Figure 1. Oskar van Deventer, *Eight-Inch Bolt,* 2003. ABS plastic, 20.3 x 10.1 cm. Kinsey Institute for Sex, Gender, and Reproduction, Bloomington, Indiana. Photo: Courtesy of the Kinsey Institute for Research in Sex, Gender, and Reproduction.

Visual difficulty as a cultural system

BRET ROTHSTEIN

> We can forgive a man for making a useful thing as long as he does not admire it. The only excuse for making a useless thing is that one admires it intensely.
> —*Oscar Wilde,* The Picture of Dorian Gray

Why bother?

Mechanical puzzles have received relatively little scholarly attention, and while this is probably salutary for designers and aficionados, it is a remarkable oversight by those of us who study the cultural work of images.[1] For these objects tell us much about an important aspect of visual communication, specifically the pursuit of difficulty.[2] No less striking, though history abounds with attempts at making things hard for the viewer, we also lack a vocabulary for discussing such attempts, let alone a sense of what their larger ramifications might be.[3] This article is designed in part to address that lack, and in part to offer a few thoughts about the intellectual and social significance of visual difficulty as a shared pursuit.

I have chosen enigmatology, or the culture of mechanical puzzles, as the basis for this essay for four reasons. First, being difficult is a puzzle's primary, if not sole, justification. Disentanglements (fig. 8) and burr puzzles (fig. 9),[4] for example, are what we would, under most circumstances, call useless. And even when a puzzle does bear a whiff of utility, as is the case with secret boxes (figs. 7 and 10), it tends to represent so hypertrophied a response to the idea of application that that response becomes its own justification. Second, puzzles boast extraordinary variation as well as deep historical roots. There is, for instance, the *Ostomachion* of Archimedes, and trick locks abounded in ancient Rome; topological puzzles date from around 1500, and six-piece burrs from at least 1698.[5] Such durability and diversity speak to the operation of sophisticated value systems. Third, relatively independent of narrative or emblematic constraints, objects of this sort do more than serve merely as adjuncts to other cultural practices. They offer the most concentrated expressions of difficulty *as such*. Fourth, as the most concentrated expressions of difficulty, mechanical puzzles can help us address a number of pressing questions about conceptions of utility in visual expression, about the cultural status of manufactured objects, about the significance of playfulness, about the relationship between thought and physical experience, and about the nature and value of intellectual labor.[6]

By using the phrase "visual difficulty" I do not intend to make a sweeping claim about the visual as some kind of discrete entity. To an even greater extent than most other art forms, mechanical puzzles necessitate the intertwining of vision with other sense data, especially hearing and touch. Nonetheless, sight figures especially prominently in the cognitive operations these objects engage. Thus, my use of the term is meant to denote types of interpretive difficulties that must be resolved in

1. Cf. M. Danesi, *The Puzzle Instinct: The Meaning of Puzzles in Human Life* (Bloomington, IN, 2002). In this essay I use the term "mechanical puzzle" to designate a three-dimensional object that poses a combined logistical and intellectual challenge. The most familiar type is probably the jigsaw, which offers a dual edge-matching problem. That is, one must reconnect various portions of a dissected image while also aligning the convolutions of the pieces generated during that dissection.

2. Most historical studies on the topic attend to questions of technique or of the presumed moral or ethical importance of interpretive effort. See, for example, D. Summers, *Michelangelo and the Language of Art* (Princeton, 1981), pp. 177–185; A. Sand, "Vision, Devotion, and Difficulty in the Psalter Hours 'of Yolande of Soissons,'" *The Art Bulletin* 87 (2005): 6–23.

3. The contrast with poetry, where the topic has reached an enviable level of maturity, is striking. See G. Steiner, "On Difficulty," *Journal of Aesthetics and Art Criticism* 36 (1978): 263–276; W. Christie, "A Recent History of Poetic Difficulty," *English Literary History* 67 (2000): 539–564.

4. Named for its spiky exterior when assembled, the burr is a set of sticks that interlink by means of gaps cut into each stick; these gaps create the internal volumes that allow some movements while barring others.

5. D. Singmaster, "*De Viribus Quantitatis* by Luca Pacioli: The First Recreational Mathematics Book," in *A Lifetime of Puzzles: Honoring Martin Gardner,* ed. E. D. Demaine et al. (Boston, 2008), pp. 77–122.

6. I hope to discuss these issues in greater detail as part of a book-length study of difficulty in Western visual cultures since about 1400.

Figure 2. Detail of the mobile ring from the *Eight-Inch Bolt.*
Photo: Courtesy of the Kinsey Institute for Research in Sex,
Gender, and Reproduction.

Figure 3. Oskar van Deventer, *Bronco,* 2001. Laser-cut acrylic,
9.9 cm diameter. Jerry Slocum Puzzle Collection, Lilly Library,
Indiana University, Bloomington, Indiana. Photo: Courtesy
Lilly Library.

ways that are primarily or at least strongly visual, though
not exclusively so.

Finally, for what I hope are obvious reasons I have
avoided providing any solutions, and where description
risks divulging such information my accounts are
necessarily elliptical, even cryptic. At times they might
also be unreliable. I can only ask that the reader bear
with me. In addressing this strangely neglected topic
I hope to achieve something no less peculiar than the

subjects of my inquiry: a calculatedly unresolved (not
simply provisional, but distinctly incomplete) account of
objects that depend on resolution (or at least the idea of
it) for their very justification.

Getting down to business

Recently, the Kinsey Institute for Research in Sex,
Gender, and Reproduction in Bloomington, Indiana,
acquired an object that is peculiar even by the standards
of their collection: the *Eight-Inch Bolt* designed by Oskar
van Deventer and printed in ABS plastic by George
Miller (fig. 1). This object is a relatively large bolt-
shaped structure shot through a ring, which the viewer is
supposed to remove. The bolt itself bears an inset maze
rather than the customary threading. Three pins extend
from the interior of the ring into the maze (fig. 2). Two of
these are fixed and prevent the ring from turning side to
side. The third pin rides on a second, thinner ring nested
within the first. The ability of this second ring to rotate
allows its pin to act as a shuttle that accommodates
diagonal passages in the maze. More than a few visitors
to the Kinsey have remarked on the phallic nature of
van Deventer's design, and not only because of its size
and shape. Though most do not, this particular example
sports a bright red tip.[7] What is more, the process of
solving the *Eight-Inch Bolt* requires a set of repetitive
movements: specifically, one must propel the ring up
and down the shaft of the bolt, taking care to feel for
minute changes in the orientation and movement of the
mobile pin. The result is a challenge that literalizes the
old vulgar saw about useless cerebration.[8]

The joke initially seems just an obvious bit of self-
deprecation. After all, the *Eight-Inch Bolt* is a product
of sophisticated and influential enigmatological
experimentation that van Deventer began in the later
1970s, initially with burrs and three-dimensional mazes,
and more recently with combinatorial puzzles. With
respect to mazes, he has experimented with planar
arrangements through which various shuttles move. In
the case of *Bronco,* the shuttle is essentially a pair of pins
set at an interval that matches only certain holes, and
then only when approaching from a specific angle and
direction; one rocks the shuttle back and forth, rotating
it variously, in order to free it from the maze (fig. 3). In

7. Miller's STL printer ran out of black plastic about six inches into
the printing, whereupon he substituted red (correspondence with Oskar
van Deventer, 4.III.11).

8. Van Deventer and Miller had this in mind from the beginning of
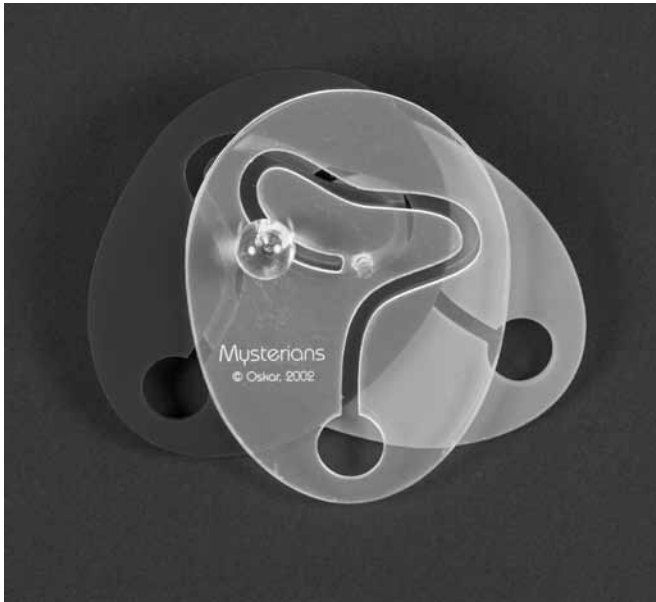their project (conversation with Oskar van Deventer, 10.VII.2010).

Figure 4. Oskar van Deventer, *Mysterians,* 2002. Laser-cut acrylic, 6.8 x 9.1 x 3.6 cm. Jerry Slocum Puzzle Collection, Lilly Library, Indiana University, Bloomington, Indiana. Photo: Courtesy Lilly Library.

Figure 5. Oskar van Deventer, *Snake Ball,* 2003. ABS plastic, 5.7 cm diameter. Jerry Slocum Puzzle Collection, Lilly Library, Indiana University, Bloomington, Indiana. Photo: Courtesy Lilly Library.

another case, *Rotten Apple* (2007), the pins take the form of a helix. As in *Bronco,* the orientation of and interval between the pins govern their movement, but the helical structure requires a different type of physical operation and, thus, a reconsideration of the maze at hand.[9] In addition, van Deventer investigated how one defines the path of a maze itself, as in *Mysterians* (fig. 4). This puzzle layers three simple slots in such a way as to produce a kind of composite maze, the actual path of which is determined by the shifting positions of the three layers. The outer two layers rotate about a common axis, while the third floats between them, its movement governed by a barbell that holds the ensemble together and can best be described as navigating the path all three layers produce as they move relative to one another. (The goal is to free the middle layer by separating the outer ones.) Other arrangements are even more vigorously deconstructive. For example, the *Snake Ball* employs two C-shaped pieces that serve as both shuttle and path simultaneously (fig. 5).[10]

Compared with such examples, the maze presented by the *Eight-Inch Bolt* is neither the most abstract nor the most obscure. In fact, the path traced during its solution is fairly conventional. But the mechanism one uses to enact that solution and the joke it produces represent something of a high-water mark in a subculture that is dedicated to the pursuit of visuospatial difficulty. What is more, the ironic triviality and obscenity of that joke call attention to a complicated relationship with both ease and utility that has characterized Western visual expression for several centuries.

Four types of visual difficulty

Before discussing the relationship between ease and utility, it is worth asking what sorts of visual challenges one might face in the first place, for not all are created equal.[11] With that in mind, let me recall George Steiner's four types of poetic difficulty: *contingent* (something one must "look up"), *modal* ("getting" something versus "digging" it), *ontological* (being faced with something perhaps—but also perhaps not—not interpretable), and

9. For a photograph of *Rotten Apple,* see http://webapp1.dlib .indiana.edu/images/item.htm?id=http://purl.dlib.indiana.edu/iudl/lilly /slocum/LL-SLO-030793&scope=lilly/slocum.

10. Each bears a pin that moves through the inset pattern on its neighbor. One pin is visible just to the lower left of center in my illustration.

11. On the various types of puzzles, though not the strategies I have in mind, see J. Dalgety and E. Hordern, "Classification of Mechanical Puzzles and Physical Objects Related to Puzzles," in *The Mathemagician and Pied Puzzler: A Collection in Tribute to Martin Gardner,* ed. E. Berlekamp and T. Rodgers (Natick, 1999), pp. 175–186; J. Slocum, "Mechanical Puzzle Classification" (self-published, s.d.), http://www .slocumpuzzles.com/WoMP/Puzzle%20Classification-HiRes.pdf.

Figure 6. Oskar van Deventer, *Topsy Turvy,* 2009. Various materials, 30 cm (diameter) x 7 cm. Tom Cutrofello Collection, New York. Photo: Courtesy of Tom Cutrofello.

Figure 7. Akio Kamei, *Drawer Box,* 1995. Various materials, 6.5 x 10 x 5.1 cm. Jerry Slocum Puzzle Collection, Lilly Library, Indiana University, Bloomington, Indiana. Photo: Courtesy Lilly Library.

tactical.[12] The most important of these for my purposes is tactical difficulty, or the play of signification itself. Other sorts do matter. For instance, contingent difficulty abounds in puzzles. Another design by van Deventer, *Topsy Turvy,* is a case in point (fig. 6). A crank propels twelve numbered metal discs through a semicircular path in either of two directions; the path leads to a cascade that reorganizes the discs with each cycle of movement.[13] Running the crank clockwise generates one sort of scrambling, while doing so counterclockwise results in a different one. Consequently, turning the crank first one way and then the other will not undo the initial jumble. Rather, it will only scramble things further. Still, the behavior of the discs is linear and entirely predictable. It is, however, entirely predictable only for users with specialized knowledge, for the scrambling process models the behavior of a mathematical entity called the M12 group. Without a grasp of that group and its behavior, the puzzle is effectively insoluble.[14]

For all the subtleties of its underlying mathematics, though, *Topsy Turvy* is easy to operate. The prominent

handle, inset pathways, circular format, arrows, and textual prompts leave little room for doubt. The difficulty this puzzle presents is thus entirely of the sort one might need to "look up." By contrast, opening Akio Kamei's *Drawer Box* (fig. 7) is a fundamentally different sort of task, even if one is familiar with the concept of a handle (which may or may not act as expected). A variety of mechanisms cause the entire object to behave peculiarly. Consequently, to open what looks like a drawer, one must reconsider conventions associated with that mundane activity. This is where tactical difficulty gains force: Straining against a repertoire of signs and configurations, it is vigorously reflexive; vigorously reflexive, it addresses most directly the peculiarities of visual signification. Furthermore, it does so in ways that do not depend on representation in any traditional pictorial sense of the term. Kamei's *Drawer Box* activates certain ideas about handles and drawers, but its physical operation is not necessarily congruent with those ideas. Thus, tactical difficulty allows us to deal with not simply a hermeneutics of discerning subjects or even resemblance, but also a hermeneutics of discerning, gaining control of, and even articulating the fundamental interpretive options an object allows in the first place.

Tactical difficulty is hardly monolithic, though. In visual expression, it derives from a number of different strategies. The four most basic, it seems to me, are *simplicity, complexity, de-emphasis,* and *misdirection*. *Simplicity* minimizes visual information, often in pursuit of paradox or at least a seeming contradiction of the sort

12. Steiner (see note 3).

13. For a video demonstration, see http://www.oskarvandeventer.nl /M12/#TopsyTurvyClip.

14. See M. O. van Deventer and I. Kriz, "Developing Topsy Turvy and Number Planet," http://www.oskarvandeventer.nl/M12 /Developing_Topsy_Turvy_and_Number_Planet.doc.pdf; I. Kriz and P. Siegel, "Simple Groups at Play," *Scientific American* 299, no. 1 (2008): 64–89.

Figure 8. Anonymous, *Double W,* n.d. Heavy-gauge chromed wire, 10 x 11.2 x 4.2 cm. Jerry Slocum Puzzle Collection, Lilly Library, Indiana University, Bloomington, Indiana. Photo: Courtesy Lilly Library.

Figure 9. Bruce Love (designer), Bill Cutler, and Jerry McFarland (manufacturers), *Love's Dozen,* 1987. Wood, ink, and varnish, 7.5 x 7.5 x 7.5 cm. Jerry Slocum Puzzle Collection, Lilly Library, Indiana University, Bloomington, Indiana. Photo: Courtesy Lilly Library.

found in two-piece disentanglements such as the *Double W* (fig. 8). A puzzle of unclear origin that invites the separation of its two identical pieces, this object has one solution and only a handful of possible ways to orient its two components without actually separating them. Yet solving it can be surprisingly hard. This is precisely because with the *Double W* what one sees is what one gets, but there is very little to see. The challenge is one of construction praxis—that is, discerning the manner in which components relate to one another, and then assessing how they might have arrived at that relationship. Only a single visual trait seems to pertain directly to resolution: the gap formed by the ends of each piece. Yet the convolutions of those pieces preclude all but a few orientations, none of which immediately lends itself to resolution. One therefore quickly exhausts the seemingly available repertoire of configurations, lapsing into a cycle of futile repetition. Consequently, I would suggest that simplicity serves to provoke a kind of mental noise that hinders resolution and, in so doing, demands a fundamental change in the process of interpretation itself.

Complexity, by contrast, maximizes the number of components, of required operations, and so forth. This is evident, for example, in "high-level" burr puzzles— that is, those requiring a high number of moves to free the key piece, or the stick that anchors the group as a whole. Designers have experimented with increased numbers of sticks, nontraditional cuts, and idiosyncratic movements from the 1880s onward. However, the
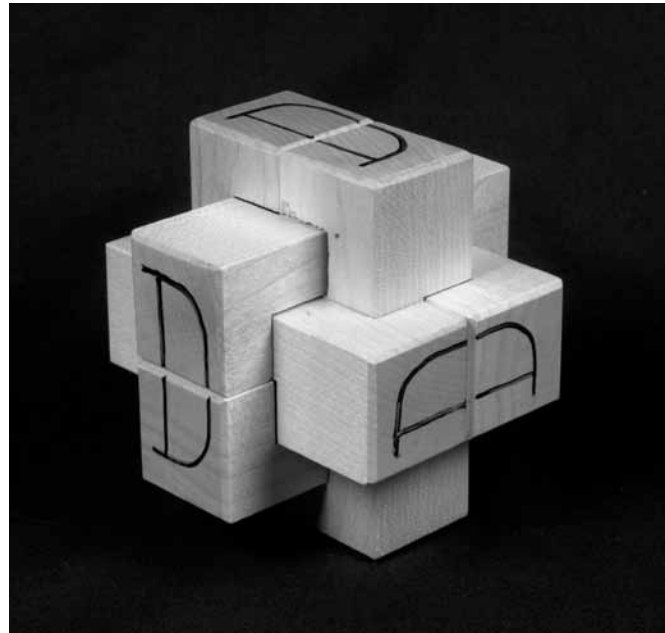
pursuit of maximum complexity accelerated in 1981 with a formal challenge by the designer Stewart T. Coffin, who developed a level-three burr using traditional components. By 1985, the designer and programmer Bill Cutler was declared the winner, having produced a level-five example, *Bill's Baffling Burr*. Further experimentation continued on and off until the appearance in 1987 of *Love's Dozen,* a design by Bruce Love that requires twelve moves to free the key piece (fig. 9).[15] In the process, the burr became a vehicle for the generation of ever more involved logistical problems requiring not only hypertrophied attention but also sensitivity to visuospatial identification, tracking, and manipulation amid the resulting complications. Employing nontraditional components, more recent six-piece burrs have come to require upward of twenty-eight moves to free the key

15. Love's contribution spurred a three-year effort to prove Cutler's declaration that this is the "highest level possible" for a six-piece example with traditional sticks. (It is.) See B. Cutler, *A Computer Analysis of All 6-Piece Burrs* (self-published, 1994), VIII ("Examples"), http://home.comcast.net/~billcutler/docs/CA6PB/examples.html. On Coffin's challenge, see B. Cutler, *Holey 6-Piece Burr!* (self-published, 1986), I ("Introduction"), http://home.comcast.net/~billcutler/docs /H6PB/intro.html.

piece.[16] Increasing the parts count (to eight pieces, for instance) can yield even higher-level objects (100 moves or more).

The crux of the matter with respect to such puzzles is information reduction on the part of the user (rather than the designer). Specifically, one must group or categorize data in such a way that they behave as if a lesser quantity. Other factors may intervene. For instance, the traditional high-level burr involves a series of orthogonal moves (that is, shifts along the length of each stick) that bring some gaps or notches into view as they obscure others. One must therefore coordinate sense data with a robust mental map. Still, information reduction allows one to do this more readily by, say, discerning a numerical pattern that governs the sequence of operations required for resolution. Thus, the primary challenge that complexity offers is one of executive function—the ability to perform a relatively straightforward sequence of movements, if over a longer period and with more components to manage. It is, in other words, more (though never entirely) a challenge of procedure than of fundamental discernment.

The third and fourth strategies resemble defensive maneuvers, since they involve masking or even outright deception. These processes may be marked by relative simplicity or complexity, but they nonetheless differ from the other two in their underlying mechanisms. The third, *de-emphasis,* entails obscuring salient cues through either the minimization or the profusion of detail. Perhaps the best example of this occurs in secret boxes, such as *Apricot* by Akio Kamei, who in 2002 executed this puzzle with Haruo Uchiyama.[17] Apricot provides the viewer with multiple points of interest: contrasting materials, various handles, joints that appear mobile, ornamental details that may either mask a mechanical function or be purely decorative, and components that move but produce no other result than that movement. Objects such as this contrast markedly with secret boxes and other sorts of sequential-discovery puzzles, many of which cloak their workings in largely unrevealing exteriors. An example of this would be the work of L. D. Whitaker, who was active in the first half of the

twentieth century. One opens his boxes by means of sliding unseen blocks, blowing through minuscule apertures, applying magnets to unspecified areas, and piloting marbles through hidden mazes—none of which corresponds to the external appearance of a given box itself. Crucially, both types of de-emphases share an underlying mechanism. Specifically, they cultivate a syntactical challenge. Working with one of Whitaker's boxes or Kamei's *Apricot* brings together various elements of that object's vocabulary—visual, tactile, auditory, and so forth. Some of those elements conflict with one another, while others prove more interpretively compatible. Ultimately, in each case one has to discern that syntax, parse it, and then prioritize each box's cues before resolution can begin.

The fourth strategy, *misdirection,* dispenses with the presumption of guidance, aiming instead at outright deception. Perhaps the best example of this among puzzles is the *Calling Card Box* by Akio Kamei, for the simple reason that it does not behave like other objects he has produced (fig. 10). None of the usual blowing, probing, pulling, pushing, shaking, tapping, or twisting will open it. As an inscription on the bottom—守兵衛, or "Loyal Defender"—suggests, Kamei set himself the express goal of fending off his audience. The name is ironic, since he made a small number of examples exclusively for friends and clients familiar with his work. Yet to be familiar with that work is, in this case, to possess a set of distinctly unhelpful strategies against which the "Defender" can work. Acumen and experience become weaknesses in the face of a sign system (*misdirection*) that is antithetical to custom.[18]

The *Eight-Inch Bolt* provides an excellent example of how some of these strategies can coexist and interact. The simplicity of the maze implies a straightforward task, if one made slightly more complex by its deformation around the shaft of the bolt. Combined, the large and small rings introduce further complexity by requiring that one navigate the maze via an ingenious mechanical shuttle. The large ring then de-emphasizes information by obscuring both the smaller mobile ring (and its pin) and part of the maze itself. Since one cannot easily observe the shuttle as it moves through the maze, the would-be solver must coordinate sight with touch and

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16. Working with nontraditional components not only can increase the level of a burr, it also can introduce other sorts of challenges. See, for instance, Derek Bosch's *Helical Burr* (2013). Though comprising only four pieces, this puzzle nonetheless offers a level-13 problem. In addition, the behavior of its components can be very confusing.

17. For a photograph of *Apricot,* see http://webapp1.dlib.indiana .edu/images/item.htm?id=http://purl.dlib.indiana.edu/iudl/lilly/slocum /LL-SLO-028853&scope=lilly/slocum.

18. Cf. the idea of the cheat as articulated in J. Huizinga, *Homo Ludens: A Study of the Play Element in Culture,* trans. R. F. C. Hull (London, 1955), pp. 10–12. However, the rules of the game in puzzling, as in other aspects of visual communication, are malleable. Indeed, they presume a measure of trickery. See also H. G. Frankfurt, *On Bullshit* (Princeton, 2005).

Figure 10. Akio Kamei, *Calling Card Box,* 1997. Various materials, 9 x 11 x 3.3 cm. Jerry Slocum Puzzle Collection, Lilly Library, Indiana University, Bloomington, Indiana. Photo: Courtesy Lilly Library.

hearing, orienting the bolt variously, peering here and there, moving the ring, listening to the movement of the mobile pin, feeling for changes in resistance, and so on. So, while it employs only some of the strategies (misdirection being notably absent), the *Eight-Inch Bolt* presents us with a set of diverse and carefully orchestrated interpretive challenges. What it does *not* do is anything utilitarian. On the contrary, as the *Bolt*'s anthropomorphic associations imply, it is distinctly unproductive, even if one manages to liberate that ring.

The object doth protest

Self-professed uselessness is hardly novel, but this particular sort—self-justifying rather than merely self-conscious—seems to have effloresced in Western visual cultures of the past five centuries or so.[19] Take, for instance, Pieter Bruegel the Elder's *Elck* (fig. 11), which scholars have treated as an indictment of materialism and the undue reliance on visual objects for moral guidance. The figure of *Elck* (Everyone) littering the image stands for a humanity so blinkered by selfishness and possessed by goods that it enjoys little chance of reflection or, thus, redemption. The figure depicted in the framed image in the middle ground, *Niemant* (Nobody), appears to serve as a counterexample; as the Middle Dutch inscription below him declares, "Nobody knows

himself." There has been considerable debate about the earnestness of this declaration. For some, the figure of *Niemant* is admonitory, while for others it is ironic, since Nobody sits atop a pile of goods as disorderly as those that distract *Elck*.[20] I favor the ironic interpretation. As Peter Parshall once pointed out, Bruegel's print is an exercise in paradox and negation. On the one hand, the self-knowledge it seems to advocate is effectively nonexistent, since Everyone lacks it. On the other hand, to possess self-knowledge is to cease to exist, since that possession is only possible for Nobody.[21] In short, the print denies both the potential for reflection and the existence of one who would engage in it.

True, *Elck* busies himself with worldly rather than spiritual goods, but he does so in pursuit of what he hopes will prove durably valuable. In this respect he echoes the behavior of the viewer, who likewise seeks some reward in an inanimate object. As if adding insult to injury, the inclusion of spectacles on the central *Elck* explicitly tags sight as a barometer of ignorance, suggesting that the more one looks, the less one actually sees. The result is, I believe, a parody of earlier attempts at religiously motivated pictorial self-obviation.[22]

That self-obviation is one of the most noteworthy features of fifteenth-century Netherlandish painting. Paradoxical reflections and striking assertions of facture repeatedly impeach the supposed accuracy of naturalism, while self-referential details continually attest to the artist's agency. The origins of such maneuvers remain unclear, but the functions are evident enough. First, reflexive self-obviation enabled religious images to avoid the charge of idolatry by asserting their supposed insufficiency. Second, the resulting pictorial sophistication redounded to the credit of the patron. Third, and most important for my purposes, paradox and reflexivity enabled artists to render image-making its own best subject.[23] Simply put, by declaring the image's

19. See the argument offered by Hans Belting in *Bild und Kult. Eine Geschichte des Bildes vor dem Zeitalter der Kunst* (Munich, 1990).

20. For a review of the literature as well as bibliography, see B. Rothstein, "The Problem with Looking at Pieter Bruegel's *Elck,*" *Art History* 26, no. 2 (2003): 143–173, esp. 146, notes 7–14. See also C. Heuer, "Nobody's Bruegel," in *The Anthropomorphic Lens: Anthropomorphism, Microcosmism and Analogy in Early Modern Thought and Visual Arts,* ed. W. S. Melion, B. Rothstein, and M. Weemans (Leiden, 2014): 403–420.

21. P. Parshall, "Some Visual Paradoxes in Northern Renaissance Art," *Wascana Review* 9 (1974): 97–104, esp. 101–102.

22. Rothstein (see note 20).

23. See J. Marrow, *Pictorial Invention in Netherlandish Manuscript Illumination of the Late Middle Ages: The Play of Illusion and Meaning* (Leuven, 2005); R. Preimesberger, "'Der zweite Phidias.' Beobachtungen an van Eycks 'Madonna des Kanonikus van der Paele,'"

Figure 11. Pieter Bruegel the Elder (designer), *Elck,* 1558. Engraving, 24.7 x 29.2 cm. The British Museum, London. Photograph © Trustees of the British Museum.

supposed spiritual inutility, early modern painters and some printmakers were paradoxically asserting the value of their intellectual labor. After all, it is one thing to execute a picture beautifully and in minute detail. It is another thing altogether to endow that execution with reflexive intellectual overtones.

As an almost tortuous exercise in complexity (such as the profusion of narrative and emblematic details) mated to de-emphasis (using visible moral admonition to occlude almost purely reflexive paradox), Bruegel's print does not so much direct us toward first principles as question the ability of objects to do so in the first place. That emphasis on self-knowledge in the face of materialism, for instance, calls for self-

reflection. Furthermore, the print makes various literary, philological, philosophical, proverbial, and religious references that presume a knowledgeable viewer. Yet the end result is hardly reassuring for the viewer capable of recognizing those references and engaging in reflection. Since self-knowledge is the sole province of Nobody, to possess it is to cease to exist. As for those who fail to do this—that is, for anyone viewing the print—continued existence signals interpretive failure. The result is an inverted Augustinian moment, as *si fallor, sum* ("if I err, I am") becomes *si sum, fallor*. In short, the print inherently, automatically, and perpetually defines its viewer as simply, utterly wrong.

Since interpreting *Elck* correctly is effectively impossible, all effort associated with it is by definition wasted, including the effort required to make the image in the first place. After all, if the print is doomed not to edify, then it too is useless. Thus, both the artist and the viewer have squandered their material and intellectual resources. This strikes me as a far cry from the useful

Neue Zürcher Zeitung 265 (13–14 Nov. 1993): 67–68; B. Rothstein, *Sight and Spirituality in Early Netherlandish Painting* (Cambridge, 2005). On artisanal understanding more broadly, see P. H. Smith, *The Body of the Artisan: Art and Experience in the Scientific Revolution* (Chicago, 2004).

reflexivity produced by someone like Jan van Eyck, which, for all its pictorial and artisanal self-sufficiency, never muscularly dissociates itself from religious application. By contrast, the difficulties of Bruegel's image contribute little of obvious use to any larger moral process. As rigorous exercises in paradox, they refer not primarily to the world—let alone transcendence of it—but to themselves. Like the mechanical puzzle, they present themselves primarily in order to present themselves.

The utility of futility

What good are such objects, then? I suspect the answer lies in a little helical torus, one of two made before 1596 and kept in the *Kunst- und Wunderkammer* assembled by Ferdinand II, Archduke of Tirol at Schloss Ambras (fig. 12).[24] Ferdinand's collection was filled with all manner of remarkable objects, both manufactured and naturally occurring. Among such riches, this strange little thing would hardly have been a star attraction.[25] On the contrary, with its tear-outs and gouge marks it presented a fairly unimpressive level of polish. Yet there it was, smack in the middle of a room given over to finish woodwork. But why? Made of seventy-six essentially identical interlocking pieces, this object serves no evident function. True, at least one contemporaneous inventory refers to a similar torus as a trivet.[26] But the inventory for Ferdinand's collection suggests a different situation. At one point it does refer to "Ain hilzenes pfannholz" (a wooden trivet), but then it mentions two very different items, neither of which it assigns an explicit use. The entries for these two objects specify physical traits rather than function, indicating that those traits were considered salient. Furthermore, those traits correspond directly to the tori from the Ambras collection, suggesting these were categorized not as kitchen utensils but rather as curiosities. The first entry lists "ein cranz, von Holz gemacht" (a wreath or ring made of wood), while the second describes
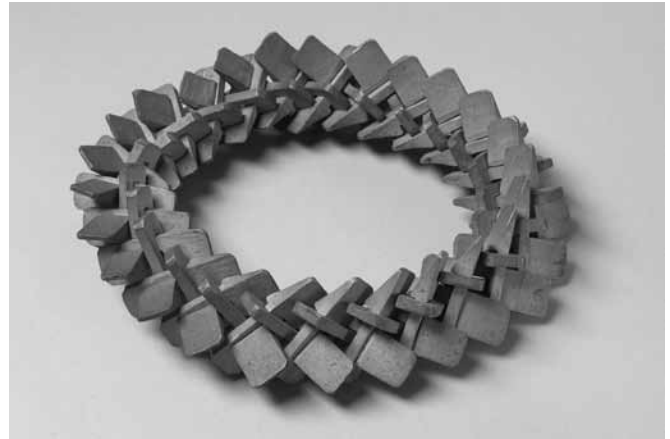

Figure 12. Anonymous, *Helical Torus,* before 1596. Beech wood, 27 cm diameter. Schloss Ambras Museum, Innsbruck. Photo: Courtesy of the Kunsthistorisches Museum, Vienna.

"Ain selczames holz, so creizweis under einander gewachsen" (a strange wood[en object], the pieces of which extend crossways through each other).[27] The reference to strangeness is especially interesting, for it gets at what I believe was the original justification—as if one were required—for the Ambras torus.

The Ambras torus was almost certainly in that collection because it was a mechanical puzzle—one of the oldest surviving examples, no less. The challenge in this particular case is not to assemble or disassemble something. Rather, it is simply to explain how this thing was made in the first place.[28] The seventy-six pieces are arrayed in three ranks placed at ninety degrees to one another. The pieces are rounded rectangular slabs with a bevel on one end and a barb at the other; a slot punctures the broad side of each slab. Each piece runs through the slot in its neighbor, with the barb securing one end and the next piece securing the other. In this way the pieces join in a helical pattern along the periphery of the torus. None of the pieces has been cut and then glued, nor has the torus been carved whole from a single block. Rather, it has been assembled from

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24. See B. Rothstein, "Making Trouble: Strange Wooden Objects and the Early Modern Pursuit of Difficulty," *Journal for Early Modern Cultural Studies* 13 (2013): 96–129.

25. See L. Daston and K. Park, *Wonders and the Order of Nature 1150–1750* (New York, 2001), p. 266.

26. P. Diemer, E. Bujok, and D. Diemer, eds. *Johann Baptist Fickler. Das Inventar der Münchner herzoglichen Kunstkammer von 1598* (Munich, 2004), no. 389: "Ein hülzener Pfannenknecht, oder schüßelring, von clainem gestückletem holz ineinander verschrengt, umb und umb mit clainen schilten . . . ."

27. The mention appears on fol. 472v of the inventory. See W. Boeheim, "Urkunden und Regesten aus der K. K. Hofbibliothek," *Jahrbuch der Kunsthistorischen Sammlungen des Allerhöchsten Kaiserhauses* 7 (1888), p. 310. The other torus in the Schloss Ambras collection, PA739, comprises eighty-one pieces arranged without a helical twist.

28. In this respect it corresponds to the modern genre known as the "impossible object," the most familiar example of which is perhaps the *Arrow through the Coke Bottle*.

those intact pieces, despite the seeming impossibility of such an achievement, and therein lies the so-called application. Rather than perform some physical function, the Ambras torus denies any association beyond the most willful. An exemplary case of simplicity at work, it appears as nothing more or less than what it is: a torus somehow made of seventy-six interlinked pieces of wood. Consequently, its utility lies almost entirely in its inutility. That is, the torus was probably valuable precisely because of the needless thought and pointless effort that went into producing it. I would call it a proof of concept, but the frequent use of this term to imply the hope for some future application makes for a poor fit, even with respect to the reception of the object in 1596.

This matters, for Ferdinand seems to have understood the basic sort of idea behind proof of concept. In the course of his travels through Italy via Switzerland and Austria in 1580 and 1581, Michel de Montaigne visited Schloss Ambras. While there, he had the opportunity to see the products of a workshop Ferdinand himself maintained:

> This archduke is a great builder and a planner of such things [viz., ingenious objects]. We saw in his castle ten or twelve weapons. Each carries a projectile as big as a goose's egg and is mounted on wheels [. . . .] They are made of nothing more than wood, but the muzzles are covered with an iron skin, which is doubled inside [the barrels]. A man can carry one on his back, all by himself. And [while] these pieces are fired less frequently than those cast in iron, nevertheless they will send a projectile almost as far.[29]

The accent in this account falls not on artisanal perfection or polish, but on the novel application of a material. But novelty is redeemed in the case of the rifles precisely because they can serve a material purpose: inflicting substantial damage while allowing for reduced energy expenditure.

With respect to the torus, by contrast, Ferdinand the utilitarian—that "great builder and planner"—seems to have shaded into Ferdinand the mental masturbator. For the *selczames holz* inflicts no damage, nor does it seem to have served any other readily discernable function.[30]

Rather, the Ambras torus justified its existence by playing an instrumental role in a cycle of futility: it is the result of a structural hypothesis that generated an object designed solely to provoke a corresponding structural hypothesis.[31] It therefore seems reasonable to suggest that the Ambras torus is nothing less than a machine for generating difficulty. Like a grossly enlarged plastic bolt covered in a maze rather than threading, it serves only to make things harder.

But why do something like this, whether with an object owned by someone fond of efficiency (composite weapons) or with a technology increasingly hailed as the engine of a new industrial revolution (stereolithography)? Both three-dimensional printing and lightening a firearm result from a cult of application, before which the *Eight-Inch Bolt* and the Ambras torus are evidence of apostasy. Indeed, they constitute the very opposite of what application and practicality espouse: a commonsensical response to "the really important facts of life [that] lie scattered openly along its surface."[32] Such objects and the exercises to which they correspond do not so much deny what is "really important" as simply ignore it outright or, on occasion, aggressively overcompensate for it.

Difficulty as a cultural system

So what, then, is the value of difficulty? The answer lies, I think, in van Deventer's *Eight-Inch Bolt*. A literally hollow echo of its model, this puzzle recalls an industrial object, but its relatively fragile body belies any such function—as, of course, does the maze, which wittily subverts the concept of threading. Consequently, the *Eight-Inch Bolt* demands that its user perform an onanistic task that involves a relatively short exercise in construction praxis followed by an extended test of executive function. Manipulating it, one engages reflexively in the mechanical pursuit of temporary gratification. Hence van Deventer's crude joke: Rather

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29. *Journal du Voyage de Michel de Montaigne en Italie par la Suisse & l'Allemagne en 1580 & 1581,* ed. C. Cavallini, p. 40. http://humanities.uchicago.edu/orgs/montaigne/h/lib/JV1.shtml.

30. There is no evidence of wear that would correspond to physical use, whether as a trivet or, as some have suggested in online discussions, a yeast ring for brewing beer. See, for example, the comments appended to M. Frauenfelder, "Fun with twisted toruses (or tori, if you must)," http://boingboing.net/2010/08/03/fun-with-twisted-tor.html.

31. Regarding structural hypotheses, I have in mind here something like the "operational aesthetic," as formulated in N. Harris, *Humbug: The Art of P. T. Barnum* (Chicago, 1973), pp. 72–89. On early modern uselessness, see K. Pomian, *Collectors and Curiosities: Paris and Venice, 1500–1800,* trans. E. Wiles-Porter (Cambridge, 1990); T. DaCosta Kaufmann, "From Mastery of World to Mastery of Nature," in idem, *The Mastery of Nature: Aspects of Art, Science, and Humanism in the Renaissance* (Princeton, 1993), pp. 174–194. Cf. P. Findlen, "Jokes of Nature and Jokes of Knowledge: The Playfulness of Scientific Discourse in Early Modern Europe," *Renaissance Quarterly* 43 (1990): 292–331.

32. C. Geertz, "Common Sense as a Cultural System," *The Antioch Review* 33 (1975): 22.

than actually promote material change, the *Eight-Inch Bolt* diverts its user from recognizable productivity. Intellectual labor, that most elusive of commodities, becomes little more than a sexualized, slightly embarrassing interlude.

Of course, our engagement with a mechanical puzzle is almost identical to our engagement with other arts: occasionally solitary, but more often in groups. Enigmatology thus entails a shared engagement with difficulty, which means that these seemingly trivial things, like all the others we study, "materialize a way of experiencing; [they] bring a particular cast of mind out into the world of objects, where [we] can look at it."[33] What the puzzle materializes and mobilizes is, in this case, difficulty itself.[34] Moreover, it does so in a deeply social and complex way: It is we who look at the thing materialized. This is especially important to note with respect to the *Eight-Inch Bolt,* given the ideas of privacy and shame that puzzle activates. For, without an audience—even if, as in this case, one in the single digits—such objects would likely not exist, at least not in material form.[35] I find the irony of van Deventer's joke interesting, then, precisely because it raises the question of whether grown men and women should really be *wasting their time* with this sort of thing.

A string of jokes common among puzzlers suggests that they should. These jokes work in two ways. First, they play with the idea that there is something distinctly counterproductive, if not unhealthy or even dangerous, about the pursuit of difficulty. Second, they use that idea as an oppositional mechanism for confirming the social and intellectual fabric of the puzzlers' subculture. Stewart T. Coffin, for instance, tells of a 1970 craft show where he had several early examples of his work on display: "[A] man who had spent quite a long time at our booth staring at my large display of new and unusual polyhedral puzzle designs finally looked up at me and asked whimsically, 'Did you have an unhappy childhood?'" Though representative of the sort of judgment puzzles frequently provoke, the observer's remark is less interesting than how Coffin later described his response to it: "It was always my intention to use

that as the name of some special puzzle design."[36] (The design in question requires the insertion of various cube-based shapes into a rectilinear box.)

Like many designers, in fact, Coffin has a long history of invoking emotional instability, diminished mental function, or even simple fecklessness as explanations for his work, attributing designs to laziness, incipient Alzheimer's, and so forth. He is neither alone nor the first. Indeed, the etymology of the word "puzzle" reveals that the term itself conveyed ideas of needless or wasted effort from the sixteenth century onward, not only in English but also in its Germanic cousins.[37] Against this backdrop, enigmatology has repeatedly defined and maintained itself by simultaneously embracing and satirizing such presumptions.[38] Thus, *Unhappy Childhood* is implicitly not only a result but also a cause, suggesting that since Coffin's parents did something to him, he is now going to do that to you. In short, it frames the pursuit of inutility as a kind of contagion.

Insofar as difficulty—the appeal of it, seductive or otherwise—is the vector for that contagion, we should recognize it as a crucial factor in the constitution of this particular society. For it is difficulty that attracts attention, infects the viewer with a desire to perform tasks with no readily commodifiable material result, and—this is key—has the capacity to generate further interest or susceptibility. This last point is perhaps best illustrated by the source for Coffin's story about the genesis of *Unhappy Childhood:* He provided his account in an accompanying note to collectors when he distributed the puzzle in 1983.[39] Thus, it is something of a teaser, providing (like the *Eight-Inch Bolt*) a playfully negative self-definition both for him and for those who share his predilections. At the risk of sounding like a functionalist, I must therefore admit that difficulty is, at least partly, what knits one into the culture, so long as you know or can find the solution to a given challenge.[40]

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33. C. Geertz, "Art as a Cultural System," *MLN* 91 (1976): 1478. For a different approach to materialism and visualization, see D. Tiffany, *Toy Medium: Materialism and Modern Lyric* (Berkeley, 2000).

34. What is more, it does so "directly" (i.e., by activating the idea) rather than "illustratively" (by simply depicting it). See Geertz (see note 33), p. 1480.

35. George Miller printed some five copies of the *Eight-Inch Bolt* (correspondence with George Miller 16.II.11).

36. S. T. Coffin, "Instructions for the *Unhappy Childhood* Puzzle" (March 1983), Puzzle Instructions and Ephemera (n.p.) (documents provided courtesy of John Rausch). The task with this puzzle is to assemble its various cube-based pieces into 2x5x5, 2x3x5, 2x4x5, and 2x5x5 configurations. The easiest operation involves a random color pattern; greater ambition requires that the result be checkered.

37. For more on the sixteenth-century etymology of "puzzle," see Rothstein (see note 24), pp. 103–105.

38. See, for instance, D. Hebdige, *Subculture: The Meaning of Style* (London, 1979), esp. pp. 5–19.

39. Coffin (see note 36).

40. This brings to mind other aspects of enigmatological subcultures, not least the ways they manifest social demarcation. Some people prefer impossible objects, others high-level burrs, and still

Clubs that won't have us as members

And yet, that knitting is always deferred, since the suitably difficult object repels effort. Like Kamei's *Calling Card Box* or Bruegel's *Elck,* such an object serves specifically to fend off the supposedly knowledgeable and capable interpreter. To cultivate such failure, temporary or otherwise, is a strange cultural dynamic, not only because it seems at first blush like some sort of abuse, but also because it runs counter to one of the underlying tenets of aesthetic theory—that pleasure (the correlate of beauty) is the bailiwick of art. One way to think of the matter is this: The difficult object regularly defies a set of expectations that we bring to it; we see that object, formulate a response to it, and then feel that response fail. In short, we experience the deferral of satisfaction, which by any other name is a sort of disharmony.

To be sure, there is enjoyment or pleasure (resolution) to be had in enigmatology. As early as 1500, the Italian mathematician Luca Pacioli had recognized the joy one might find in difficulty. In proposing a set of topological puzzles he noted that many served no other purpose than to delight.[41] The kind of delight Pacioli almost certainly had in mind, though, is the pleasure brought by a surprising resolution. His were topological tricks and games, objects that behaved in a clear, mathematically demonstrable manner. They were, in short, delayed revelations—jokes of knowledge, in a way—and the delectation they allowed was thus coincident with the moment of revelation itself.[42] But that delight was essentially satisfaction after deferral, which suggests that there can be no such pleasure or delight without some initial frustration, frequently of a pronounced sort. And where is the pleasure, where the beauty, in that?

The pleasure, I think, lies in rivalry of a sort. A puzzle may take hours to resolve, it may take weeks, or it may even take months, depending on the difficulties one faces and the skills one can deploy. During that span, the would-be solver may experience any number of mental states, but the main one will likely be frustration. Interestingly, that frustration is itself hardly unitary. A sophisticated (not necessarily complex) puzzle can subvert resolution in ways that are at times breathtakingly elegant, even exhilarating. For example, making a wrong turn in one of van Deventer's planar mazes will divert the user into a dead end that is hard to recognize as such because it is not so much an "end" as it is a sequence, one that feeds into itself rather than the solution. Likewise, Kamei's *Drawer Box* invites all manner of responses, most of which turn out to be artful only in their subtlety and complexity. (His designs are remarkable for their ability to reveal the seven-league interpretive boots with which we regularly stride past viable ideas.) Thus, interpretive failure before the puzzle, as elsewhere, only occasionally correlates with pleasure in any traditional sense of the word. More often, the delight a puzzle does provide is of a peculiar sort, depending at least partly on the continued promise of a satisfaction still deferred. The more elegant, the wittier that deferral, the greater one's enjoyable frustration. It is as if the would-be solver squares off against the maker of a given puzzle, each party vying for a kind of interpretive control. The longer the puzzle resists resolution, the longer its maker can boast of primacy.

This realization lends an unexpected edge to van Deventer's *Eight-Inch Bolt,* which does more than simply redefine enigmatology as onanism rather than solipsism. Taking a familiar, intimate activity, it recasts that activity as alien and dismayingly awkward. Each misstep, each failed attempt at resolution drives the point home, since overshooting the proper path of the maze necessitates a return to the start. Dancing merrily about the maypole of difficulty, the *Bolt* suggests that we pursue this particular hobby badly, at least until we sort the mechanism and navigate the maze. Of course, the insult is implicitly temporary. Anyone who plays with this puzzle will hardly do so by accident. Like Bruegel's *Elck* or Kamei's

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others interlocking geometric solids. Trick locks appeal to a particular kind of person, while fans of disentanglements and other sorts of topological puzzles are easy enough to spot. Another noteworthy group is the quite vocal and rapidly expanding community dedicated to twisty puzzles, a genre that traces its ancestry through the Rubik's Cube to a 2x2x2 design originally developed in 1957 by an engineer named Larry D. Nichols. There also are intriguing (and widely recognized) differences between designers and certain types of collectors. No doubt Torsten Veblen would have had plenty to say about this, and about the importance of surplus resources for the sorts of practices under consideration here. After all, leisure and its associated traits are basic requirements for a more or less socially acceptable inutility to thrive in the ways that puzzling has. Indeed, such a flagrant disregard for application is an almost textbook case of conspicuous consumption. Important as these issues are, however, my concern lies not with functionalism, but with something rather like its opposite. Think of it as an ethical obligation.

41. L. Pacioli, "De Viribus Quantitatis," ed. D. Uri (Bologna, Biblioteca Universitaria di Bologna, Codex 250), fol. 206r (http://www.uriland.it/matematica/DeViribus/Pagine/441.JPG): "Sonno alcune operationi per dar dilecto alla brigata quali sonno de grande speculatione et fan se frali giouani per a comodare loro ingegni a maggiore facti dele quali luna . . . ."

42. See Findlen (see note 31).

Calling Card Box, the *Eight-Inch Bolt* presumes a skillful, knowledgeable audience. It presumes, in short, the potential for a success that is all the more frustrating for its elusiveness. And in that frustration, difficulty— infuriating, delightful, shameful—threatens to become the only thing that matters.

Why difficulty matters but does not always mean

Like common sense, difficulty seems a nonissue precisely because it is so basic a concept for shaping our perception of the world.[43] Nonetheless, I find it peculiar that someone would consciously provoke a desire (resolution) that must *necessarily* be frustrated in order for that provocation to have succeeded fully (difficulty). This has at least two important implications for the study of visual culture. First, it points to an important mechanism behind the evaluation and circulation of puzzles. Recall Georg Simmel's theory of value:

> We desire objects only if they are not immediately given to us for our use and enjoyment; that is, to the extent to which they resist our desire. The content of our desire becomes an object as soon as it is opposed to us, not only in the sense of being impervious to us, but also in terms of its distance as something not-yet-enjoyed, the subject aspect of this condition being desire. As Kant has said: the possibility of experience is the possibility of objects of experience— because to have experiences means that our consciousness creates objects from sense impressions. In the same way, the possibility of desire is the possibility of objects of desire. The object thus formed, which is characterized by its separation from the subject, who at the same time establishes it and seeks to overcome it by his desire, is for us a value.[44]

The puzzle is designed specifically to provide a resistance that generates value by ramping up desire even as it defers or prevents satisfaction.

In fact, Simmel's suggestion gains particular weight with respect to mechanical puzzles. As machines for generating difficulty, they exist to provoke and then defy the desire for resolution. Total defiance is unsatisfactory; providing no interpretive footholds, the wholly opaque object fails to sustain effort, let alone reward it. Such an example is thus of no value. By contrast, the effective mechanical puzzle must necessarily hint at, but not readily allow, resolution. In such an object, then, that resolution is not the sole commodity on offer. Rather, it is paired inextricably with difficulty, which derives

from the carefully balanced suggestion and deflection of resolution. Consequently, the four strategies for generating visual difficulty all perform one shared operation: Each indicates the potential for interpretive success, in the process fueling the desire it subverts. Simplicity, hiding nothing, implies a kind of obviousness: With everything on display, one need only spot a mechanism that lies in plain view. Complexity, with its profusion of detail, suggests the potential for organizing and subsequently employing that detail. As a rhetoric of elusiveness, de-emphasis speaks to the existence of cues or mechanisms that have in some sense been masked, suggesting that one need merely demonstrate adequate perceptiveness. And, finally, misdirection likewise provides gists and piths that signal feasibility, if in unreliable ways.

Since the mechanical puzzle builds on some combination of these four strategies, it is also a machine for generating desire, and thus a machine for generating value as well. The value it generates is, of course, partly monetary. But there is another value at stake here, too, and it is one that sharpens the paradoxical celebration of purposeful uselessness. By generating a solution in order to withhold it, the puzzle designer constructs a cycle of desire, from provocation and deferral to, at times, satisfaction. The desire in question, however, is not purely for acquisition. Rather, it is for the successful completion of labor. Insofar as that labor is mainly intellectual, it is tempting to interpret this fondness for offering something specifically in order to withhold it as an exercise in testing the value of thought itself. Again, note that this test takes the form not of representation, but rather of enactment. The person who would solve a given enigma embodies the value at issue, which is why I suspect that the mechanical puzzle is perhaps less a statement about ideation than a question, which the viewer repeatedly, even continually, answers by straining to resolve a given difficulty.

Second, and no less interesting, that answer— difficulty, along with the effort it provokes—matters but does not necessarily mean.[45] After all, difficulty itself is continually in flux, not only deriving from some combination of the four strategies, but also varying in degree and material manifestation. More important, though, difficulty can only expand to fill and inflect one's perceptual and cognitive field for some limited duration, in the process creating a host of hermeneutic

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43. Geertz (see note 32).

44. G. Simmel, *The Philosophy of Money,* trans. T. Bottomore and D. Frisby (London, 1978), pp. 62–63.

45. I thank Colin R. Johnson for calling my attention to this distinction.

problems. Miguel Tamen has suggested that "[t]he most popular notion concerning interpretation is that things are 'interpretable.' According to this notion, certain properties of certain objects render those objects especially apt to *mean*." What he has in mind here is, I think, the widespread expectation that one can treat a given object as standing for something else: other objects (for instance, that a flat, pigmented piece of fabric depicts the Dutch countryside near Wijk bij Duurstede), economic maneuvers (that this depiction includes seventeenth-century markers of industry, such as a windmill), political claims (that near the windmill I see a group of women dressed in socially acceptable outfits), or even genres (that a group of letters in one corner of the fabric marks it as a specific type of cultural product—a finished painting).[46]

Tamen is especially interested in the putatively intrinsic qualities that interpretation claims to articulate, but another issue has caught my attention here: the expectation that we might arrive at something susceptible to articulation in the first place, whether through direct or indirect expression. This expectation is, to say the least, problematic where difficult objects are concerned, for those objects repeatedly destabilize not only a given meaning, but also our sense that meaning as such is readily available to us. Both mechanical puzzles and other sorts of baffling objects readily suggest interpretability. They are, for instance, visibly manufactured and thus redolent of purposefulness (displaying painstaking finish carpentry or refined engraving technique); they display various characteristics shared by other, familiar sorts of objects (drawers, handles, or clearly labeled dramatis personae, such as Everyone); and, finally, they evince other, less referential traits that we nonetheless identify with some kind of application (pieces that move in limited ways or a visual syntax that promotes parallelism among constituent elements). Consequently, objects of this sort encourage the pursuit of interpretation. At the same time, though, simplicity, complexity, de-emphasis, and misdirection complicate that pursuit. In this respect, mechanical puzzles operate in a manner directly analogous to objects such as Bruegel's *Elck,* in which paradox disallows easy or stable resolution of the subject matter. Challenging artworks all, they create a situation in which the attentive viewer may come to wonder if

the difficulties at issue are in fact ontological rather than tactical.

This is so because, with each interpretive failure, we return to a state somewhere between basic cognition and recognizable cogitation. I do not refer here to the transition from thoughts to ideas. As anyone who has ever had a conversation knows, either can be articulated almost as readily as the other. The difference between them is one of rigor, clarity, and precision—that is, one of degree, not kind. Rather, I have in mind the transition we make, when faced with an unfamiliar object, from initial perception to the formulation of some kind of response, be it intuitive or logical, crude or polished. The difficult object, insofar as it defies the sort of understanding it seems to promise, generates an important reversal in that transition. Rather than allow us to move simply and more or less directly from apprehension to comprehension, such an object repeatedly suggests that the latter is illusory, and thereby necessitates a return to the former. Thus, while I suspect that the majority of our time in the presence of a difficult object is spent engaging with various interpretations, successful or otherwise, a small but significant component is spent in a kind of intellectual limbo, where we neither simply apprehend nor actually comprehend what we face. It is as if we encounter an object simultaneously old and new, with all the complications that this might entail. (That return to initial cognition is, after all, incomplete. Part of what makes the *Double W* so successful, for instance, is that prior interpretive efforts linger, hindering resolution and leading interpretation to confound itself.) But that is precisely why difficulty does not necessarily mean but still matters: So long as we recognizably fail to interpret an object correctly, our failure runs counter to the characteristics that provoke our attempts in the first place, creating an intellectual dissonance that begs for another shot at harmonization. In this respect, the larger significance of difficulty lies specifically in its irresolution.

The takeaway

Some time ago, a fellow academic remarked to me that he wished psychological research would demonstrate a set of mental benefits that attend playing with puzzles. That way, he suggested, one could spread the contagion proudly in classrooms, the workplace, perhaps eventually even museums. What matters most here is the idea that intellectual labor somehow cannot—perhaps *should* not—be self-sufficient, since it does not result in a readily recognizable commodity.

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46. M. Tamen, *Friends of Interpretable Objects* (Cambridge, MA, 2001), p. 130. Tamen also discusses the concept of "reduction" (pp. 8–27), as well as (briefly) mattering versus meaning (p. 136).

Rather, it must be shown to serve some commonsensical or at least utilitarian purpose. Indeed, according to my interlocutor's model, the puzzle would enter the museum—that sobering temple of inutility—only once its *usefulness* had been proved beyond doubt.[47]

Of course, the jokes and tasks I have discussed in this essay trade less in that sort of ambivalence than in ambiguity, and that tells us perhaps the most diverting thing about the cultural work of visual difficulty. Bruegel's *Elck,* for instance, simultaneously excludes us from any sort of ideal intellectual community (as examples of Everyone, we obviously do not know ourselves) and includes us in the most highly prized one of all (the few, putatively nonexistent, who in fact know enough to reflect upon what they do not know). Crucially, one's ability to savor this paradox would have marked attempts at interpretation among the primary audience for Bruegel's quite sophisticated pictorial games.[48] Van Deventer's *Eight-Inch Bolt* indicates something similar, and that is the ability of the reflexively useless object to knit together a group of people based primarily, if not solely, on their ability to master that inutility. In short, difficulty as a cultural system thrives on the paradox of esteemed uselessness.

Let me close, then, with failure. With the *Eight-Inch Bolt,* as with other mechanical puzzles, the goal is to produce that state in the viewer, if only temporarily. Here, as in Bruegel's milieu around 1558 and Ferdinand II's around 1596, certain types of failures thus constitute success. Moreover, that success is sometimes even measurable. With each strong puzzle design, a flood of new ones based on it will appear: *Hexsticks* leads not only to a commercial release, *Hectix,* but also to *Hexsticks Revisited, Tech Sticks,* and *Hextasy*; the *Pennyhedron* gives rise to *Ze Chinnyhedron*; *Packuliar* follows *Kim NoPack*; and so forth. This retrospective, reactive, and dynamic process of innovation adumbrates a devil in the details.[49] That devil is not quite Blake's Lucifer; it lacks adequate anguish.[50] Nevertheless, it

demonstrates perhaps the most important and ethically promising aspect of difficulty as a cultural system. The rivalry in question has no defensible application, and yet it continues. Moreover, while seemingly ad hoc (based here on caprice, there on inspiration), those exercises are in fact supremely methodical in their underlying structure: One will build on numerical progressions, another will be subject to rigorous logical constraints, a third will prey meticulously on mental and physical practices (such as those associated with lock-picking or with the orthogonal movement of traditional burrs). And all the while the only goal is to destabilize knowledge acquired thus far. Thus, the order of enigmatology ultimately derives from carefully cultivated disorder, and the experience reified is that of visuospatial restlessness and nothing more. Indeed, this refusal to get down to business is precisely the business of that subculture in the first place.

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47. See Pomian (see note 31), ch. 1; M. Thompson, *Rubbish Theory: The Creation and Destruction of Value* (Oxford, 1979). Cf. the opening remarks to D. Joselit, *After Art* (Princeton, 2012).

48. See, for instance, the overview provided by W. Gibson, *Bruegel* (London, 1977).

49. Whatever else we may say about genres—disentanglement, burr, combinatorial, and so forth—their manifestations mutate quickly. As for retrospective innovation, I have in mind the model articulated by G. Kubler, *The Shape of Time: Remarks on the History of Things* (New Haven, 1962).

50. H. Bloom, *The Anxiety of Influence: A Theory of Poetry,* 2nd ed. (New York, 1997).