon with special emergent properties.

The mechanisms of blending that give us this special blended moon work generally throughout *Harold and the Purple Crayon*. When he needs to walk, he draws a path, and then sets off on his walk. When Harold wants to return home, he draws a window around the moon, positioning the moon where it would appear in his window if he were in his bedroom, and so he is automatically in fact in his bedroom and can go to sleep (Figure 8.1).

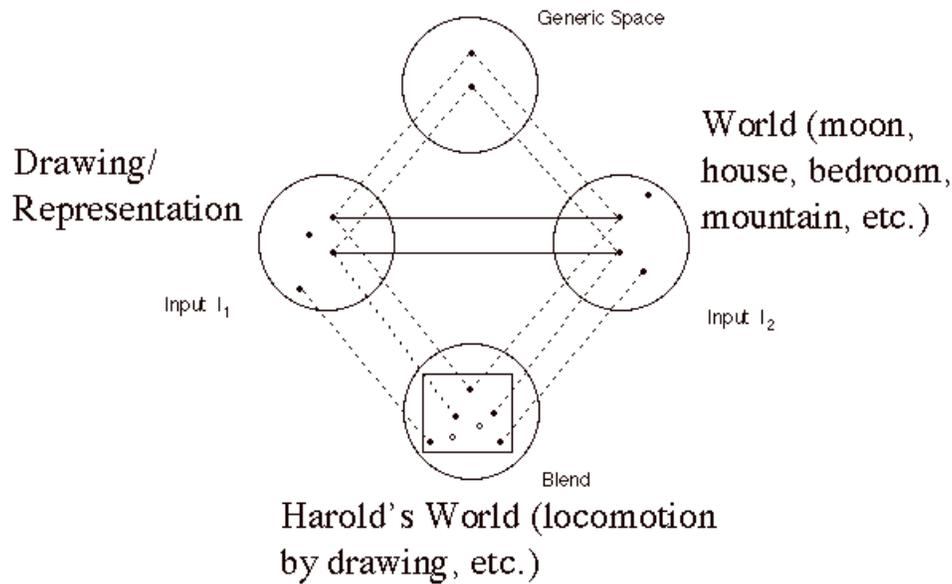


Figure 8.1: Blending network for *Harold and the Purple Crayon*

Child Harold's blended world has new kinds of causality and event shape that are unavailable from either the domain of drawing or the domain of spatial living. Blends of this sort are found widely throughout art and literature.

Double-scope Blending and Attributions of Mind

Imaginative double-scope blending is equally the mainstay of everyday thought and understanding. Consider, as an example of routine blending, our perception of a seal. The eyes of a seal are remarkably like the eyes of a human being. When we see a seal at the seashore, it is impossible to resist the conclusion that we and the seal share a category. Compelling and evident analogies leap out at us, between the seal's appearance and ours, between the seal's motion and ours. Our human eyes align toward an object as our limbs propel our bodies toward it, and it seems to be no different for the seal.

We immediately forge a mental blend of ourselves and the seal. The result is a conception of a seal that has not only all of the seal's appearance and motion but additionally a feature we know only of ourselves—the possession of a mind (Figure 8.2).

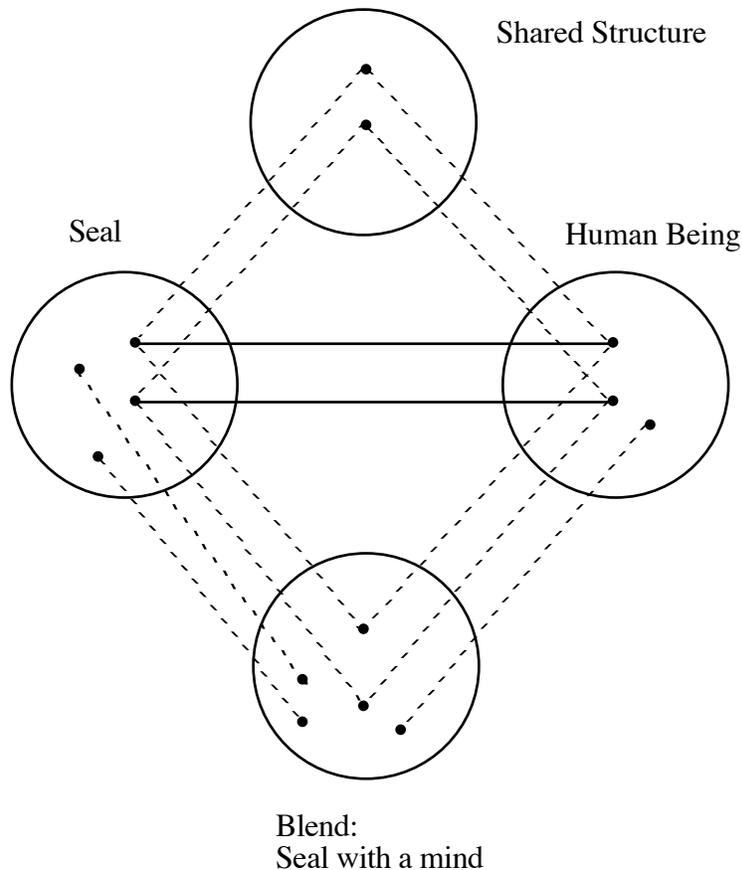


Figure 8.2: Blending network for Seal with a Mind

In the mental blend, we conceive of a seal as having a mind something like ours, lying behind its appearance and motion. In the mental blend, the seal's eyes are not merely open, round, clear, and active, but also alert, intelligent, inquisitive, and perceptive. It *inspects* us with wide-eyed, penetrating *attention*. It *intends* to *pursue* an object. It has perception, appetite, and memory. We believe in this blend completely, long before we have any refined scientific evidence for it.

This is the sort of blend we assemble unconsciously, from early childhood, for any other human being. In the standard blend that we use for conceiving of another human being, the human being has not only all the organismic appearance and movement that we routinely perceive when we pay attention to the person, but also something we project to it of ourselves—the possession of a mind. It has perception, sensation, and intention behind its appearance and movements, just as we have perception, sensation, and intention behind ours. In the blend, the person whom we watch has mental states that accord with what we see.

We are adept at varying the conceptual structure that we project to the blend. When we perceive that someone is in a situation or condition that is not identical to ours, we can project their situation or condition to the blend, giving their perspective to the blend, with consequences for the thoughts we imagine them to have. When we see that someone's

behaviour is unlike our own even in identical conditions, we adjust the projection to the blend accordingly.

The projection of mind to the seal automatically gives the seal some viewpoint, but we can vary the specific details. We can choose specific details that belong to the conditions of the seal. Alternatively, we can mix in elements that belong to our own condition. At the one extreme, the seal has a viewpoint very different from ours in both location and disposition, and we apprehend the blended seal-with-a-mind from a distance, as a strange and foreign species. At the other extreme, the blend can be given our own first-person viewpoint, and we can see, in the blend, through the seal's eyes. (Try it: in imagination, be the seal looking at you, the human being, watching the seal from the seashore. Do you suddenly feel a little wet? Do you feel yourself trying to keep yourself afloat?) The nature of the mind possessed by the seal in the blend can also be varied: we can imagine what it is like to be a seal with seal-like abilities and preferences, or we can imagine what it is like to be something like us clothed in seal form. Such blending apparently outstrips by a vast distance anything a non-human species can perform.

Children routinely perform such acts of blending in conceiving of other human beings, and perhaps equally routinely in conceiving of animals, with the result that talking animals are the mainstay of the human nursery. Other species show no disposition to make dolls of other species and then attribute to them their own vocalizations, but the creative projection done by the human child can easily produce a seal who talks, who makes friends with us, who invites us to come swimming for his birthday party, and who winks at us collusively as we engage in adventures.

These are again 'double scope' blending networks, with inputs to the blend that have different (and often clashing) organizing frames and an organizing frame for the blend that includes parts of each of those organizing frames and has emergent structure of its own. *The Way We Think* presents the details of double scope blending in examples drawn from mathematics, science, grammar, counterfactual reasoning, causal reasoning, humour, the construction of identity, category extension, artefacts, and so.

In all such cases, there is emergent structure in the blend. In the case of the talking seal, the creature in the blend has specific properties that belong to neither the human being nor the seal, that is, to neither of the two mental concepts that feed the blend. Consider the speech of the talking seal. It might have a sound system for its language that includes barks and growls, and a grammar bizarre for a human being. No human being has such speech, and of course no seal has speech at all, but the talking seal has just this emergent style of speech.

It is an open cognitive scientific question how the modern human being, from infant to adult, activates these conceptions of other minds, and how these blended conceptions differ. One of the most important variations is whether the blend has a counterpart in our conception of our reality. The seal that we see at the beach has an immediate counterpart in our notion of our reality, while Donald Duck does not. We are not deluded, and the difference is strong.

Similarly, there is the question of how the human mind evolved so as to be able to make immediate recognition of other minds. Consider a range of hypotheses:

- Possibility 1: Human beings have ‘Swiss Army Knife’ minds, whose different capacities are like different tools, unrelated in their mechanisms and evolution, and operating separately but with some coordination in the brain. On this view, a separate module evolved to recognize other human beings as having minds, and that module has no particular computational relation to any other.
- Possibility 2: Human beings have the operation of double-scope blending, and put the notion of another mind together from scratch through blending every time they encounter a person or invent an imaginary being.

These are surely straw-man possibilities. Possibility 1 seems implausible because human beings do double-scope blending across many different and perhaps all conceptual domains, and do it for non-human beings. Possibility 2 seems implausible because it offers no place for efficiency and entrenchment. But there are two plausible possibilities:

- Possibility 3: People have double-scope blending that can achieve attributions of mind for non-human beings, but extremely early in life put together blending templates that serve them thereafter for dealing with people. These templates are quickly entrenched, and people ‘live in the blend’, never aware of the work that went into the template, but able to open it back up actively and on-line when they want to do new work. We never need to construct these templates afresh again. Instead, we activate the blend directly, just like that. This possibility allows for adjustment, so that the newborn who regards the voice-activated mobile as an intentional agent could refine its reactions later.
- Possibility 4: Genetic assimilation has picked up some of the work of double-scope blending in the case of human beings, so that human beings now have a head start in achieving the blending templates for other minds.

Possibilities 3 and 4 could combine: double-scope blending is responsible for our evolution of concepts of robust other minds and accordingly for our outstanding abilities for social cognition. Indeed, the adaptiveness of social cognition contributes to the much greater overall adaptiveness of double-scope blending. Modern human beings continue to do active double-scope blending with robust on-line construction when we assemble imaginary beings such as intelligent robots or a river that rises up in a Japanese animated film to express, in exotic ways, its pain at being polluted. But the basic human reaction to another human being does not need to be assembled from scratch.

Imaginative Blends: the Selkie

Let us consider a remarkable blend that has no counterpart in our conception of reality: a blend of *seal* and *human being*. This is the concept of a *selkie*. Selkies have new properties. In the folklore of the Orkney Islands, they are shape-shifting beings. When in seal form, a selkie can shed its coat to become a human being, or rather, something deceptively like a human being. When in human form, it can converse and mate with a human being. Selkies shed their coats in the moonlight and dance on the level shore. A prudent selkie hides its coat carefully before cavorting. Here we see a case where the emergent meaning in the blend includes not new properties for a seal but in fact a new species that falls into the category of neither human being nor seal.

In the selective projection to the blend, the selkie when out of its coat has the anatomical parts and proportions of a human being but the sleek and lithe movements of the seal. Accordingly, when out of their coats, selkies are sexually irresistible to human beings. In the Orkney legends, a man sometimes steals the coat of a female selkie to compel her to agree to marry him if she ever wants to regain her coat.

But male selkies also shed their coats and slip into villages to mate with deliriously grateful women. Selkies have a relation to their coats that is a blend of a seal's relation to its skin and a human being's relation to clothes. Selkies take off their clothes to have fun, and are vulnerable when thus 'naked'.

Blends of Blends

It is common in art to work with many blends, and to make blends of blends. A particularly elaborate development of the selkie legend is offered in a well-known modern tale for older children titled 'Aunt Charlotte and the NGA Portraits' (Turner, M. W., 1995).¹ NGA is the acronym for 'National Gallery of Art', the one in Washington, DC. It sits next to the Capitol Building on the National Mall.

'Aunt Charlotte and the NGA Portraits' presents a character named Olga Weathers. Halfway into the story, the reader discovers that Olga is a selkie lacking her coat. The word 'selkie' never occurs in the story, and no prior knowledge of selkies is required to understand the story.

Olga has the mental character of a woman but, understandably, no native taste for the human world. She would prefer a life of swimming in the water. Wearing her coat, she would have something like the body of a seal, naturally. But not quite, since her coat can be removed, and when it is, she becomes a woman. But not quite, since, when she is a woman, she retains her knowledge of the sea and retains, too, the remarkable instinctive capabilities of a marine mammal.

Olga Weathers has features possessed by no seal. Neither seal nor woman can lose its skin or assume the skin of another species. Neither seal nor woman can be transformed into a member of another species. And it is not only Olga who is different in the world of this story. A real man in our world cannot obtain a wife by stealing the skin of a seal, but in the story, a man can try to get a wife by stealing the coat of a female selkie.

These things are possible in Olga's world. She switches from species to species according to whether she is wearing her coat. She is never either woman or seal, but always something different, and this difference counts in the story as her 'magic'. A mean man, it turns out, did steal her coat. He hoped she would marry him in order to regain it but she refused to marry him, because she knew he would have kept her coat forever, and she would never have been free. He thought she was helpless and had no choice, but she was not powerless, and she had a few friends who helped her make a home on Ocracoke, a seaside town in North Carolina, where she earned her living by helping the fishermen. Olga can tell where the fish are, and she can foretell the weather, and she has a sense for the conditions of the sea. The fishermen therefore pay her for advice. In Olga's World, it seems, boats have an intentional nature, too, or at least, they can hear a selkie, and they

are happy to comply with her requests. She can call the boats home when they are lost. As luck would have it, the man who stole her coat was injured while hunting narwhals. The wound turned septic and he died without telling her where he had hidden her coat. So there is Olga, beached on Ocracoke.

In the blending network that produces this selkie, the shape and movement that are projected from the human being input and from the seal input to Olga do not make her lithe and frisky. On the contrary, her body is massive, like a seal's, and she has relative difficulty moving on land, as a seal might. She is hefty. Her long hair combs out in perfect waves. She is herself a kind of undulation whenever she passes over the sand.

Olga's world, inhabited by selkies, is brushed to that extent by the magic of shape-shifting, the magic of moving from one category to another, of blending incompatible elements such as woman and seal to make not just a mental blend but elements in the world to which the blend refers.

Picture Worlds

There is another magic pattern of blending in Olga's world, and this additional magic is also based on a very familiar pattern of blending, one that concerns our everyday, entirely pedestrian concept of representation. Human beings effortlessly understand the concept of 'representation'. As a matter of straightforward practice, we routinely put something and its representation into mental correspondence. The representational element is understood as 'representing' a world or a scene or an element in a scene (Figure 8.3).

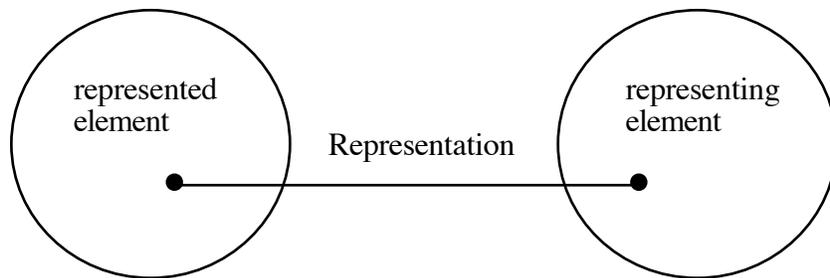


Figure 8.3: A Representation Vital Relation connecting elements in different inputs

It is extremely common for us to blend these two related spaces and in so doing to compress the 'outer-space' relation of *representation* between them into a unique object in the blend, as in Figure 8.4.

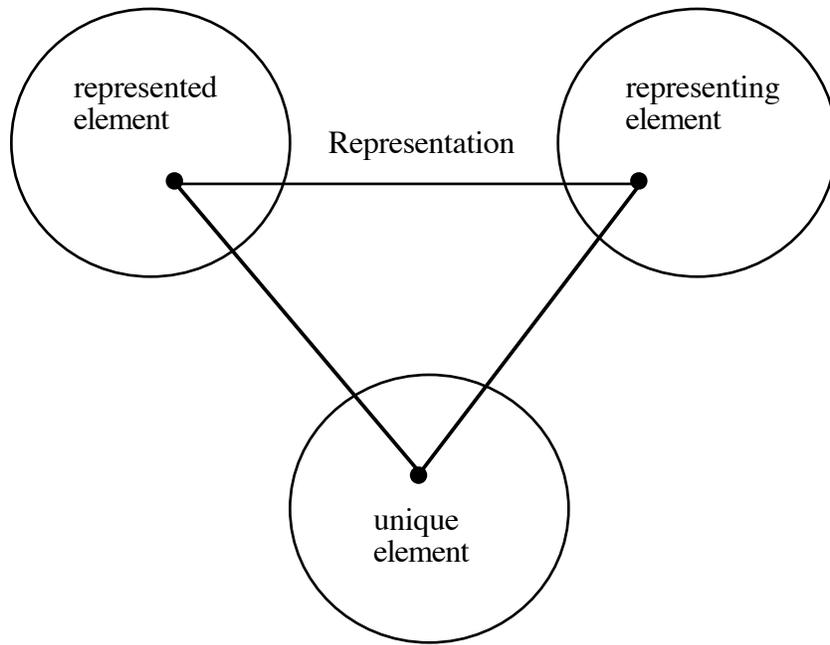


Figure 8.4: Blend of represented element and representing element

For example, a person and a photograph are two quite different things, but we can blend the photographic element and the person. In the blend, the person is fused with the photographic element. We point at the picture and say, ‘This is John’. Of course, we are not deluded in the least: we know that, in the contributing space with the person, John is three-dimensional and moves. We know that the photograph is two-dimensional and does not move. But the conceptual blend in which the representation of John is fused with John is extremely useful. Most blends of this sort, but not all, have outer-space connections not only of representation but also of analogy between the representation and the element represented. That is, the visual image that is the representation of John is visually and topologically analogous to John himself: there are two images of eyes in the representation and two eyes in John's head; the two images of eyes in the representation are above the image of the nose in the representation just as the John's actual two eyes are above John's actual nose; and so on (Figure 8.5).

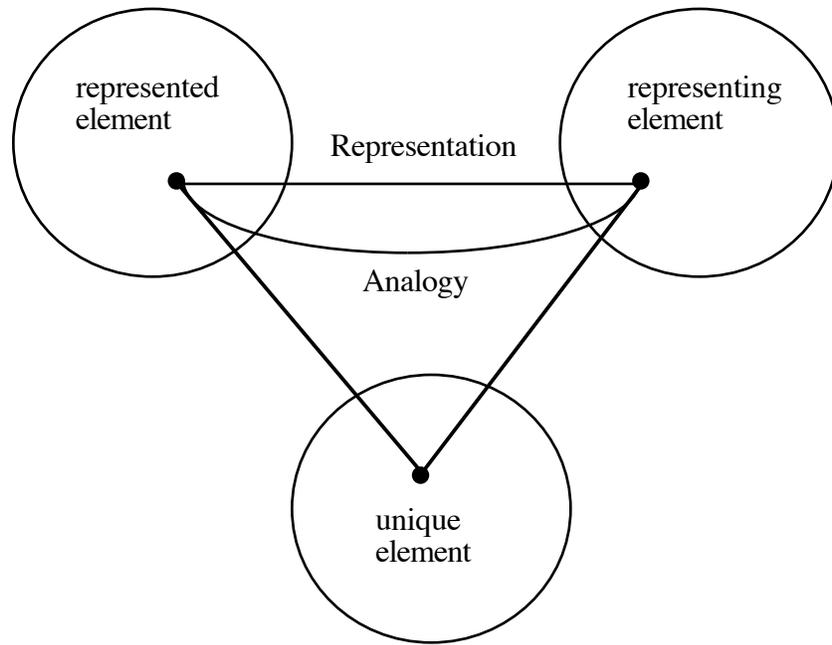


Figure 8.5: Blend of represented element and representing element, with an additional Analogy Vital Relation

This is, of course, just the kind of blending network we saw in *Harold and the Purple Crayon*.

In addition to the contributing mental space that contains the representation and the other contributing mental space that contains what is represented, there is yet another contributing mental space that can be brought into this common ‘compression of representation’ network. A window, or a gap in the curtains or the fence, or a portal of any sort gives us a view. When we catch only a punctual view through a portal, we get a framed glimpse. Many vital conceptual relations create a connection between a framed representation and a framed glimpse. For example, a photograph of a person and a framed glimpse of the same person are strongly analogous not only in the content of what is viewed but also in the fact that there is a viewer of that content. It seems to be conventional to blend the photograph of a person with a framed glimpse of the person, so that, in the blend, the representation of the person is the person while the entire representation is a framed glimpse of the part of the visual field the photograph represents, including the person. (So if you show someone a mug shot against a wall, and ask ‘what’s to the left?’, the answer is likely to be ‘more of the wall’, and if you ask, ‘what’s below?’, the answer is likely to be ‘the rest of the person’, even though the picture does not contain these elements. They are projected instead from our conception of the image as a framed glimpse.) We often say not only that the photograph gives us a ‘glimpse’ but also that a true visual glimpse is a ‘snapshot’.

We project much of what we know about a framed glimpse to the blended space in which the representation is fused with what it represents. Principally, we know that what we see in a framed glimpse is only part of a world that has spatial and temporal extent not

directly represented in the framed glimpse. The ability to conceive of a framed glimpse as part of a larger spatial and temporal world may be common across all mammals that have vision, and this tendency to take a limited percept as implying a larger context may extend across all sensory modalities. For example, if we feel something small in the dark, we take it immediately to be part of a larger spatial and temporal world. Human beings, and perhaps dogs and dolphins, are very adept at conceiving of rich dynamic scenes with full spatial and temporal continuity on the basis of very partial perceptions.

When we blend a framed representation such as a photograph with our concept of a framed glimpse, the photograph thereby becomes a spatially and temporally limited part of a rich dynamic world with temporal and spatial continuities and changes that are not directly represented. Our conception of the conditions of photography leads us to project to the blend many elements from the represented scene that have no visible counterpart in the representation itself. If we see a photograph of the middle of a bridge, we routinely and naturally conceive of the bridge as extending beyond the frame. We conceive of the person on the bridge as obscuring elements behind her.

But of course we can do just the same thing with a painting or a sketch. We project to the blend elements that correspond to our understanding of the reality of a framed glimpse even though there is no visible counterpart of them in the representation itself, and we do this even when we know that the representation is fictitious. In the blend, the painted woman on the painted bridge is obscuring something from our view even if the painter invented both her and the bridge.

In the case of Olga, the blend that derives from all three contributing spaces—that is, the representation, what it represents, and a framed glimpse of what it represents—is reified: this blend is ‘true’ in her world, in the following way. Olga’s world has paintings, in fact the same paintings that exist in our world. But in Olga’s world, those paintings actually are rich dynamic worlds of their own, and the few elite viewers in the world who in fact see properly, that is, with intelligence and open-minded insight, can indeed see the dynamic painted worlds that the paintings present. When they look at paintings, the people move, the sea rolls, the wind blows, vehicles enter and depart from the scene.

This emergent structure in the blend—rich, dynamic worlds inside the paintings—comes in part from projection of what we know about a glimpse through a window or portal. We know that if we prolong the glimpse to a stare, we might, looking through the portal, see change, dynamism, movement. Just so, in Olga’s world, if you are talented and trained and you stare at the painting, you might see change, dynamism, movement. Why do you see it? In Olga’s world, the answer is straightforward: because it is *there*.

Olga, of course, is one of those who see properly. When she looks at a painting, or at least a certain painting, she can see the people in it move, breathe, and act, because in the blend they in fact do, and in Olga’s world, the blend is real. In the reified mental array that blends the painting, what it represents, and a prolonged view of what it represents, the representation of a person is not merely a person but indeed a person who has received very full projections from our notion of staring through a window at a world: the blended painted person can move, converse, think, plan, become hungry, eat, and so on. Yet the projections from the space of the person are not complete: in this blend, these

painted people do not age. With a few exceptions, they are unaware of anything outside the world of the particular painting they inhabit.

Into and Out of the Frame

We are all familiar with a basic ‘Picture World’ blending template. We use this template routinely. In it, there is a further set of correspondences between the representation and what it represents, as follows. Suppose that in our real world we have a bridge over a canal. Well, something can literally be part of that scene. If the physics works out right, that thing can literally be put into the scene or removed from the scene. For example, we can row a real gondola into the real scene. Over in the representation, that is, the picture, there can be individual representations that can be created there; they can be erased or otherwise made invisible. So, for example, the painter can do something with paint and a paintbrush that results in the existence of a representation of a gondola as part of the represented scene. There is an outer-space correspondence, that is, a correspondence between two of the contributing spaces, that connects two acts: putting something into a real scene, and taking some action that results in a new element in a representation. This correspondence connects two caused changes and their visible results. That outer-space correspondence can be compressed in our routine ‘Picture World’ blending template to yield, in the blend, a blended causality. The blend fuses these two caused changes, so that the performing of actions that result in a representational element in the representation is fused with ‘putting’ what it represents ‘into’ the ‘scene’. We say, ‘the painter put a gondola into the painting’. Of course, we are not at all deluded: while a gondola must exist before it can be rowed into the Grand Canal, the exact flat composition of paint that represents the boat in the representation does not in fact exist as such to be ‘put’ into the picture until the artist is quite finished taking the artistic action. We use such expressions all the time, as when we say that the artist ‘put some flowers into the sketch’ but then ‘took them out’, or ‘Hey! You forgot to put Grandma into your sketch’. The blend that fuses the representation with what it represents gives a very natural way to think and speak about representations at human scale. It lets us recruit for the purpose of talking about representations and their creation the deeply understood logic of manipulating objects. So our notion of the creation of a representation already has some structure that can be projected to the blend to support the idea of ‘putting’ an element ‘into’ the representation. This blend has some remarkable emergent structure: we can for example ‘put’ a ‘mountain’ into the picture. Indeed, we can ‘put’ ‘the moon’ or ‘the sun’ into the picture, even though in the real world we cannot perform the corresponding action.

There is yet further useful structure in what we know of looking through a portal onto a scene. One of the things we know about a window or portal on a real scene is that we can throw things through it or go through it ourselves, and then be part of what we previously only saw. We can project to the blend this action of ‘entrance’, to give, in the blend, the possibility of moving something from our world into the picture world.

Olga’s world reifies the ‘Picture World’ blend and additionally provides the possibility of moving an object from our world into the picture world. The man who stole Olga’s coat as a means of compelling her to marry him hid it not under a rock or up a tree or in any other normal locale in our world, but instead inside a painting, of Venice, by Canaletto. Within the logic of Olga’s world, he literally ‘hid’ it ‘in’ Canaletto’s painting. The coat is

there, in the painting, in the exact sense that it was here, outside the picture, where any actual coat ought to be, but he moved it from here to there, and now it is there and not here. Olga's coat, in accordance with the physics of our world, can be in only one location. But in the hyper-blend that comes of blending Olga's Selkie World network and her Picture World network, this location can literally be inside a painting, and there is a means of moving things from locations outside the painting to locations inside the painting.

Olga's ignorance of the fact that her suitor hid her coat in the Canaletto painting presented her with a difficulty, but she overcame it, partly by studying art history to help her locate its hiding place. When she has located the painting, she faces a far greater challenge. As the suitor-thief had anticipated, it is not so easy for the land-bound selkie to take the coat out of the painting. To get to it, you must first physically enter the painting. But Olga cannot do that; she is too stout to squeeze through the frame. More daunting still, there is nothing but water across the bottom of the frame. Olga, massive and cumbersome, would fall into the water, and, unable to swim in her present unfortunate form, would drown. It is extremely witty to manipulate a selkie through fear of drowning.

Olga's world is a blend of two blending networks. One is the blend in which there are selkies, Selkie World. The other is a Picture World blend in which representation is compressed: in this Picture World network, the outer-space representation link between two separate mental inputs is compressed into uniqueness in the blend, so that the representation and what it represents are fused there into a single element. In this Picture World blend, the painting of the water really is water, for example, even as it is part of the painting. The Picture World blending network in Olga's World has, as mentioned, yet another input to the blend: the concept of a portal, such as a window, on a real scene. Projecting *portal* to the Picture World blend results in a Picture World that is much fuller than our view of it, a Picture World into which we can insert elements from the external world, such as a coat.

In the blend of blends that comes from blending these two blending networks, there is a selkie, and her coat can be hidden inside a painting (Figure 8.6). In Olga's world, although the separate Picture Worlds that correspond to individual pictures are rich, they do not possess anything like the completeness of our world. Someone who enters this world from the outside finds that the world inside the Picture World fades out. If you are in the Canaletto Picture World, and you walk through the marketplace to where the side streets lead deeper into the city, and you open yet one more door, you are then confronted with 'impenetrable grey mist'. There is not anything there, you see. As a character in the story says, 'It's a painting. It only goes so far.' There are other ways in which the Picture World in Olga's world is unlike our world, some of them influenced by projections from the representation input. For example, one can enter the Canaletto Picture World, and take a chicken away from its marketplace and dine on it. But when you go back, the chicken is still there. 'It's a painting', the story explains. 'When you go back, everything will be just exactly as it was before you came.'

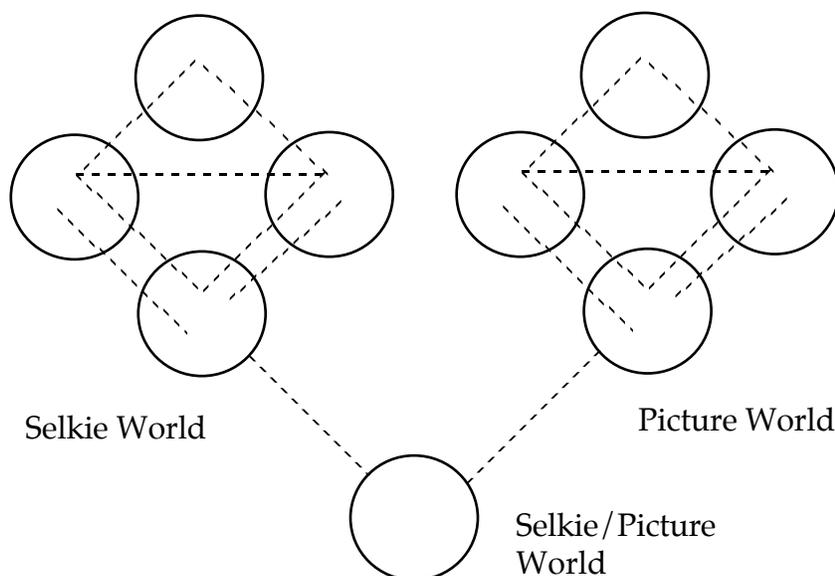


Figure 8.6: Blend of Selkie World and Picture World

Well, not exactly. Olga recruits a young girl to help her. This girl, Charlotte, is a talented but solitary child, adept at solving puzzles. She is visiting Ocracoke in November with her adequate but bored mother and adequate but distracted father. Through Olga's tacit coaching, Charlotte learns to see the people moving in the Canaletto painting. It is not clear to the reader that even a talented and motivated human child could perceive the Picture World of Canaletto's painting of Venice without both Olga's training and influence: Charlotte encounters the painting in Olga's home, which is perhaps a magical place itself. Olga sings, puts her arm around Charlotte, and unpins her own long hair so its smooth waves brush across Charlotte's bare arm. Charlotte sees, and a few minutes later goes through the frame to retrieve the coat. Charlotte is much smaller than Olga, and she can swim very well.

In general, 'Picture World' is a generic double-scope conceptual integration network which we have at our mental disposal to apply to any picture. It guides the mental act of blending and offers options. It does not dictate all the details of the particular picture world. For example, some picture worlds can be entered by outsiders, others cannot. In some picture worlds, a visitor from outside the picture can be perceived by those who inhabit the picture, but in other cases, the visitor is invisible to the natives.

In Olga's world, the picture worlds can be entered, at least by those who have the knack to see that they are picture worlds. Insight brings new possibilities, a central theme of this story. In Olga's world, the usual blend of understanding and seeing that we all know and deploy ('I see what you are saying') undergoes remarkable conceptual development. Charlotte must work on her literal ability to see. She must strive to attain advanced vision. As she looks at the painting, its elements and their movement become clearer and clearer. Seeing better, she understands deeply. She already had, as Olga knew, talent in

that direction: solitary and friendless Charlotte spent her time on jigsaw puzzles, looking at each piece, seeing its significance, perceiving its place. After their first meeting, Olga and Charlotte worked together on jigsaw puzzles, and Charlotte improved. The idea that Olga might have superior perceptual abilities is naturally projected to her from our knowledge of a seal: we are familiar with the idea that many animals have perceptual abilities we lack—the ability to hear sounds we cannot hear, to see patterns we cannot. Olga explains to Charlotte why she attends to people: ‘I like to piece together their actions in order to understand their thoughts.’ Charlotte has honed the identical knack through inspecting her mother and father. She turns it on Olga, too, and figures her out. She sees. She looks at the Canaletto painting, and she sees.

Charlotte hooks her foot on the frame, which turns out to be as solid as a rock banister (because it is a rock banister), and throws herself over the banister through the frame into the Grand Canal. Most of the rest of the story presents the adventures of the real girl, Charlotte, inside the Picture World that happens to contain the hidden coat of a selkie.

Double-scope Blending and Everyday Language

All of these networks rely on an important power of blending, to compress outer-space relations to inner-space elements in blends. It is a useful virtue of compression that it can result in human-scale elements in the blend that can then be expressed through existing basic human-scale grammatical constructions. While a full integration network, with its network of outer-space relations, might be quite difficult to express without using language that is extensive, discursive, or periphrastic, compression can save the day. The compressed human-scale mental array in the blend can often fit into available grammatical forms. For example, ‘Mom could make us work’ seems entirely prosaic. But the workaday grammar underlying that sentence is readily available for a wonderful blend that is compressed in the right way: ‘Honey, you could make a blind man see’. Here is an example that involves a cascade of blending compressions, but that can be fit into everyday grammatical constructions because the blending compressions result in a conceptual array that suits the grammar:

A halloween costume that limits sight or movement is an accident lurking in disguise.
—National Public Radio warning a few days before Halloween, October 2000.

Let us consider one of these examples in some detail. It is an advertisement broadcast on the radio a few days before a three-day holiday weekend:

At South Shore Lumber, get no sales tax Friday, Saturday, Sunday, and Monday!

In one mental space, there is a person buying something at South Shore Lumber during Friday, Saturday, Sunday, or Monday. The buyer pays a price. In another mental space that is highly analogous but somewhat disanalogous to the first, the buyer pays the price and an additional amount, namely, sales tax on the price. In the blend, the buyer pays the price. But the blend now contains an element that is available in neither of the inputs; it is a compression of the outer-space disanalogy between the two spaces. That new imaginative element in the blend is an event, a transitive event in which what is transferred to the buyer has a certain property, namely, the property of being the absence

of something that is in one of the inputs. The buyer receives both what he buys and something extra, the absence of sales tax. This conceptual structure is very compressed and familiar, and can be expressed in an existing common grammatical construction, a transitive verb phrase whose noun phrase has a quantifier in the determiner sequence: 'get no sales tax'. One customer 'gets a screwdriver'; another 'gets a sheet of plywood'; and they both 'get no sales tax'. This last phrase prompts us to construct an entire blending network in order to understand the disanalogy between the two input spaces, and, motivated by that disanalogy, to go to South Shore Lumber (Figure 8.7).

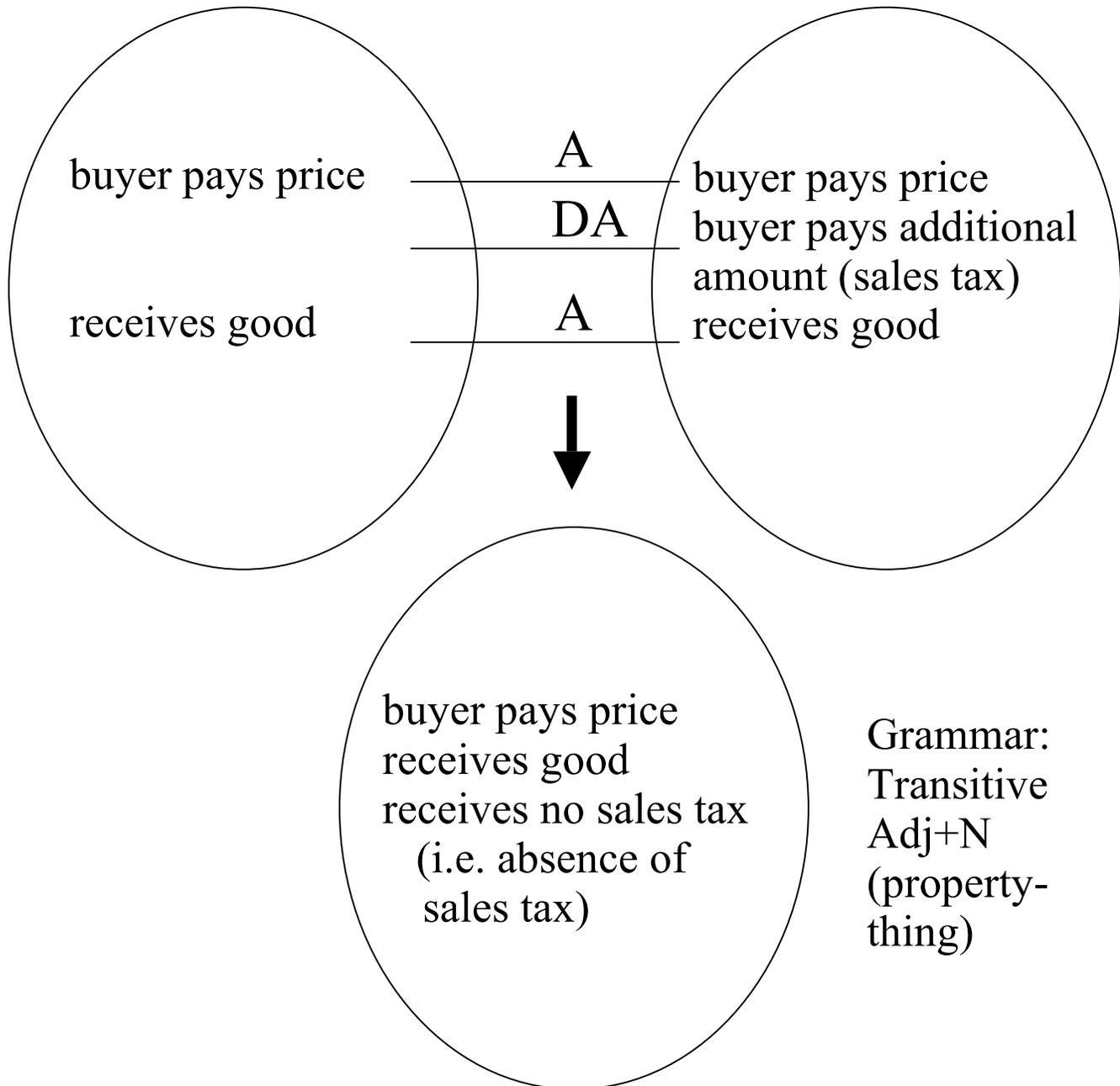


Figure 8.7: Blending network for Get No Sales Tax

Now consider a somewhat different example. I overheard someone ask in the Sangre de Cristo mountains, ‘At what altitude do the deer turn into elk?’ Here, we actually notice a compression pattern that is highly productive but usually unremarked. We notice that the analogy and disanalogy between the two mental spaces is compressed. In the blend, the outer-space analogy has been compressed to an inner-space category (the animals), and the outer-space disanalogy is compressed to a change for that category (the animals turn from deer to elk). Of course, no one is fooled or deluded. We know perfectly well that one species of animal does not change into a different species of animal. But the compressed blend has human-scale structure that can be expressed in an existing and relatively simple clausal construction. ‘At what altitude do the deer turn into elk?’ is striking, but the same conceptual and grammatical patterns sound perfectly straightforward in expressions like ‘The new theory is that dinosaurs turned into birds’. In the outer-space, diffuse array of inputs, dinosaurs did not turn into birds. Instead, organisms were born and died over very long stretches of time. None of those organisms itself changed in any of the relevant ways. Instead, there were analogies and disanalogies across these organisms in a long line of descent, and cause–effect connections between ancestors and descendents. Those analogies and disanalogies are compressed into change for a category in the blend: dinosaurs turned into birds. These compressions make it possible to use existing grammatical forms to evoke the blend and hence the integration network. New ideas usually do not require new grammatical constructions. Instead, what they require for their expression is imaginative compression into a blend that fits existing grammatical.

Now consider a third phrase, heard on a National Public Radio broadcast:

We are eating the food off our children's plates. When we overfish, we eat not only today’s fish but tomorrow's fish, too.

In one mental space, we have a certain amount of fishing. This mental space has reference to present reality. In another mental space, we have a lower level of fishing that would lead causally to an acceptable amount of fish reproduction later in time (Figure 8.8).

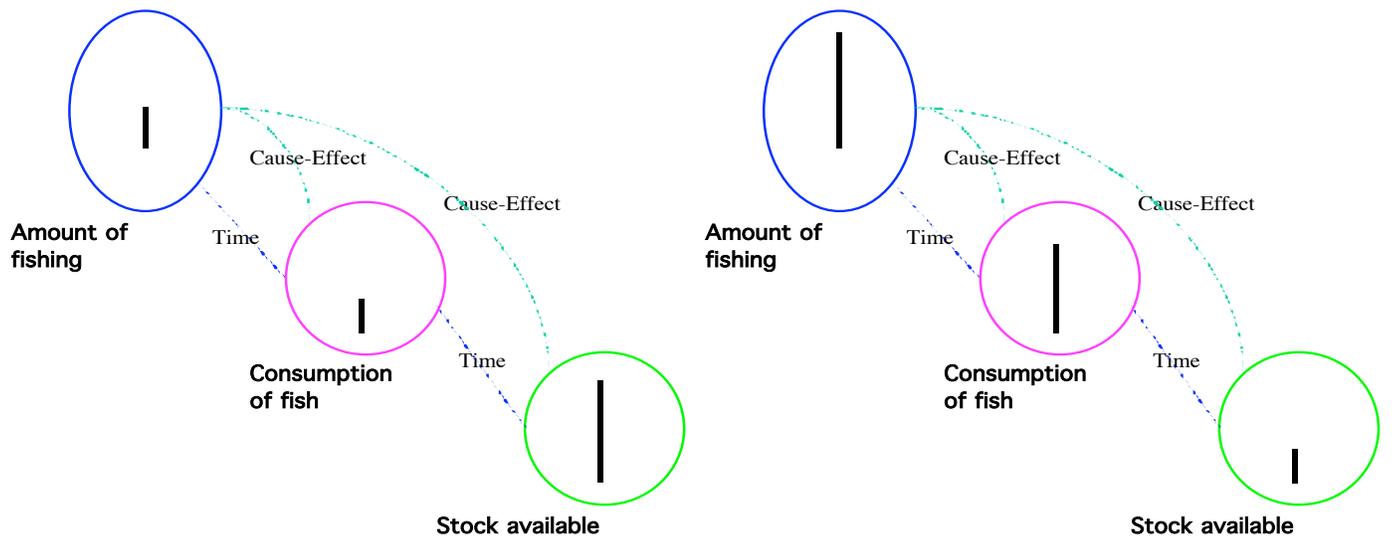


Figure 8.8: Mental space networks for fishing and stock, under two different initial conditions

The disanalogy between these two amounts of fish is compressed so that, in the blend for the present moment, a portion of present fishing is now 'overfishing' (Figure 8.9).

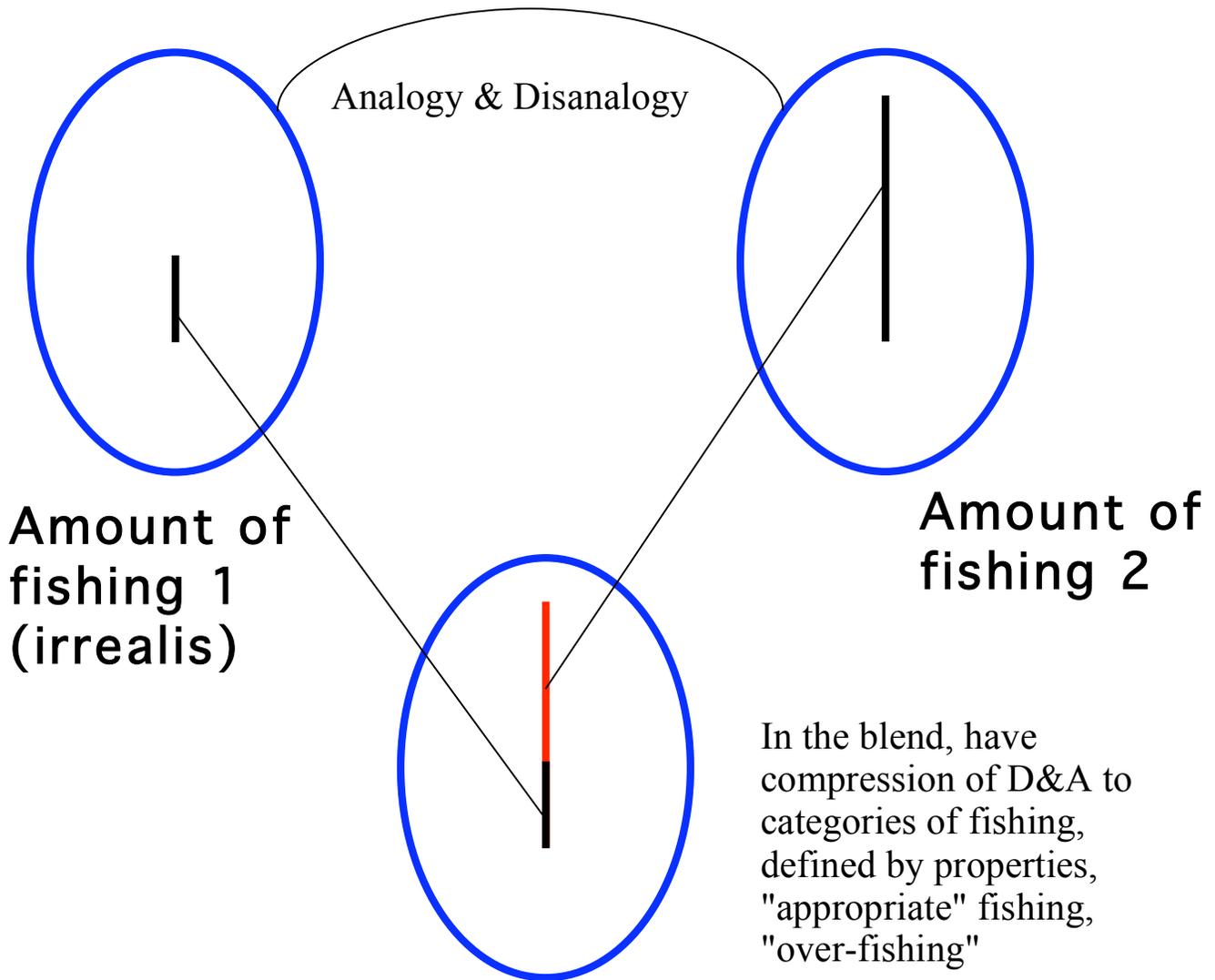


Figure 8.9: Blending network for "overfishing"

Similarly, a portion of present consumption of fish can be thought of as 'over-consumption' (Figure 8.10).

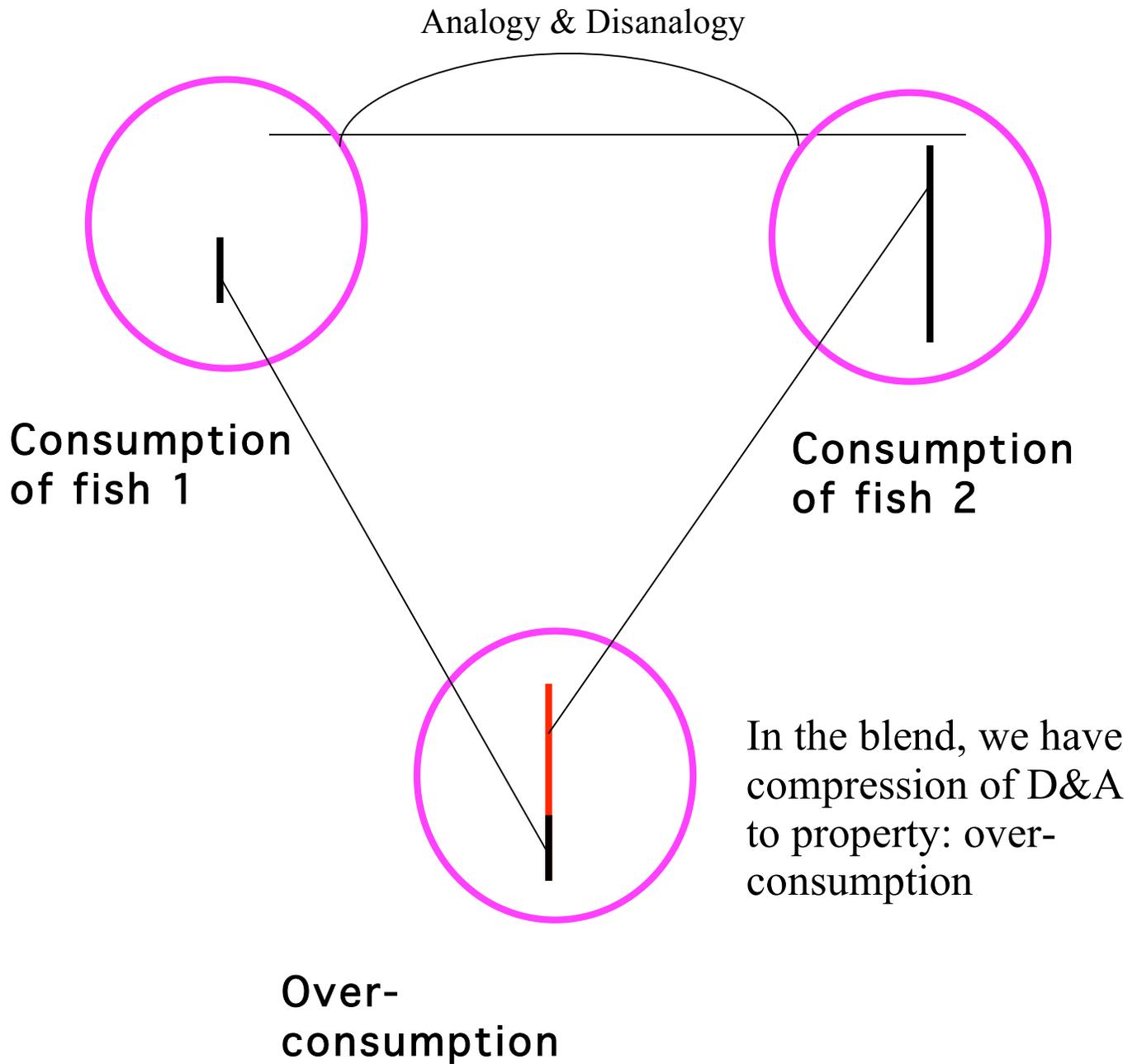


Figure 8.10: Blending network for "overconsumption"

There are cause–effect vital relations between the overfishing and the eating of the fish, and there is also a long-range cause–effect vital relation between the overfishing and the smaller amount of fish reproduction and accordingly the smaller number of fish in the future. A blending network is created for a hypothetical future. In it, the disanalogy between the small number of fish that will be available in the future as a consequence of the overfishing and the number of fish that would be there under appropriate fishing is compressed: from both of those future spaces we project the category *fish* to the hypothetical blend for the future, and the outer-space disanalogy between the inputs is compressed to a particular property: *missing*. Now we have *missing fish* in the blend for the hypothetical future (Figure 8.11)

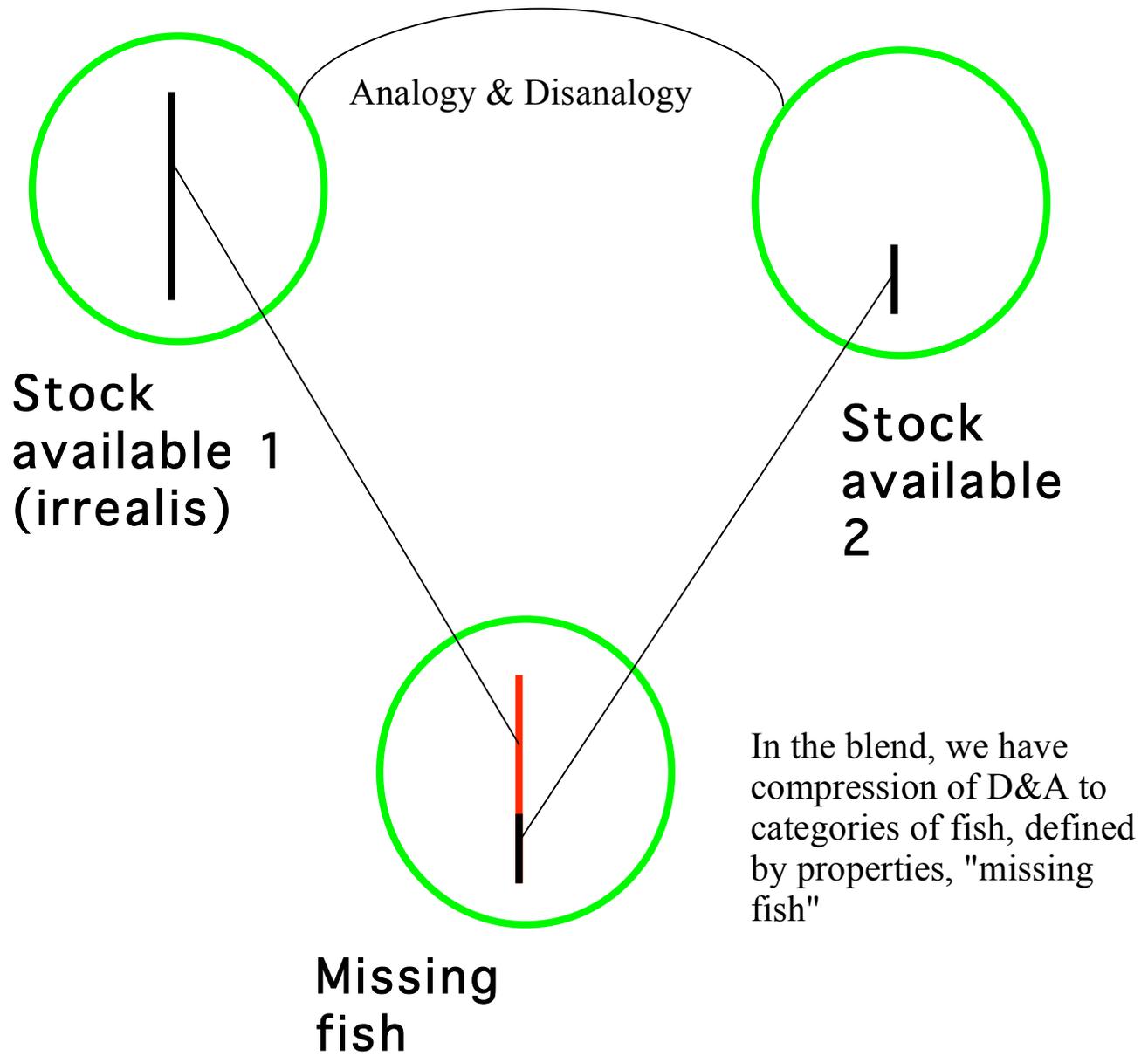


Figure 8.11: Blending network for "missing" fish

The Time vital relation between now and the future is compressed by scaling it down to a day, so that, in the blend for the hypothetical future, the future is tomorrow. The *missing fish* in the blend for the future are now part of tomorrow's fish, the missing part. Then there is another compression: the cause-effect relations between eating fish now, fishing a lot now, and the missing part of tomorrow's fish are compressed into one scene in which the fish are missing tomorrow because we are eating them now (Figure 8.12).

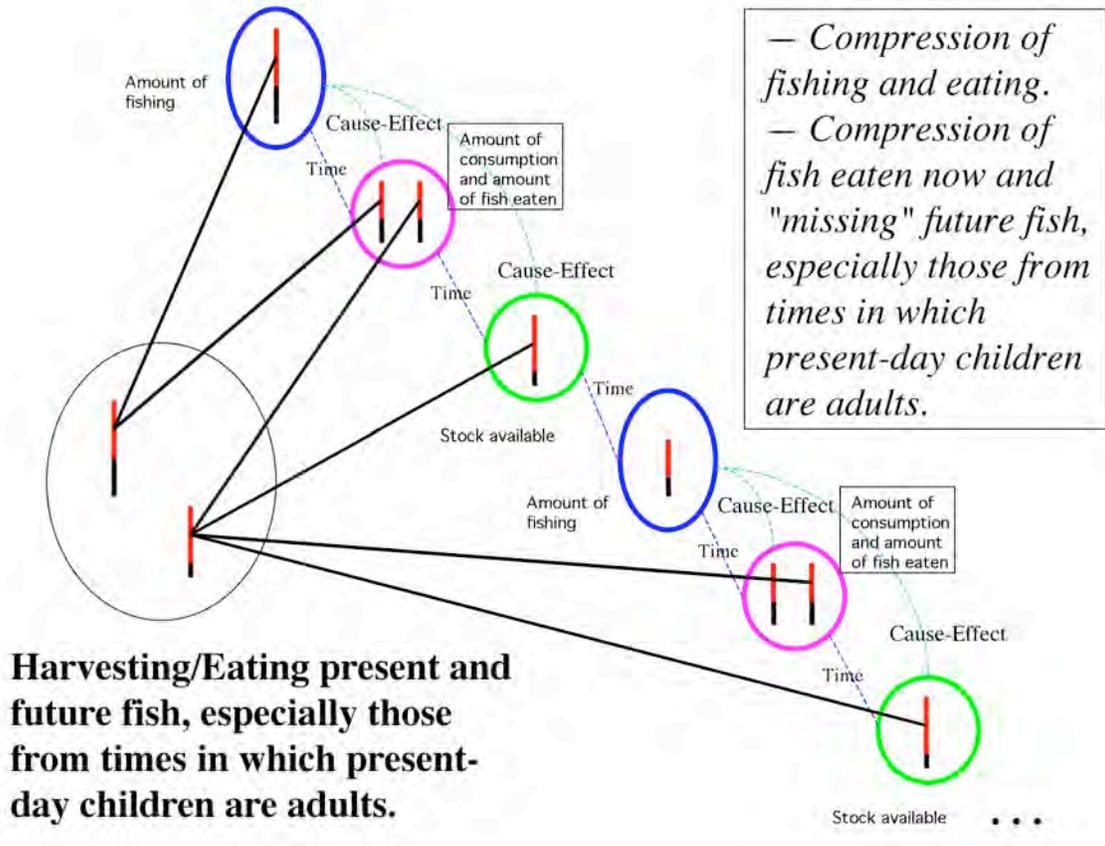


Figure 8.12: Blending network for Harvesting/Eating over time

This structure fits a standard frame of indulgence. We all know the normative stricture against raiding the icebox and eating up food reserved for tomorrow. Dramatically, there is an additional compression that brings even the one-day lag down to the immediate moment. Those missing fish are not only in the space for tomorrow. Now the future fish are compressed with the food that is on our children's plates. But the food is 'missing'. Why? Because we are taking it from them and eating it ourselves. We are eating the food off our children's plates. This compression produces a highly human-scale scene, with a strong judgemental framing (Figure 8.13). (Note, incidentally, that we are taking the food off our children's plates, not the fish off their plates, because fish is not, for the relevant audience, the mainstay of child fare. It is also more exhaustive and serious to take their food than their fish.)

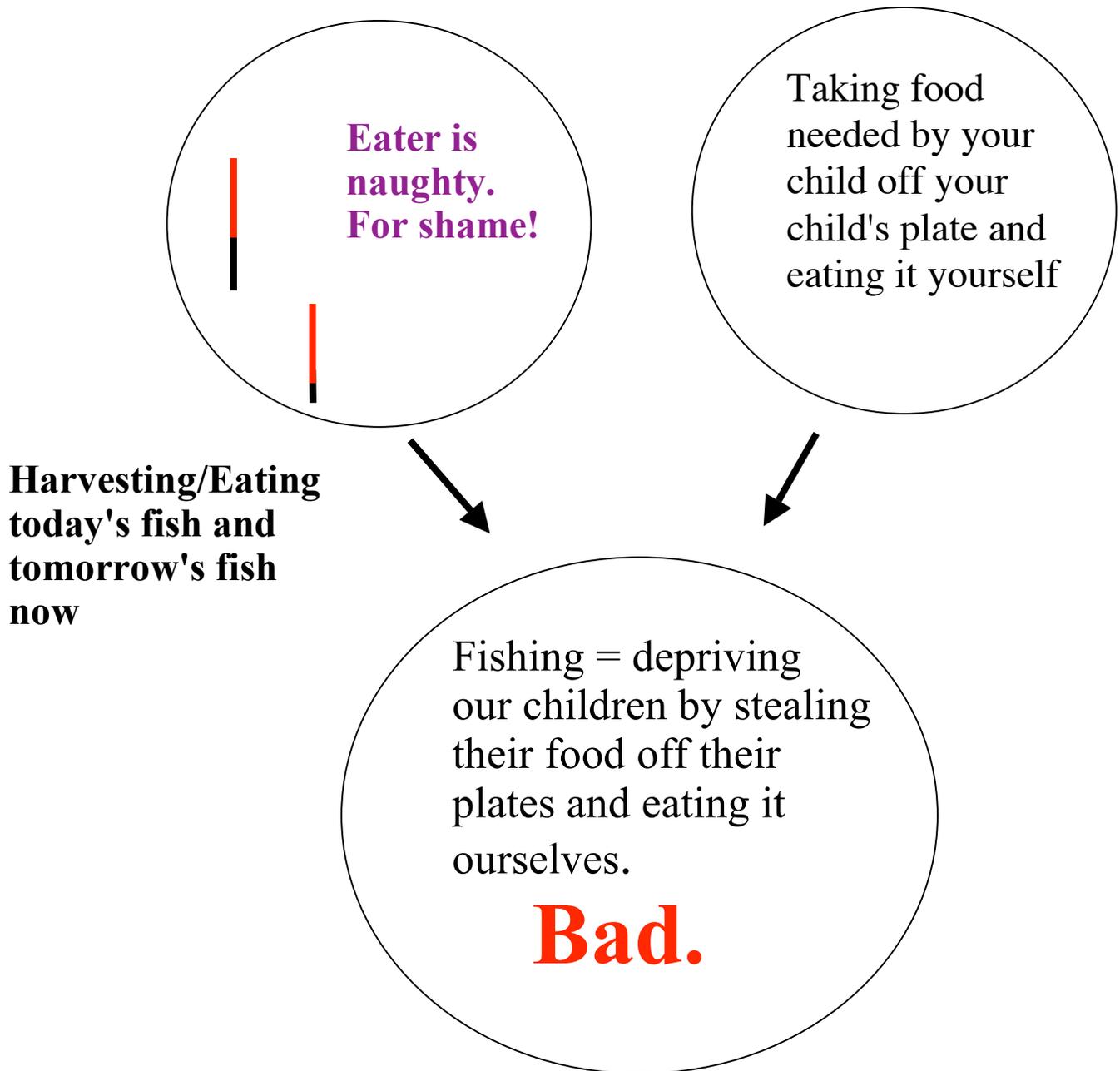


Figure 8.13: Blending network for Fishing/ Eating food off our children's plates

Again, no one is fooled by the blend. The fishing that is happening today out in the oceans is completely unlike taking away the food your children are eating today in order to eat it yourself. But the compressed blend, expressible in basic grammatical forms, evokes the entire and elaborate integration network, with the appropriate normative inferences.

Human beings, all of them, are geniuses at double-scope blending. They produce imaginative compressions inconceivable to other species. But they do it so routinely that we notice the performance only very rarely, such as when a writer places it explicitly on stage, as it were, drawing attention to it. Even then we miss the extraordinary systematicity of the operation and sophistication of the operation. It is only now that cognitive science is beginning to unearth the real powers of the imagination to show how different from their ancestors human beings really are.

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