
In the Data Kitchen: A Review (a design fiction on data science)

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Abstract

The story “In the Data Kitchen” appeared online in 2017, and went viral, receiving an astonishing degree of attention for an unattributed work with obscure origins. We review this provocative fiction, discussing its evident resonance with societal concerns and ongoing discussions of big-data ethics.

Author Keywords

Design fiction; Big data; Ethics.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Review

In early 2017, a story called “In the data kitchen” began to circulate online. Its origin is unknown. While it has been re-posted in many places, albeit with some variations, the re-posters all disclaim authorship. This is a bit surprising, as the story’s characters and themes have been taken up in genres from cartoons to videos. They are now being appropriated by commercial endeavors: t-shirts are widely available, and there is speculation that tie-in dolls and other animated toys will be must-have products for the next holiday season.

We became aware of “In the Data Kitchen” when it provoked a flurry of controversy in well-known technical blogs. While some commentators dismissed it as “derivative” or “just a parody,” we suggest a closer look. When a work receives such an intense reception, it is important to understand why. In this review, we argue that “In the Data Kitchen,” (hereafter DK), can be read as a critique of data science, and that it is tapping into a deep anxiety about the impact of big data on individuals and society.

We begin by reviewing the plotline of DK and its relationship to the apparent source text, a children’s book by Maurice Sendak titled *In the Night Kitchen* (NK) [35]. Next, we consider the impact of an imported rhyme that elaborates and complicates the main plotline. We then consider how progressive changes to the rhyme create ambiguity that gives rise to multiple interpretations. We conclude by highlighting what we see as the key to the story’s intense reception, and remark on its relevance to today’s concerns.

Plotline

The plot of DK appears to have been based on NK. However, it included large amounts of imported content that are only partially related to Sendak’s text. We’ll begin by describing the plotline, noting the passages that diverge from the original structure of NK, and discussing the significance of the divergences.

The story of DK begins with a child protagonist named Mickey; in this way, it seems to pay an homage to NK. In NK, Mickey is male. In DK, the gender-identity of Mickey is left unclear. As in the plotline of NK, Mickey experiences a mysterious nighttime fall into a vast kitchen of a commercial bakery. However, the kitchen

of DK is a hybrid domain that seems to be part-bakery (as in NK) and part-laboratory – i.e., the “data kitchen” of the title of the story. The people in the data kitchen appear to be cooks (another reference to the bakers of NK). However, unlike the comedic bakers of NK, the cooks in DK are initially enormous, menacing, troll-like figures.

When Mickey becomes aware of the data kitchen, s/he is on a conveyor belt leading to an enormous mixing-vat that the cooks are tending. The conveyor is crowded with stacks of numbers and symbols in various type-faces and font-sizes, and heaps of flow charts and data schemas. In the background there is a low, rhythmic rumbling that grows louder as the conveyor carries Mickey deeper into the data kitchen.

Mickey is feeling very odd. There is a sort of pressure that makes it difficult to move, like being underwater. Mickey is pressed down against the conveyor and can see his/her hands becoming flatter and translucent. It’s difficult to breath. Mickey is puzzled, and then alarmed, to find that the immobility is beginning to feel normal, even comfortable. Gathering some remaining strength, Mickey scrambles out of the hopper and tumbles off the conveyor, falling deeper into the data kitchen. Mickey lands on a surface on which the cooks are working. Mickey immediately regains mobility and form and shouts,

I’m not the data and the data’s not me. I’m Mickey!

Mickey scurries about, looking for a place to hide. There is a large stack of numbers on the kitchen counter (a reference to digital processes?). Mickey hides behind the numbers (a pun?) as the cooks begin to sing.

It seems likely that the author of DK is again invoking NK. In NK, the bakers sing happily about putting

"...milk in the batter, stir it, scrape it, make it, bake it." And they put it up to bake a delicious Mickey cake.

In NK, Mickey is nearly baked into cake, but springs free:

*But right in the middle of all the steaming
and the making
and the smelling
and the baking
Mickey popped through and said,
"I'm not milk and milk's not me."*

Similarly, in DK, the troll-like cooks have been chanting, again echoing NK, but with a more data-oriented twist to the language:

*We won't dawdle, we'll make a Mickey model
we'll slice
and we'll dice
and make Mickey nice
and we'll round off the bits that just don't fit*

Mickey's answering shout – "I'm not the data" – is an initial defiant resistance to being turned into a model ("and the data's not me").

In the plotline of NK, the bakers encounter a problem (they need more milk), and Mickey solves their problem by shaping an airplane out of dough and flying to the top of an enormous bottle of milk. This triumph enables him to bring milk to the bakers. While in the NK's bottle of milk, Mickey sings,

*I'm in the milk and the milk's in me. God bless milk
and God bless me.*

While the structure is not strictly parallel, Sendak seems to be developing Mickey's role from a human who is trying to avoid the fate of *being an ingredient* ("I'm not the milk..."), into the active role of a helper. Mickey's intervention allows the bakers to complete their task, and they sing,

*Milk in the batter, milk in the batter.
We bake cake, and nothing's the matter.*

At this point, Mickey may have become an apprentice baker, who is "bless"ed by being "in the milk" and by having "the milk[] in me." Apparently, once he has achieved agentive status, it is no longer a problem to be associated with an ingredient.

There is a similar thematic development in DK, but with a more troubling subtext. In DK, Mickey also helps the data cooks solve a problem. The conveyer has run out of numbers, and Mickey flies off, sitting cross-legged on a carpet-like matrix of numbers. Mickey returns, but rather than bringing more numbers, s/he brings other children. They land on the conveyer, and the children leap off the matrix and scamper about, shouting with excitement. Their shrill cries and chaotic movement contrast with the rhythmic sonority of the data kitchen.

But this is where the story takes a troubling turn. After the chaos of the children's arrival, their voices decrease in volume, and seem to become entrained to the rhythms of the kitchen. As this happens, the images of the cooks become smaller and less menacing. Or does Mickey become more like the cooks? We cannot be sure (see "From Rhyme to Chant," below). In any event, the Mickey of DK has undergone a change in status similar to that of the Mickey of NK, from ingredient to cook.

Thematic Progression in an Introduced Song

The author of DK introduces a second, nearly parallel development of themes through a series of revisions to a song. In addition to “milk in the batter,” the cooks of DK have a second song, which they sing many times, with significant variations. This second song appears to be a modification of the traditional English rhyme, “Pease porridge hot.” The extant versions of the traditional rhyme refer to food (e.g., [8]):

*Pease porridge hot
Pease porridge cold
Pease porridge in the pot
Nine days old!*

*Some like it hot.
Some like it cold.
Some like it in the pot
Nine days old.*

In DK, the words of the rhyme reflect the big-data orientation of the data kitchen, while nonetheless retaining references to food and consumability.

*Algorithms hot
Data structures cold
All my users in the pot
Nine days old!*

*Some like them bought
Some like them rolled
Each consumer in their slot
Nine days sold.*

The rhyme in DK elaborates on the theme that we first encountered on the data-conveyor, of the dissonance between a living, embodied person (note that the original “Pease porridge hot” is part of a children’s clapping game), and the flattening (dehumanizing) big-data manipulations that are applied to them.

We begin to understand that the cooks of the data kitchen may be data scientists, and that Mickey and the other children may be, to them, objects of analysis – “users” or “consumer[s]” in a “slot” (the data-conveyor?), who are to be transformed into the “Mickey model” invoked earlier in the cooks’ chanting.

This rhyme returns, with a form of political evolution in the poetic images. The second appearance is perhaps even more threatening than the first version, because the second stanza of the rhyme now begins to describe not only the “what” of the transformation, but also the “how” of the transformation:

*Some like them caught
Some use a mold
Catch consumers with a bot
Nine days cold*

Mickey and the other children are “caught” via a “bot,” and are put in a “mold.” Being “caught” may be either a very passive experience, or the outcome of some kind of trap. The kitchen in DK begins to look like a dangerous place for people. Indeed, as we will see in the next section (“From Rhyme to Chant”), there is a possibility that the cooks themselves are no longer human.

By the end of NK, through helping the bakers, Mickey has undergone a transformation in status. As described above, the Mickey of DK also has undergone a change in status. The next occurrence of the rhyme reflects this change in Mickey’s relationship to the cooks and the kitchen. In DK, it is not clear whether the third version is sung by the cooks, or by Mickey, or by all of them, together:

*Interaction hot
Exploitation old
Some would leave them all to rot
But we like them bold!*

*Collaboration hot
Separation old
We will give it all we've got -
Together we have told!*

Some commentators focus on this version of the rhyme as indicating a "happy ending" to DK. Mickey has survived his/her entry into the data kitchen, and has struck up an alliance with the cooks. Perhaps Mickey has become a cook. Perhaps Mickey has persuaded the cooks that "exploitation" is "cold" and "separation" is "old," and that everyone will be happier if they adopt new algorithms that support "interaction" and "collaboration" with their users. This interpretation aligns with the use of the "Pease porridge" rhyme in the cooperative children's game, where they clap hands with one another in rhythm to the rhyme.

However, other commentators offer a contrasting interpretation. They ask, *what about the other children?* Mickey, they say, has solved a personal and individualistic problem, but did so to the detriment of the others. While the children are initially excited and intrigued by the data kitchen, DK is ominously silent about their fate. These pessimistic commentators speculate that Mickey has now joined the data scientists as they continue to "[catch]" and "mold" the users into their "slot[s]." The gradual evolution of the rhyme does not help us to answer these questions. The use of language provides some clues, as discussed in the next section.

From Rhyme to Chant

A detailed examination of the transformation of the rhyme tells a more complex story. Whereas DK maintains clear parallels with NK, the rhyme rapidly diverges from "Pease porridge hot." The brief rhyme is spun out into increasingly bizarre variations that lose its original structure, its rhythms and rhymes becoming stark and monotonous. What is going on here?

One possibility is that this is intended to symbolize the long-term impacts of big data. More generally, this move may indicate that in the data kitchen, language itself is pliable or workable, just like the bakers' dough in NK. As the rhyme mutates, the cooks chanting becomes increasingly ritualistic and arcane:

*knowledge through numbers
minimize fumblers, iterate stumblers*

The cooks' chants include increasing numbers of neologisms that build in complexity and triumphalism, "*data-gagement... contagement... arrangement... amagement...*" The rhyme has come a long way from a children's clapping game.

In the world of DK, the data structures are also capable of speech: They answer the baker's chants with rhythmic, alliterative neologisms of their own, such as "*continuation... configuration... countigation...*" and tightly rhyming incantations of "*precision, recision, concision, ELISION!*"

Perhaps the emphasis on "elision" is another reference to the children's plight as they are transformed from three-dimensional humans into two-dimensional, translucent "models." Note, as well, that the chants, with their rhythmic structure, evoke the iterative nature

of data processes, and the sometimes forced neologisms may be meant to evoke the tendency to force individuals into generic “slot[s].”

Commentators have proposed many interpretations. Some note that ordinary bakers perform acts that seem magical: They whip cream into stiff, elegant structures; they purée vegetables into silky soups; they cause soufflés and breads to rise. The bakers in DK also do magic. Just as magicians use chants to cast spells, data scientists transform raw data, and by making it consumable, increase society’s prosperity.

Other commentators counter that any prosperity will accrue only to a few, and that big data will have a pernicious impact on the many. The DK bakers, they note, use algorithms to transform people into models, and those models may replace people. Here they reference books and movies in which robots replace people, such as Levin’s *Stepford Wives* [20]; or the classical eastern tradition of the *hone-onna*, who steals the life-force from a person [37], or the classical western tradition of the *changeling*, in which magical fairies steal a human child and leave an animated but soulless block of wood in its place [29].

In DK, the chanting *by the data structures themselves* (e.g., “precision/recision/...”) suggests that data structures may also have (“algorithmic”) methods for magically (autonomously?) transforming persons into models. That is, those who use big data may be transformed by their own use of it. Are the cooks doomed? Or are the cooks already transformed? Are the cooks, in fact, structures which (or should we say “who”?) transform other humans into data structures, leading to an auto-catalytic phase-shift into a post-

human singularity? And if that is so, then what, indeed, is happening to Mickey as s/he helps – and ultimately joins – the data-scientist cooks?

Conclusion

In our view, Mickey is the linchpin to DK’s interpretation. Is Mickey the change-maker who restores the cooks’ understanding of the humanness that they share with Mickey and the other children? Or has Mickey become, knowingly or not, a traitor to the other children, and ultimately has become an autonomous processor of the other children – i.e., a cook? The successive transformations of the rhyme tell an optimistic story of human-algorithm mutual aid. But the changes to the language suggest a less happy end.

It is, of course, the multiple readings of the DK that account for its varied reception, and the energetic debates it has evoked. The readers of DK have fallen, just as Mickey did, into the dreamlike story of the data kitchen. DK, modeled as it is on a children’s story, captures the liminality of the increasingly data-infused world in which we dwell, and evokes our increasing awareness of our uncertain prospects. Clearly DK has struck a chord, although whether it is harmonious or dissonant – or both – remains to be seen.

Authors’ Statement

At CHI 2017, there was an informal discussion of how to explain technology terms to people who had little or no background in computer science. Some terms were considered too complex to explain. The group rescued the term “algorithm” from the “inexplicable” category, by defining an algorithm as “a recipe for how a computer cooks data” (unaware of the similar explanation offered by Zhu et al. [43]). This

conversation reflected the field's renewed interest in algorithms and ethics [1, 18, 22]

Although the mythology of data science makes claims to objectivity and even a kind of inevitability [7, 23], Pine and Leboiron have shown that there is much human discernment and decision-making in data science [32]. In a convergent paper, Passi and Jackson showed how much of data scientists' "data vision" is dependent on local contexts and situated decisions [28]. Taylor et al. [39] showed possible extremes of local situatedness for some collections of data and their interpretation, and Feinberg [11] provided evidence that data do not take an inevitable form and content, but are *designed* by the person who collects the data. In some accounts, data science has been characterized as a constructivist undertaking (e.g., [17, 24, 30]).

In this design fiction, we addressed some of these issues through a parable. Historically, parables have been used to pose broad questions. For example, Orwell's work provides three distinct accounts of his concerns regarding one situated interpretation of the principles of Marxism: as journalism [25], as straightforward fiction [27], and as a parable [26]. Using other fictive forms, scholars have considered possible futures before they occur (e.g., [10, 36, 38]).

The story, "In the data kitchen," doesn't exist, and nor do the reviews. In this way, we follow the example of Baumer et al. [2], who provided a set of titles-abstracts-authors of papers that might be published at a CHI conference 25 years in the future (see also [5]). Both the Baumer paper and our own are somewhat derived from Lem's tour-de-force book *A Perfect Vacuum* [21], in which Lem wrote reviews of non-

existent books – including a review of *A Perfect Vacuum*, which *did* exist after a fashion (the reader was holding the book while s/he read the included review of the book), but which was also a work of fiction, because the review made critical comments about critical comments of non-existent literary works.

We want to extend this line of fictional thinking back to a short story by Borges, which suggests important nuances to this kind of experimenting with ideas. In "Tlön, Uqbar, Orbis Tertius," [6] Borges played with concepts from Berkeley's subjective and idealistic philosophy [13]. In "Tlön," Borges posited a fictional idea, which became a place, and then a world, in which the concept of materialism is considered paradoxical and even heretical. Crucially for the purposes of DK, ideas take on the power of reality, and (if thought with sufficient force, or by sufficient numbers of humans or animals) ideas *become* reality.

In HCI, CSCW, and the social sciences, we discuss similar concepts with phrases such as "social construction" (in sociology, [3]; and in HCI, [12, 15, 41, 42]), as well as the subfield of the social construction of technology [4, 19, 31, 40]). We also commonly talk about "world building [9] and "world creation" [14] especially in gaming contexts, including military gaming contexts [33]. The key to Borges' story is that the principles of an idealistic universe become operative in our universe – that is, *thinking* about an idea (and talking about it) can cause a cascade of increasingly physical and widespread manifestations of that idea.

That's similar to what "we" do in a social or policy space, when we talk about the evolution of systems, including designed technological systems: Through

argumentation, experimentation, and extrapolation, we cause some of those ideas to become real to other people [15, 41, 42]. We or they might then build systems that embody, enable, and ultimately enforce those ideas. One example is an insurance company's cost-savings concept, which is implemented as a claims-processing rule, and which makes certain kinds of medical treatments expensive beyond the reach of poor people, thus creating "haves" and "have-nots" among people needing medical care. When people sign up for insurance, they agree to abide by the rules, and in this way a cost-savings concept can be enforced in a court of law. The cost-savings concept might be called by a name that accounts for only part of its intent – e.g., "proportionate-pricing" or even "right-pricing."

Orwell thought deeply and urgently about these dynamics in the language-changing chanting of the sheep in *Animal Farm* [26]. In the early days of the farm animals' revolution against their corrupt human masters, the sheep are instructed to chant, "four legs good, two legs bad." Later, as the ruling junta of pigs becomes corrupt and begins to take on human affectations, such as walking on their hind feet, the sheep are instructed to change their chant to, "four legs good, two legs better."

In a more disturbing and subtle way, Orwell also explored the consequences of what we might now call "weaponized language," in which a version of reality, asserted through language with sufficient force and brutality, gradually *becomes real*. In *Nineteen Eighty-Four* [27], he develops the concept of Newspeak, in which new words are added to the language the populace hears and is required to speak - the ultimate aim being in Orwell's words, "to narrow the range of

thought." (See also Havel's discussion of the role of ideology in shaping thought [16]). In DK, the flattening of children, and the threatened reduction of Mickey to a Mickey-model, may be seen as an analog of this narrowing of thought. Similarly, the rhythmic, repeated chanting of the cooks in DK may be seen as a rhetorical means of emphasizing this use of formulaic language to shape thought. Certain events in some of our countries are repeating these lessons today.

When we think of an idea, and then design a named system to explore that idea, we are constructing a form of reality [3, 4, 9, 12, 14, 33, 34, 40, 41, 42]. Zhu et al. explored the concept of an algorithm as a "recipe" [43]. As we noted above, recipes are – among other interpretations – procedures that can make or transform reality. In NK, Mickey initially struggles to avoid becoming an ingredient in a "delicious Mickey cake," and in DK, Mickey struggles to avoid being cooked into a "Mickey model."

But who uses the recipe? If an algorithm is a recipe, then the cooks are "executing" the algorithm, perhaps as a computer executes a program. The author of DK seems to be asking us to consider who or what a cook might be, perhaps challenging us regarding our own roles and responsibilities, as we ourselves enter the data kitchen.

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