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THE NUMBER 42

In every particle of the universe a world of infinite creatures is contained.
— Gottfried Leibniz, *Opuscules*

When Alice is dozing in her sister's lap, thinking about and ultimately rejecting the idea of setting out to collect flowers to make a daisy chain, she sees a White Rabbit take a watch from its waistcoat pocket. John Tenniel's crosshatched image of the Rabbit is the first of forty-two illustrations in *Alice's Adventures in Wonderland* and Lewis Carroll, it seems, was particularly drawn to this number. As Martin Gardner put it, the number 42 had "some sort of special significance for him." When, in chapter two, Alice tests her ability to solve some multiplication problems she arrives at what appears to be a series of nonsense calculations—4 x 5 = 12 ; 4 x 6 = 13 ; 4 x 7..." But before offering a solution to this last Alice says, "Oh dear! I shall never get to twenty at that rate." Gardner points out that Alice's strange multiplication table is actually valid for a number system based on 18 in the first instance, 21 in the second, and so on. If we keep adding 3 to the base in this way it is just when we reach base *42* that the system breaks down and—Alice is right—we "never get to twenty." There are no doubt many more examples of Carroll's use of "42" as an encrypted constraint in this way in *Alice's Adventures* and *Through the Looking Glass*. That Carroll delighted in making logical and mathematical puzzles, and was the author not only of the ageless *Alice* books but of works at once ludic and didactic like *The Game of Logic*, invites us to find numerical patterns nested in his fictional worlds. Carroll seemed to have thought of numbers not only as counters but also as elements for making abstract designs.

In his 1899 study of Gottfried Leibniz, Bertrand Russell hinted at the anfractuous vessels binding literary imagination to logic and mathematics. There Russell described Leibniz's *Monadology* as a

"fantastic fairy tale, coherent perhaps but wholly arbitrary." That is an apt description not only of Leibniz's wonderfully bizarre treatise—which shows the world to be an infinity of soul-like atoms, none of which ever come into contact and all of which mirror the entirety of the universe—but also of some of Carroll's logical treatises. For Carroll, logical demonstration was itself an occasion for flights of sublime silliness, what Harry Mathews called "a witty sense of the absurd." The posthumous *Symbolic Logic* includes some hundred examples alternately involving: babies, saucepans, potatoes, spiders, muffins, pudding, porridge, pencils, lobsters, toothaches, bankers, frogs, wasps, pillows, eggshells, professors, medicine, puppies that do or do not say "thank you," ducks that wear lace collars, waltzing ducks, inaudible music, guinea pigs which are not ignorant of music, the absence of terriers among the signs of the zodiac, the knowledge gardeners have of military subjects . . . and many, many more. In Carroll's examples of valid inference, in his choice of an apparently infinite array of variables for illustrating necessary laws, one feels oneself entering a combinatory monadology of the quotidian; a magic hinge where stray predicates form mad composites.

But why 42? Aside from the fact of the number's recurrence across Carroll's imaginative writing, what is it about this number that makes it uniquely catalyzing for aesthetic patterning? We could begin by taking another cue from Leibniz, who derived his Wonderland of Monads from the containment patterns of subject-predicate logic. All predicates of a possible world are in every case for Leibniz "contained" in some subject. That relation is clear enough in what philosophers call "analytic judgments." In the proposition *all bachelors are unmarried* the predicate is redundantly contained in the subject, since "bachelor" includes *unmarriedness* in its definition. Thus the proposition may be reduced analytically to "all unmarried men are unmarried," and so to a relation of Identity (A=A). Leibniz treated this patterned containedness as the glue for his metaphysics. Even the most ephemerally contingent predicate—say, *a snowflake has landed in Martha's lemonade*—is in the Monad Wonderland itself analytically reducible. That bit of snow landing in the lemonade, if submitted to an act of infinite analysis, may be shown to be contained "analytically" in the world. For Leibniz, only God may perform such acts of infinite analysis. "42" then seems numerically to embody this idea: the number's nested leftward symmetry—the twos fitting neatly into the host 4 (and if we double it to 84 we seethe pattern repeated an octave up, as it were). Alice herself undergoes similar scale shifts as she traverses the membrane between the world where she dozes on her sister's lap and the wonderland of transformations. Alice herself undergoes a similar pattern of scale shifts as she traverses the membrane between the world of her dozing with her sister and the wonderland of transformations she enters after plunging down the rabbit hole, or even the way a copy of the world may be found to be contained in a mirror. Such artificial worlds bring to mind a Piranesi print or a Mozart piano sonata—artworks which deliriously multiply their combinatory units, giving a feeling of opening onto limitless vistas.

Even his rooms at Christ Church, Oxford, as the child actress Isa Bowman tells it in her 1899 memoire, *The Story of Lewis Carroll,* were full of delightful gadgets and trinkets that seemed to spring from this kind of patterned world. Among them, she notes, was Carroll's formidable collection of music boxes: "There were big black ebony boxes with glass tops through which you could see all the works . . . Sometimes one of the musical boxes would not play properly [and Carroll would] go to a drawer in the table and produce a box of little screwdrivers and punches, and while I sat on his knee he would unscrew the lid and take out the wheels and see what was the matter . . . Sometimes when the musical-boxes had played all their tunes he used to put them in the box backwards, and was as pleased as I at the comic effect of the music 'standing on its head' as he phrased it." Reversing the clockwork music of the box, showing how the music could be flipped, turned upside down, thrown into a mirror, evinces a fascination with pattern as such; as malleable material subject to transposition and inversion. Carroll, it seems, was as interested in the music broken apart into free units of recomposition as he was in the recognizable melody of the tune.

Many of the best essays on Lewis Carroll—such as William Empson's "The Child as Swain," and Virginia Woolf's 1939 essay on Carroll—stress the connection of his work, to the idea of childhood. (Woolf noted that in Carroll childhood had been preserved like a "perfectly hard crystal" in the "untinted jelly" of his outwardly uneventful life). The *Alice* books do seem to be about the candor and whimsical absolutism of children; of the swoops of imagination that may suddenly appear as huge threatening inversions of logic in the midst of otherwise rational considerations, and that this contrast or juxtaposition has something to do with "being little" and "growing up."

This idea of childlike freedom, and the imposing constraints of adulthood, may be found also in the novels of Raymond Roussel, whose hidden tricks involving puns and homonyms unleashed fictional worlds of such overwhelming extravagance John Ashbery once said one must "wear some kind of protective equipment" while reading these novels and poems which "explode all around us like a fireworks factory." Roussel's whole writing life was spent trying to attain the glory he had experienced as a child reading Jules Verne's *Voyages extraordinaires,* and his own cryptographic procedures are like alchemical ciphers for trying to regain the wonderland of a vanished childhood immersed in—and regularly reading aloud from—these adventures.

Another searcher after vanished wonderlands—the radiant details contained in the larger frames of memory, all those glittering twos nestled inside their grown-up, encompassing fours—was the Russian-American novelist and lepidopterist Vladimir Nabokov. Nabokov, who at age twenty-two and while living as an exile in Berlin, translated *Alice in Wonderland* into Russian, threaded allusions to the book throughout much of his subsequent fiction. From the double exile of having been first dispossessed of his beloved St. Petersburg after the revolution and then leaving increasingly fascist Europe with his Jewish wife in 1940 for the United States, Nabokov's first novel in his adopted language of English, *The Real Life of Sebastian Knight*, has a hotel concierge address the narrator in "the elenctic tones of Lewis Carroll's caterpillar." The line, with its alarming adjective—*elenctic* means to refute and is the opposite of *deictic,* to assert—melds his interest in insects and an attunement to the strangely disputatious atmosphere of *Alice* (she always seems to be getting into arguments with whomever she encounters), unleashing a bit of the outré English vocabulary he had cultivated for a switch from Russian to English prose. Later in the novel, that allusion to Carrollian disputation metamorphoses into a more overly numerical patterning as the narrator meditates on the date of his half-brother's death, noting that "as I look at this figure I cannot help thinking that there is an occult resemblance between a man and the date of his death: Sebastian Knight d. 1936 . . . This date to me seems the reflection of that name in a pool of rippling water. There is something about the curves of the last three numerals that recalls the sinuous outlines of Sebastian's personality." I don't think it's any accident that the number Nabokov chooses as the hieroglyph of the dead writer's personality is one teeming with patterns of containment, the "curves" of 9, 6, and 3 in succession fitting neatly into one another like Russian dolls and, like the tidier evens 4 and 2, set off a flood of aesthetic possibilities, like the wheels of one of Carroll's music boxes.

The same year Woolf published her essay on Carroll and childhood (1939), Jorge Luis Borges wrote "Some Avatars of the Tortoise" for the Argentinian magazine *Sur.* The essay is a coy rehearsal of a planned future (and ultimately unwritten) book on the history of infinity. That extravagant premise sets the stage for a discussion of different patterns of regress, beginning with Zeno of Elea. Zeno's well-known thought experiment is of the tortoise which, if given an inch head start, will win a race against Achilles. Achilles cannot overtake the tortoise, since to reach it he must first reach the half way point of the distance opened up by the head start; and in order to get to the halfway point he must first get to the half of the half, and to the half of the half of the half, and so on, to infinity.

In the course of his remarks on this kind of *regressus in infinitum* Borges mention's Carroll's 1895 article "What the Tortoise Said to Achilles" (*Mind*, 1895). There Carroll finds the mathematical regress illustrated in the parable of Achilles and the tortoise at work in

logical inference. Like the connoisseur of musical boxes who reverses the inner clockwork to make music "stand on its head,"Carroll transposes the spatial form of regress as animated in Zeno's paradox to the stepwise sequence of the syllogism (*modus ponens*), finding a disturbing infinity lurking in laws of logic. Taking as his example the first proposition of Euclid, Carroll's tortoise lectures Achilles: if two terms (A, B) are the equal of some third term (C), then the first two terms must be equal to each other. In challenging this idea the tortoise inadvertently opens up a regress, such that the assumed principle that A and B are equal to some third thing C itself becomes a new hypothetical (D). This new term cannot be avoided, since it is nothing less than the implicit hypothesis that *modus ponens* itself is valid. Both Zeno's paradox and Carroll's syllogistic regress have a form that may be extrapolated from the starting point *42: 4 , 2 , 1, .5, .25, .125, .0625, .03125* . . . and so on infinitely.

Like Carroll, Borges had a taste for threading his mathematical and interests into his literary works. In the baroque detective story "Death and the Compass" (1941) Borges uses a version of Zeno-like regress for the climax, in which detective Erik Lonnrot asks his nemesis, the gunslinger Red Scharlach, to find him again in some future version of their confrontation. "In your labyrinth there are three lines too many," Lonnrot says. "I know of a Greek labyrinth which is a single straight line . . . When, in some other incarnation you hunt me, feign to commit (or do commit) a crime at A, then a second crime at B, eight kilometers from A, then a third crime at C, four kilometers from A and B and halfway between the two. Wait for me later at D, two kilometers from A and C and halfway, once again, between both."

One assumes Lonnrot is plotting his escape from this second, future encounter by disappearing into the infinity opened up on the labyrinth composed of a single line.