

Perception-Shifting: Exercises for Active Thinking

By Roger Burrows

The purpose of this essay is to encourage active thinking in a time when thinking often seems to be out of fashion: to help the mind practice shifting viewpoints, resisting premature certainty, and discovering more than one way to see.

Perception-shifting is the deliberate movement from one way of organizing experience to another. It can occur while looking at geometric designs, reading a story, listening to a joke, entering an argument, or noticing one's own automatic reactions. Its value is not merely aesthetic. It exercises adaptability, creativity, judgment, and humility. It reminds us that perception is not a passive recording of reality, but an active construction shaped by attention, memory, language, habit, and desire.

This document explores perception-shifting in two related forms: first through images, especially ambiguous geometric line designs, and then through words, especially stories whose meanings change as the reader changes the angle of interpretation. It concludes by considering the mental "loops" that narrow thought and by offering practical exercises for loosening their hold.

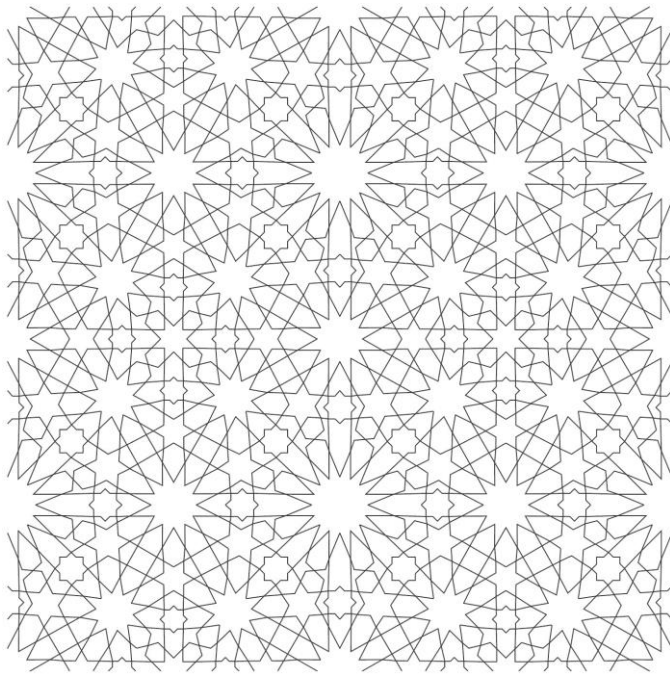
Visual Perception-Shifting

Perception-shifting geometric designs are line drawings that can be seen in more than one way. They appear to change before the eyes as attention follows different paths through junctions, crossings, and networks of lines. Nothing in the drawing moves; what moves is the viewer's organization of it. One set of connections becomes dominant, then another. A field of lines becomes a lattice, a rhythm, a depth pattern, a surface, a figure, or a passageway.

When these designs are presented as coloring works, coloring becomes a perceptual act rather than mere decoration. Each color choice selects some relationships and quiets others. It gives temporary priority to one possible reading while leaving the others still latent in the design. Coloring the same design again can reveal an entirely different structure, rhythm, balance, or spatial direction.

In this sense, Perception-Shifting Designs are visual illusions with intention. They are not designed simply to surprise the eye. They are designed to exercise perception: to make seeing more flexible, exploratory, patient, and versatile. The Images Design and Altair Design books

present such designs as coloring works whose purpose is to encourage viewers to move among alternatives rather than settle too quickly on a single interpretation.



From a tile found in the Sultan Han Caravanserai, Aksaray Province, Turkey, 13th c, CE.

What Perception-Shifting Means

Perception-shifting is a change in viewpoint: a movement from one way of grouping, naming, and valuing experience to another. In visual perception, the phenomenon is familiar in ambiguous or reversible images. The drawing remains the same, but the viewer's interpretation changes. The same lines, edges, and spaces can suddenly become a different figure.

- Ambiguity: one arrangement can support several valid interpretations.
- Attention: the eye may follow one route through a design, then shift to another as different connections become prominent.
- Figure and ground: foreground and background may trade places, changing what appears solid, open, near, or distant.
- Cognitive flexibility: repeated movement between interpretations can encourage a more active, less fixed way of seeing.

The Roots of Perception-Shifting Designs

The effects produced by intersecting line designs are rooted in the way the brain organizes visual information. We do not see lines, angles, and surfaces with absolute neutrality. The visual system searches for likely structures, grouping edges and directions into meaningful

patterns. Intersecting hubs—points where several lines meet and radiate outward—give the eye choices. Like switch points on a railway line, they allow perception to travel in one direction, then another, creating many possible visual journeys through the same design.

Origins

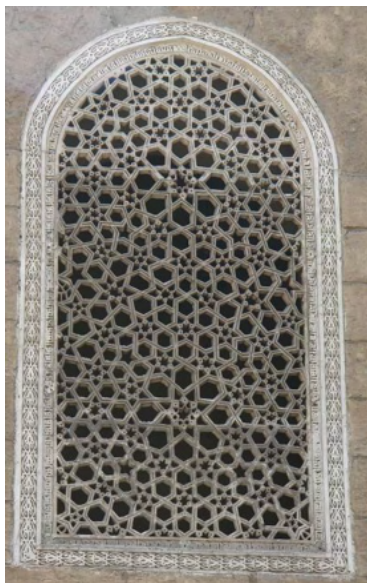
My own interest in perception-shifting designs began with a window in Old Cairo. Its pattern was composed of many line-connecting hubs, and those hubs allowed the eye to redirect what it was seeing again and again. The experience resembled watching the silhouetted branches and twigs of trees at sunset against a darkening sky, provided one allows enough time for the mind to relax into that kind of looking.



Tree branches at sunset

Since that encounter with the fourteenth-century Cairo window, I have explored ways of creating multiple line-intersecting hub designs, especially designs built from repeating cells such as squares, rectangles, and hexagons. In *Visual Thinking*, *Seeing Through Time*, *3D Thinking*, and several papers, I describe construction methods and trace aspects of their lineage. B

Below: A window of the madrasa of Amir Salf al-din Sargatmish in Old Cairo, dated 1356 CE



Many sources of inspiration come from geometric designs of the early Islamic period and from the work of Jules Bourgoïn. Within that broad design tradition are crystalline patterns, strictly symmetrical patterns, non-repeating arrangements, and patterns that invite perception to shift. We cannot know whether the original geometricians intended these shifting effects or whether they emerged naturally from particular construction methods. Yet the love of interplay, layered meaning, rhythm, and variation found across Persian and Arabic artistic traditions suggests that such shape-shifting geometries would have delighted their makers, students, and audiences.

Why Coloring Matters

Coloring of perception-shifting designs matters because it makes perception visible to itself. Each choice clarifies some paths and obscures others. A repeated coloring exercise therefore becomes a lesson in mental selection: the design did not change, but the mind's emphasis did. That is the essence of perception-shifting.

Perception-Shifting with Words

Perception-shifting also occurs in language. Stories, jokes, parables, and literary works can change meaning as the reader changes the angle of interpretation. A simple tale may become a commentary on human nature, social order, moral blindness, spiritual uncertainty, or the limits of reason. As with an ambiguous line design, the text remains the same while the pattern of meaning reorganizes itself.

Some allegories guide readers toward relatively fixed interpretations. George Orwell's *Animal Farm*, for example, invites readers to connect the animals and their political struggle with recognizable historical and ideological meanings. Such directed allegory can be powerful because it sharpens criticism and concentrates attention. Yet it can also narrow interpretation by encouraging readers to decode the story according to established correspondences.

Other tales are more open-ended. They do not merely point to one hidden meaning; they invite the reader to keep thinking. The tales of Mulla Nasreddin in Turkish and Persian traditions, and the related Arabic tales of Goha, often work in this way. Nasreddin is a wise fool: ridiculous and perceptive at the same time. He reverses ordinary expectations, exposes the limits of common sense, and turns foolishness into a form of insight.

In one well-known tale, Nasreddin spoons yogurt starter into a lake, apparently hoping the whole lake will ferment into yogurt. When questioned, he admits the absurdity of the act but replies, in effect, “What if it works?” The joke depends on impossibility, yet its meaning does not stop there. The story can be read as a satire of foolish hope, a criticism of impractical schemes, a defense of experiment, or a celebration of the small gesture made in the face of overwhelming improbability.

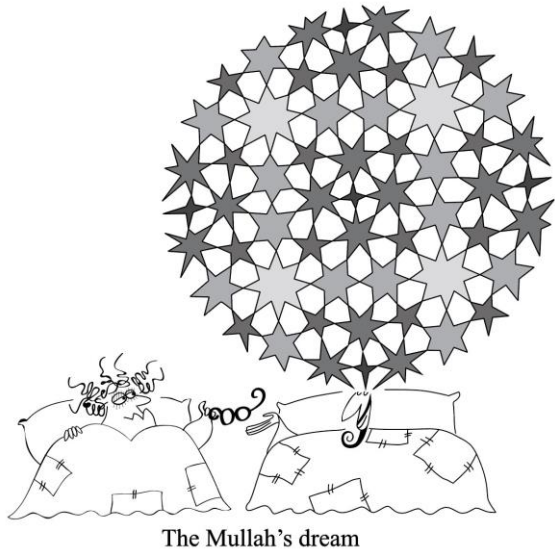
That is perception-shifting with words. At first glance, Nasreddin appears simply foolish. A moment later, he seems oddly wise. Then the reader may notice that the tale holds both possibilities at once. Its value lies not in choosing a single moral but in allowing several readings to coexist: futility and hope, skepticism and imagination, practical intelligence and playful openness.

European literature offers related figures of the wise fool, often in more formally directed settings. Stultitia, the speaking figure of Folly in Desiderius Erasmus’s *The Praise of Folly*, exposes human vanity by praising folly from within. Feste in Shakespeare’s *Twelfth Night* and Touchstone in *As You Like It* use wit, song, verbal play, and social license to reveal truths that more respectable characters overlook. Cervantes’s *Don Quixote* turns delusion into a critique of reality itself: he is comic because he misreads the world, but moving because his misreading exposes the poverty of a world without imagination.

These European examples may carry sharper satirical or dramatic purposes than the brief Nasreddin or Goha tale, yet they share the same central paradox: the fool may see what the wise miss. Short open-ended tales leave especially wide interpretive space. They do not explain themselves completely. Instead, they act like seeds of thought, depending on the reader’s imagination to germinate. If visual perception-shifting trains the eye to see more than one structure in the same design, literary perception-shifting trains the mind to hear more than one truth in the same story.

Another Nasreddin tale makes this openness even clearer. Nasreddin is searching for a lost key under a streetlamp. A passerby helps him search, then asks where he actually lost it. Nasreddin replies that he lost it inside his house, but is searching outside because the light is

better there. The tale can be read as a joke about foolishness, but it also resists any single moral. It may criticize the habit of looking only where methods are convenient; it may satirize experts who prefer measurable evidence to hidden truth; it may suggest the human tendency to seek clarity in the wrong place; or it may even defend the search itself, since one must begin somewhere. Nasreddin is absurd, but the absurdity illuminates a real pattern of thought: we often confuse the place where light falls with the place where meaning was lost.



A Richard Williams illustration of Mullah Nasreddin, with his dream from Altair Design Pattern Pad #1.

Mental Loops and the Narrowing of Thought

A loop can be comforting because it reduces the world to the already known. A loop group can make that comfort even stronger by rewarding repetition and punishing doubt.

Questioning such loops may begin when we encounter other groups, suffer the limits of our own assumptions, or face circumstances for which our inherited responses no longer work.

Gentle exposure to alternative ideas may loosen a loop; abrupt attack may instead trigger defensiveness and shut down thought. The art is to create conditions in which the mind can remain alert without panic.

The Desire to Think Outside the Loop

The wish to escape a loop may arise from boredom, curiosity, creative hunger, moral unease, or the pressure of change. Sometimes it begins simply with the feeling that one's inherited mode of life has become too small. The alternative is not the destruction of thought, but the

cultivation of a more active and generous intelligence: one able to pause, compare, reframe, and choose.

A Toolbox for Active Thinking

There is no effortless way to climb out of one's box, or even to see over its edge. The work requires patience, courage, humor, and the ability to remain steady when familiar meanings begin to loosen. Douglas Adams's comic advice from *The Hitchhiker's Guide to the Galaxy* remains useful here: "Don't panic."

1. State a belief you regard as fundamental. Then write down several contrary ideas, making them as strange, exaggerated, or uncomfortable as you honestly can. The point is not to accept them, but to notice how quickly the mind defends its first position.
2. Before analyzing those contrary ideas, remember that you are first a living body: breathing, sensing, needing food, warmth, safety, attachment, and recognition. Notice the body-state that accompanies certainty. A settled breath and a slower pulse can create enough space for thought to resume.
3. Remember what words are: social sounds and marks tied to bodily, emotional, and cultural experience. Your words are not identical to anyone else's words. They overlap through shared behavior, habit, and context, but each carries private associations. This is why conversation can both connect and mislead.
4. Spend time observing something in nature: a plant, stone, stream, cloud, insect, patch of soil, or changing light on a wall. Try to look before naming. Notice form, rhythm, pressure, motion, texture, and change before reaching for explanation. Human knowledge is powerful, but every tool also limits. For a moment, set the tools aside and practice contact.
5. After observing without naming, notice the moment when naming returns. The mind will reach for categories: tree, weed, useful, ugly, beautiful, dangerous, irrelevant. Do not condemn this. Naming is not the enemy. The danger lies in believing that the name has captured the thing. Practice holding the label lightly.
6. Deliberately change instruments. Look at the same object or event visually, emotionally, physically, analytically, and metaphorically. A leaf may be a green surface, a fragile body, a food-making system, a sign of spring, a shelter for insects, a branching pattern, or a childhood memory. None of these readings is complete. The exercise trains the mind to move from one frame to another without panic.

7. Apply the same practice to a belief, judgment, or prejudice. Choose one reaction that feels immediate and certain. Ask what body-state accompanies it: tightening, heat, disgust, fear, superiority, impatience, amusement, shame. Then ask what language is attached to it, and from whom that language may have been inherited. Finally, imagine at least three alternative explanations for the person, object, idea, or group that triggered the reaction. The purpose is not forced agreement; it is freedom from the automatic power of the first loop.

8. Return to conversation and action. Listen longer before answering. Ask a question before defending a position. Notice when humor, irritation, contempt, fear, loyalty, or pride is doing the thinking for you. When you encounter mathematics, science, politics, religion, art, or another person's behavior, ask what the chosen tool reveals and what it conceals. The practice succeeds not when you become free of loops altogether, but when you learn to feel their pull and still choose a wider path.

The Aim: Not Less Thought, but Better Movement

The purpose of these exercises is not to destroy knowledge, but to loosen the tyranny of any single mode of knowing. Mathematics, science, language, religion, politics, family loyalty, and personal memory are all tools of orientation. They help us survive, predict, cooperate, explain, and belong. But every tool selects. Every method brings certain features of the world into sharp focus while pushing others into shadow. A ruler reveals length, but not tenderness. A statistic may reveal a trend, but not the lived texture of a single person's fear. A word may organize experience, but it may also imprison it.

To escape the loop is not to become empty of thought. It is to become less obedient to the first thought that appears. The first thought is often not thought at all, but reaction: the inherited reflex of family, class, tribe, training, fear, pride, humiliation, reward, or punishment. It arrives already dressed as certainty. The work is to pause long enough to ask: whose certainty is this, and what experience made it feel necessary?

Prejudicial thinking is one of the most stubborn loops because it disguises itself as perception. It says, "I am only seeing what is there," when in fact it may be seeing what was planted there by language, fear, repetition, ridicule, exclusion, or dominance. A prejudice is a shortcut that has forgotten it is a shortcut. It mistakes familiarity for truth, difference for danger, and social agreement for evidence. To challenge prejudice, then, one must disturb the perceptual habit that feeds it.

Afterward, return to the tools of civilization, but return to them differently. Mathematics is a magnificent language for relations, quantities, transformations, patterns, probabilities, and structures. Science is a disciplined method for testing models against experience. Words are social instruments for pointing, persuading, remembering, commanding, comforting, and deceiving. None of these should be worshiped and none should be discarded. They should be used with gratitude and suspicion.

A broader mind does not merely collect more information. It learns to change instruments. It can look visually, listen emotionally, feel physically, reason analytically, imagine metaphorically, and doubt ethically. It can move among scales: the cell, the animal, the person, the family, the crowd, the culture, the species, the planet, the star field. It can ask not only, "Is this true?" but also, "True under what conditions, for whom, by what method, with what omissions, and at what cost?"

This kind of thinking is not always comfortable. The loop offers safety because it reduces the world to the already known. The matrix offers belonging because it rewards those who repeat its grammar. But life is short, and consciousness is too rare an occurrence to spend entirely inside inherited reflexes. To broaden experience is to risk confusion, embarrassment, loneliness, and the loss of easy certainty. Yet it is also to recover wonder, sympathy, invention, humor, and a more generous relationship with reality. Perception-shifting, whether practiced with images, stories, language, nature, or conversation, is therefore more than a technique. It is a discipline of wakefulness: a way of keeping thought alive.

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