Dear reader,

We offer this version of the *Meet Your Mind: The Science of Consciousness* comic book for people wishing to read the text even if they are unable to view the images. What follows is the full text of the "script" – the original work as created by author Jim Ottaviani. Some changes that artist Natalie "Tally" Nourigat made to the final printed version are not captured here.

This is an entirely new venture for *To The Best of Our Knowledge*. We make radio shows, not comic books. And making a screen-readable version of a comic book is way, way out of our comfort zone. So we welcome your feedback about this "accessible" version of *Meet Your Mind*. Write to us using our contact form at http://ttbook.org/book/contact-us

Thanks!

The folks at TTBOOK and Wisconsin Public Radio

Jim's notes to Tally are incorporated herein. Jim wrote:

"All the rest of the story notes are included on the relevant pages. Here are some more general notes:

- Title: *Upper left:*
  TTBOOK Presents:
  Main Title:
  Meet Your Mind
  Across the bottom:
  The Science of Consciousness

- Words that are to be emphasized are in ***bold italics***.

- The footnotes referencing books by guests etc. can be done as endnotes, depending on how dense we want to make the pages. I like them in context best, so that's where I put them for now. (They should appear under the panels they're called out in.) The text pages will repeat some of this, and add in publisher, ISBN, and the like.

- Finally, here's what I always say to artists: My panel descriptions are detailed and explicit, but please read them as suggestions and not commands. It's your show from here on out, so if you can think of a better way to depict something, let me know. I'll probably agree, and if I don't I'll tell you why I wrote what I did…from there I'm sure we'll be able to come up with something that works for both of us. Also, take any opportunity you can find to add visual gags, a.k.a. "chicken fat." Ask Steve L. to give you a brief comics history lesson regarding Will Elder if you don't already know the phrase. (I promise it's not a Dr. Dolittle reference.)

That's all for now.

Jim O.

Page 1
(3 panels)

Note: Until we get to the second section we need to see at least one bat on each page, either hanging upside-down or flying.

Panel 1
Establishing shot, so devote roughly a half-page to show Dr. Dolittle's cottage in Puddleby-on-the-Marsh. It's small and quaint, but run-down. It's also overrun with animals of all sorts. Well, not exactly overrun, but there are clearly plenty of pets and farm animals on the grounds.

The cottage is on the right side of the panel, leaving open space on the left for many of these animals to be clustered around a rickety, home-made wheelbarrow pushed by the cats'-meat-man. (A quick Google image search will pull up plenty of good reference for who/what that is. Those crazy British and their language!)

Said man is yelling back to the cottage as he leaves the yard.

Grabbing the eye in the empty space in middle of the panel is a parrot flying between the wheelbarrow and the house.

If possible, in one of the windows of the cottage, we see hands placing a flowerpot on the sill. That might be too much to ask here, so if we have to wait until the panel, no worries.

1.1 CAPTION (borderless, upper left):
Here's how I heard the story: Once upon a time, many years ago -- when our grandparents were little children* -- there was a doctor and his name was Dolittle.

1.2 CATS'-MEAT MAN:
Think about what I said, Doctor!

1.3 CAPTION (borderless, lower right):
He was very fond of animals…

1.4 FOOTNOTE:
And there was no such thing as "cognitive science."

Panel 2
Closer in to the aforementioned window, we see the parrot (name: Polynesia), lighting on the sill as another flowerpot gets placed there by the hands of Dolittle.

This might be where we see our first bat, hanging upside-down in the eaves above and a little behind Polynesia.

1.5 CAPTION (borderless):
One day, his parrot Polynesia overheard him get advice from the cats'-meat man*.

1.6 POLYNESIA:
The man's got sense. That's what you ought to do.

1.7 POLYNESIA:
Give the silly people up… Take care of animals instead.

1.8 FOOTNOTE:
* There is no such phrase, or job, now. We usually get our pet food in things that look like bags of potato chips. Only bigger.

(cont'd)

Panel 3
Closer in still, Polynesia is still on the sill, preening.

1.9 DR. DOLITTLE (off):
Oh, but there are ***plenty*** of animal doctors.

1.10 POLYNESIA:
Yes, there ***are*** plenty, but none of them are any good at all.

1.11 POLYNESIA:
Now listen, Doctor, and I'll tell you something. Did you know that animals can talk?

Page 2
(5 panels)

Panel 1
Finally, we see Dr. Dolittle. He looks puzzled, which is his natural look per the original drawings by Hugh Lofting. (See e.g. http://gutenberg.net.au/ebooks07/0701221h.html, and many more at Project Gutenberg Australia.) Here and in the next two panels we get a hint at the crowded nature of Dolittle's one-room home. We want to show that it contains a writing desk and a table. Both are messy, and the table is massed with science-y and doctor-y stuff. More details on the stuff on page three…

2.1 DOLITTLE:
I knew that parrots can talk.

2.2 POLYNESIA:
Oh, we parrots can talk in two languages -- people's language and bird-language.

Panel 2
Polynesia holds out her wings, as if they were arms, inviting him into the new world of animal language. Dr. Dolittle looks quizzical.

2.3 POLYNESIA:
If I say, "Polly wants a cracker," you understand me. But hear this:

2.4 POLYNESIA:
Ka-ka oi-ee, fee-fee.

Panel 3
Full-width panel, taking up spots three and four of the six-panel grid. Pull back so we see Dolittle from behind, scratching his head. Polynesia is now pointing at him with a wing.

And behind Polynesia we see the bat, and it has a thought balloon containing a question mark above (or below, rather, since it's hanging upside-down) its head.

2.5 DR. DOLITTLE:
Good Gracious! What does that mean?

2.6 POLYNESIA:
That means, "Is the porridge hot yet?" -- in bird-language.

Panel 4
Dr. Dolittle has put his hands on his hips, cocked his head, and pursed his lips as he accepts this new idea.

2.7 DR. DOLITTLE:
My! You don't say so!

2.8 DR. DOLITTLE:
You never talked that way to me before.

(cont'd)

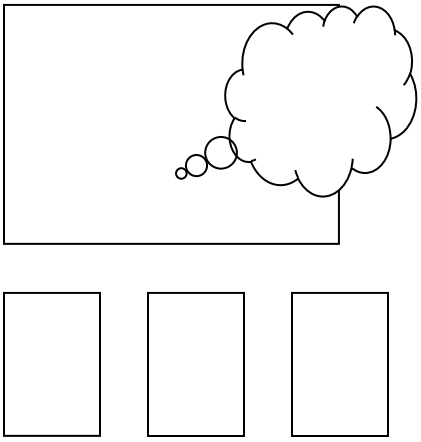
Panel 5
Dolittle is scrabbling around for something to write on. Maybe he's at his desk, or maybe he's standing at a table covered with junk. Either way, he digs through a mess.

2.9 POLYNESIA:
Why would I bother?

2.10 POLYNESIA:
You wouldn't have understood me if I had.

2.11 DR. DOLITTLE:
This is very interesting -- something quite new.

Page 3
(5 panels)



Panel 1
Another large panel. Dolittle has cleared space on the table in his room and is poised to write with an old-fashioned dip pen.

But. Back to the aforementioned messy table, massed with science-y and doctor-y stuff, here's what I'd like to see in an ideal world: first, we have stethoscopes, microscopes, test tubes and the like. I wouldn't mind at all if there were some odd and anachronistic things here as well, a suitcase, a miniature fMRI machine, a cymbal, a computer. And because we'll need them later, also have an open suitcase containing a book titled "Memory", a film canister with the label "sense of time", and a picture frame with the word "picture" in it (yes, very meta) too. I know, I know…this is a ***lot*** to jam into one image, so I don't expect to be able to tell that the book is bound in leather, not cloth, and that the film canister is dented from being dropped, and that the picture frame is gilded. These don't need to be detailed renderings, at all. Heck, maybe the suitcase isn't even open! So if you can just invoke or hint at these, that will be enough.

Anyway, Dolittle is starting to imagine the possibilities here, so we see a thought balloon tail starting in this panel and it flows over so that the whole next panel is his imagination of talking to a dolphin. And…I think the bat should be flying around the room here, since there's no room for it in Dolittle's imagination.

3.1 DR. DOLITTLE:
Tell me some more. Now don't go too fast -- I'll write it down.

3.2 CAPTION (lower right):
When you think about it, language ***is*** quite new. And it was slow to develop.

Panel 2
Inset. We're inside that thought balloon now, and Dolittle imagines himself talking to a dolphin.

3.3 CAPTION (upper left):
As soon as people had it, though, they probably imagined talking to animals.

3.4 CAPTION (lower right):
(Animals other than themselves, that is.)

3.5 FOOTNOTE:
Many cultures, such as the Ashaninka in Peru, do believe that it's possible…in modified states of consciousness, anyway.

(cont'd)

Panel 3
Dolittle is holding out a bowl of hot porridge to the dolphin.

3.6 CAPTION:
But assuming other species have language, would you be able to talk to them?

3.7 CAPTION:
You could ***probably*** agree on some verbs ("eat"), adjectives ("hot"), and nouns ("porridge").

Panel 4
The dolphin has nudged the bowl out of Dolittle's hand, so it's spilling into the sea. It's thinking "prefer raw fish." (Can we do that in pictograms? Maybe the ⦸ symbol covering the porridge, and a 回  image or 回 刺身 ?)

3.8 CAPTION (upper left):
But to complete the Dr. Dolittle fantasy of talking with animals, you'd also need more complex things, like adverbs ("yet") and abstractions ("is") to have a conversation.

3.9 FOOTNOTE:
刺身 = sashimi.

Panel 5
Polynesia and the dolphin talking, but not communicating.

3.10 CAPTION (lower right):
So, even though, unlike us, they both navigate in three dimensions, could Polynesia discuss geometry with Flipper?

3.11 POLYNESIA:
$x^2 + y^2 + z^2 = r^2$

3.12 DOLPHIN:
[speaks in a wireframe image of a sphere]

Page 4
(4 panels)

Panel 1
The two part ways, in disgust because the other doesn't get it.

4.1 POLYNESIA and DOLPHIN (sharing a thought balloon):
I have no idea what that…***whatever*** it calls itself…is saying.

Panel 2
Back to Dr. Dolittle, who's confused by the whole thing. He's scratching his head.

The bat is also overhead, again with a question mark in its thought balloon, which is of course still below its upside-down head, so the question mark is (still) also upside-down.

4.2 CAPTION:
And we, who are so wise…could we understand either of them ourselves?

Panel 3
A silhouette of Steven Pinker, formed by the word "Pinker", is molding a silhouetted brain (formed by the word "brain") with silhouetted hands, each in turn formed by (you guessed it) the word "hand". Feel free to simplify this if you need to; the idea is that words shape thought.

4.3 CAPTION:
In his book *The Stuff of Thought*, psychologist Steven Pinker shows how language shapes the way we think in both overt and subtle ways.

Panel 4
A Saami (indigenous Arctic dweller) correcting Dr. Dolittle, who's using the wrong word for snow. (Via *http://www.arcticlanguages.com/language_and_traditional_knowledge.html*)

4.4 CAPTION:
This is supported by plenty of research on people born into different languages.

4.5 DOLITTLE:
Err…snow?

4.6 SAAMI:
No, that's geardni. Oh, pardon me -- it's skáva!

4.7 FOOTNOTE:
It's the Saami people, not the Inuit, who are known for their many words for snow. So, *geardni:* "thin crust of snow"; *skáva*: "very thin layer of frozen snow."

Page 5
(4 panels)

Panel 1
Dolittle and the Saami, this time pointing at a 12 oz. glass with 6 oz. of water in it.

5.1 CAPTION:
The way we talk affects the way we think.

5.2 DOLITTLE:
It's half full.

5.3 SAAMI:
It's half empty.

Panel 2
Dr. Dolittle and a Saami person each walking their dog, approaching each other. Their respective gazes connect with dotted lines, just like in old-time comics strips. (And, in your classics lesson for the day, per the ancient Greek notion — via Empedocles et al. — that eyes send out light to connect with the things they focus on/attend to.)

5.4 CAPTION:
So if the way we think affects the way we talk, and the way we experience the world affects the way we think, then…

5.5 CAPTION:
…how can we expect to talk to an animal?

Panel 3
The people meet, and begin to talk. The dogs are sniffing at each other. I don't suggest we show the full…um…hindquarters sniff that dogs usually go for, but I don't think we have to since most people know where dogs' noses will end up when given the choice.
A bat is flying in from the left side of the panel.

5.6 CAPTION:
So forget left brain vs. right brain -- if you want to talk to a dog you need to understand the appeal of sniffing or rolling around in…

Panel 4
Dr. Dolittle, walking away and addressing his dog Jip. The dog pays no mind; it's leaping at the bat that is now on/flying out the right side of the panel.

5.7 DOLITTLE:
Really, Jip, you're a good fellow, but…must you?

5.8 CAPTION:
…well, do you really want to know?

5.9 CAPTION (lower right):
So Doctor Dolittle's – and your -- ability to talk with animals is compromised right from the start by an inability to experience the world the way they do.

Page 6
(5 panels)

Panel 1
Back in the Doctor's house, we see Polynesia and the bat interacting, at last, while Dolittle tries to figure out and transcribe what they're saying.

6.1 CAPTION:
Even if we were superficially more similar, we'd still have this problem.

6.2 BAT:
Eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee

6.3 DR. DOLITTLE:
And what does that mean?

Panel 2
Polynesia holds wings out like they're arms, palms (primary feathers/tips) up in an "I dunno" gesture.
The bat is flying out of the panel.

6.4 POLYNESIA:
Sorry, I have no idea what ***that*** bird is saying.

6.5 BAT (sound effect bleeds across panel border and off page):
IIIIIiiiiiiiiiiiiiiiiiiiiiiiiiiiii Eeeeeeeeeeeeeeeeeeeeeeeee

Panel 3
Nagel, hanging upside-down from the ceiling (via a trapeze?) typing away. The bat is flying in.

6.6 CAPTION:
In 1974, Thomas Nagel wrote a famous paper titled "What is it like to be a bat?"

6.7 FOOTNOTE:
The Philosophical Review LXXXIII, 4 (October 1974): 435-50.

Panel 4
Nagel's climbing down from his ceiling perch. The bat is now hanging from it in his place.

6.8 CAPTION:
He starts it by addressing the mind-brain problem – as in, are mind and brain distinct, or are they two sides of the same coin?

6.9 NAGEL:
Consciousness makes the mind-brain problem really intractable.

Panel 5
He's scratching his head, looking puzzled (so, <skrtch skrtch> sound effects here).

6.10 NAGEL:
Without consciousness the mind-brain problem would be much less interesting. ***With*** consciousness it seems hopeless.

Page 7
(6 panels)

Panel 1
Richard Davidson has entered the picture, and is talking to Nagel.

7.1 CAPTION:
Almost 40 years later, the mind-brain problem might not look as hopeless, but it's no less interesting. Neuroscientist Richard Davidson says this…

7.2 DAVIDSON:
A simple definition might be "The mind is what the brain does."

7.3 FOOTNOTE:
His latest book is *The Emotional Life of Your Brain*.

Panel 2
Davidson, squishing the word "MIND" into a brain with the heel of his hand, deforming both.

7.4 DAVIDSON:
That's not exactly my position, although were it not for the brain we wouldn't ***have*** a mind.

7.5 DAVIDSON:
Having said that, I would also say that we can change our brain by transforming our mind.

Panel 3
The Dalai Lama, sitting and meditating.

7.6 CAPTION:
Buddhists would probably agree with neuroscientists.

Panel 4
Pull back to see that he's doing so inside an fMRI machine, like the one we (maybe?!) saw on Dr. Dolittle's desk back a few pages.

7.7 CAPTION:
Richard Davidson's lab is carrying out imaging experiments to find out what happens in the brain when Buddhist monks meditate.

Panel 5
Pan up to see Nagel sitting on top of that fMRI machine, with just the hint of a bat dangling overhead.

7.8 CAPTION:
But Nagel didn't know any of this, and had bigger fish to fry anyway.

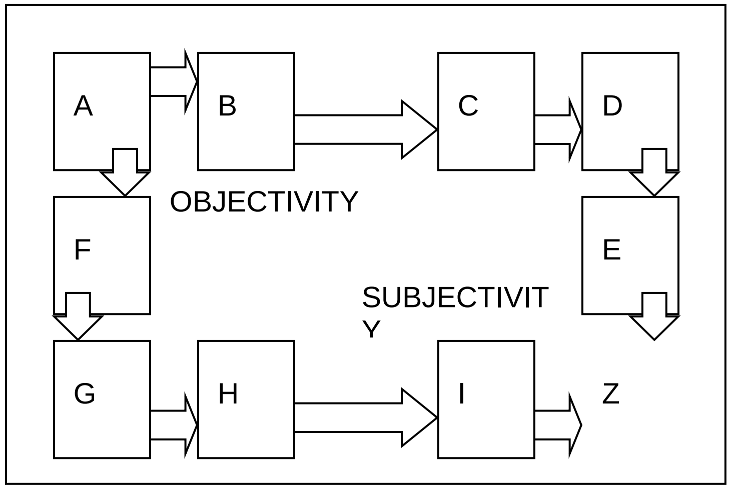
7.9 NAGEL:
Fundamentally, an animal is conscious if and only if there's something that it is like to ***be that animal*** -- something it's like ***for the animal itself***.

(cont'd)

Panel 6
Pan up a little more, so we only see the top of Nagel's head and all of the bat, which is clinging to the top panel border (a teaser for when we more overtly break the fourth wall later in the story).

7.10 NAGEL (mostly off, so his words, and the bat, are the main focus in the panel):
I call this the ***subjective character of experience***.

Page 8-9
(10 panels)



This is a tricky page layout; see figure to the right, drawn crudely using Word's (crude) tools, so it's not to scale and don't take my arrow positions seriously. I'm also not convinced that we need to label the two paths "subjectivity" and "objectivity", and am open to suggestions on what, if anything, we put in the blank spaces next to E and F where we don't have a panel.

Anyway, we're showing a flowchart after a fashion, to address Nagel's discussion of subjectivity and objectivity, and then loop back to bats.

First, the subjective branch…

<u>Panel A</u>
Nagel, with the bat on his shoulder.

> 8.1 NAGEL:
> Without ***some*** idea of what the subjective character of experience is, we can't know what's required of a theory of consciousness.
>
> 8.2 NAGEL:
> But…
>
> 8.3 CAPTION (connecting/crossing between panels A & B):
> "S***ubjective*** phenomena are connected with a single point of view, but an ***objective***, physical theory should be, well, ***objective***!

<u>Panel B</u>
Generic scientist, chiding the bat.

> 8.4 BAT:
> Iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii
>
> 8.5 SCIENTIST (cutting off the bat):
> There is no "I" in science. We say "An experiment was done." Not "I did an experiment."
>
> 8.6 CAPTION (connecting panels B & C):
> "The structure of another's brain -- not to mention mind! -- probably makes it ***impossible*** for us to experience what it is like to have that other brain, that other mind.

(cont'd)

Panel C
Nagel, by himself. The bat flies between panels C & D, connecting them.

9.1 NAGEL:
So it's tempting to deny that they exist.

9.2 NAGEL:
But look at it from the other side…

Panel D
The bat's point of view, looking at the scientist. The image is in silhouette, though, and in fact the negative space that depicts the scientist is well-defined by the sounds the bat makes, surrounding it. I'm not sure if we can use this exact trope, but I really like what Paolo Rivera did for the first issue of the newly re-launched Daredevil: www.comicbookcritic.net/Review-Daredevil-1-Marvel_FB6A/Daredevil-1.jpg , which I've already alluded to in other panel descriptions but didn't credit him for it because I didn't remember who I was referencing until just now!

9.3 CAPTION (connecting panels D & E):
"***You*** know there's something unique, and real, about what it's like to be ***you***, even though nobody else can. So…

Panel E
Back to Nagel himself.

9.4 CAPTION:
"…to deny the reality of what we can never describe or understand is the crudest form of cognitive dissonance."

9.5 NAGEL:
Or, if you prefer less fancy terms, it's wrong!

Okay, now we're on the objective branch…

Panel F
The scientist and the bat again.

8.7 BAT:
Eeeeeeeeeeeeee Eeeeeeeeeeeeeeeeeeeeeee

8.8 SCIENTIST:
I need hard data, not just your description of how you gather data.

8.9 CAPTION:
"If the facts of what it's like ***for*** the experiencing organism are accessible from only one point of view, then how can the true character of experiences be revealed?

(cont'd)

Panel G
Nagel, by himself. The bat is between panels G & H, connecting them.

8.10 NAGEL:
Forget about bats!

8.11 NAGEL:
It's unlikely we'll get closer to the real nature of ***human*** experience by leaving behind the particularity of our ***own*** human point of view.

8.12 CAPTION (connecting panels H & I):
"Any shift to greater objectivity -- that is, less attachment to a specific viewpoint—does not take us nearer to the real nature of the phenomenon…

Panel H
The inverse of panel D, where we see the scientist's silhouette built out of the words "danger", "threat", and "avoid".

8.13 CAPTION:
"…it takes us farther away from it.

Panel I
Back to Nagel himself.

9.6 NAGEL:
We can't understand consciousness unless we understand the more fundamental idea that ***objective*** processes can have a ***subjective*** nature.

Panel Z
Borderless, with Nagel, grinning out at the readers, and holding palms up as if shrugging about the hopelessness of the situation.

9.7 NAGEL:
Assuming you're conscious at all, of course.

Page 10
(6 panels)

Panel 1
Nagel, with the bat hanging upside-down from his outstretched hand.

10.1 NAGEL:
So, bats.

10.2 NAGEL:
I choose them instead of wasps or flounders because if you travel too far down the tree of life, people shed their faith that there's consciousness or experience there at all.

10.3 FOOTNOTE:
How far down the tree do ***you*** travel before shedding that faith?

Panel 2
Same image, but from the bat's point of view, so we see everything via reflected sound.

10.4 NAGEL:
And bats present a range of activity and a sensory apparatus so different from ours that the problem I pose is exceptionally vivid.

Panel 3
The bat drops from Nagel's hand.

10.5 NAGEL:
Anyone – not just philosophers -- who has spent some time in an enclosed space with an excited bat knows what it is to encounter a fundamentally alien form of life.

Panel 4
Nagel's voice, or at least the word "echolocation", straining against its word balloon, but not able to break through. The idea here is to show that the sounds we make are (mostly) useless in terms of pinpointing objects in space.
The bat is now hanging off the word balloon.

10.6 NAGEL:
Most bats perceive the external world by echolocation.

10.7 NAGEL:
Bat sonar, though clearly a form of perception, is not similar in its operation to ***any*** sense that we possess.

Panel 5
Nagel's word balloon is defined by sounds the bat makes (EEeeeeeeeeeeeeeeee).

10.8 NAGEL:
So there's no reason to suppose that it's subjectively like ***anything*** we experience or imagine.

(cont'd)

Pages 10
(cont'd)

Panel 6
Nagel, raising his arms, to show webbing underneath. The bat once again has a question mark hanging over its head.

10.9 NAGEL:
It won't help to try to imagine that one has webbing on one's arms, which enables one to fly around at dusk and dawn catching insects in one's mouth.

Page 11
(6 panels)

Panel 1
Nagel's now squinting at the aforementioned webbing.

11.1 NAGEL:
It won't help to imagine that one has very poor vision, and perceives the surrounding world by a system of reflected high-frequency sound signals.

Panel 2
Nagel, taking a step up with one foot on the side of the panel border as if he could walk up walls, or was launching into a parkour move.

11.2 NAGEL:
Nor that one spends the day hanging upside down by one's feet in an attic.

Panel 3
Nagel standing normally, again, facing the user.

11.3 NAGEL:
You didn't think I was actually going to try that, did you? Anyway…

11.4 NAGEL:
In so far as I can imagine all that -- which is not very far -- it tells me only what it would be like for ***me*** to ***behave*** as a bat behaves.

Panel 4
Nagel, holding a brain in his hand as if he were contemplating Yorick's skull. (Yeah, I know the line/pose below isn't from the "To be or not to be…" scene, but readers will get the allusion.)

11.5 NAGEL:
But that is not the question.

11.6 NAGEL:
We want to know what it is like for a ***bat*** to be a ***bat***.

Panel 5
This and the next panel form a continuous image. Here, Nagel is setting the brain down on a piano, which we only see part of here…

11.7 NAGEL:
Any extrapolation from our own case ***must*** be imperfect. For example…

Panel 6
…and the rest of, here. At the piano is Stevie Wonder, singing away. Musical notes flow to the right side of the panel.

11.8 CAPTION:
"The subjective character of experience for people blind from birth isn't accessible to me, nor presumably is mine -- or yours -- to them."

Page 12
(5 panels)

Panel 1
Stevie Wonder, playing as the bat flies past. His music is fading away in the bat's trail.

12.1 CAPTION:
And their world is as different from yours as Daniel Tammet's world is different from a bat's.

Panel 2
The bat is now flying into a panel with Daniel Tammet. No music or sound at all, of course, though his eyeglasses drip with condensation.

12.2 CAPTION:
Tammet is an autistic savant.

12.3 FOOTNOTE:
And author of the book *Born on a Blue Day*.

Panel 3
Close in on Tammet, so we now see a lumpy '37' reflected in those same eyeglasses.

12.4 TAMMET:
As a child, silence was a beautiful thing. It was a kind of silvery texture around my head, like condensation running down a windowpane.

12.5 TAMMET:
And every number to me is beautiful and has its own shape, its own color, its own texture. 37 is lumpy like oatmeal.

Panel 4
Nagel with a pile of snow in his hand and Tammet, having removed his regular glasses, is now wearing sunglasses as he stares at dazzling "111" in his hands (Nagel doesn't need shades to look at anything, of course.)

12.6 TAMMET:
89 is soft and flowing like snow. A number like 111 would be very bright and shining.

12.7 NAGEL:
This doesn't prevent us each from believing that the other's experience has such a subjective character.

(cont'd)

Panel 5
Wide. Tammet stands in a landscape comprised of numbers (I suggest the digits of π, in order, if at all possible), invoking the bat's construction of its environment from sounds.

I suggest drawing a landscape (trees, stream, clouds, etc.) and using them as a mask (in the Photoshop sense of the word) for a field of numbers.

12.8 TAMMET:
To memorize π, I put all the colors and shapes and textures I see in the individual numbers together and the result is a kind of number scape.

12.9 TAMMET:
It's full of color, texture. It's beautiful. It's like a second country: a country of the mind.

12.10 FOOTNOTE:
Tammet once gave a recital of 22,500 digits of π in Oxford, England. From memory. It lasted over five hours, and many in the audience were moved to tears.

Page 13
(6 panels)

Panel 1
Tammet, with his arms wide, explaining himself. The bat is here, again, and it's thinking its question mark, again, in a thought balloon that bridges this and the next panel so that the balloon is the image for the next panel.

13.1 TAMMET:
My ability to articulate my experience, what it's like to be me, inside my head, is unusual for an autistic person.

Panel 2
Borderless. Per above, bat's thought balloon is the image here.

13.2 CAPTION:
I know, I know. We went from "language" to "subjective vs. objective experience" and now we're back to talking about talking?

13.3 CAPTION:
What about ***consciousness***?

Panel 3
Marvin Minsky, opening a suitcase and having a whole bunch of things spill out. (Again, see Dolittle's table.)

13.4 CAPTON:
Here's Marvin Minsky…

13.5 MINSKY:
Well, I call consciousness a "suitcase word" for about 20 different kinds of mental processes.

13.6 FOOTNOTE:
Cognitive scientist and author of, among other books, *The Society of Mind*.

Panel 4
Minsky, holding a few things up. One is a book titled "Memory", another is a film canister with film dangling out — it's labeled "Sense of time". And another is a picture frame.

13.7 MINSKY:
I don't think it's good enough for a scientific word.

13.8 MINSKY:
So instead of talking about the mystery of consciousness, we should talk about 20 or 30 really important mental processes that are involved.

(cont'd)

Page 13
(cont'd)

Panel 5
Minsky is now shaking a bunch of other junk out of the suitcase. An abacus and a dictionary, at the very least.

13.9 CAPTION:
It turns out the suitcase itself…the brain…is probably important. There's an interiority there.

13.10 CAPTION:
There's an inside where all those things exist.

Panel 6
Last image of the suitcase, where we see him holding it up. There are words all over the lining. These can be random, or if you have a favorite (public domain) poem, pick that, perhaps?

13.11 CAPTION:
Language seems to live inside, for instance.

Page 14
(6 panels)

Panel 1
Einstein, Stephen Hawking, and Temple Grandin, all thinking of each other. Hawking's image of Einstein is like a father/god figure, Grandin's of Hawking is a voice coming out of a wheelchair, and Einstein's of Grandin is a female Dr. Dolittle.

14.1 CAPTION:
Sure, there are people who think in pictures. Scientists, often, and as we've learned, high functioning autistic people like Daniel Tammet and Temple Grandin.

Panel 2
We get a slip of the tongue here, to indicate the unconscious use of language.

14.2 CAPTION:
But they also use language as well. Not always in a conscious way, of course.

14.3 EINSTEIN:
Does this hair make me look crazy?

14.4 GRANDIN:
Yes.

14.5 GRANDIN:
I mean, no?

14.6 CAPTION (lower right):
Or even mostly conscious!

Panel 3
Daniel Kahneman pointing to a poster that comprises the next panel.

14.7 CAPTION:
As Nobel laureate Daniel Kahneman says…

14.8 KAHNEMAN:
As we see the world we don't ***decide*** to see the world. When we see a poster…

14.9 FOOTNOTE:
Kahneman is also the author of *Thinking, Fast and Slow*.

Panel 4
"Keep Calm and Carry On" poster.

Panel 5
Kahneman again, pointing up at panel 4.

14.10 KAHNEMAN:
…we don't decide to read it.

(cont'd)

Panel 6
Kahneman, holding the abacus from the Minsky sequence.

14.11 KAHNEMAN:
In contrast, there are mental activities that take effort, such as computing the product of 17 by 24.

14.12 FOOTNOTE:
Or memorizing π… though Daniel Tammet might disagree.

Page 15
(6 panels)

Panel 1
Kahneman, dropping the abacus back in the suitcase. The bat is flying around again, letting out its screech.

15.1 KAHNEMAN:
It goes even deeper -- we even use ***grammar*** unconsciously.

Panel 2
Kahneman closing the suitcase, barely trapping the bat as it flies inside.

15.2 CAPTION:
But, you have to learn grammar. So, is language conscious or unconscious?

15.3 CAPTION:
Does its use -- or lack thereof -- imply anything about whether there's a mind behind the eyes looking back at us?

Panel 3
Kahneman is holding up the suitcase, and passing it between panels. An "EEEeeeeeeee" escapes out the crack and leaks across the whole of the next panel…

15.4 CAPTION:
The ***implication*** of consciousness is that there's an interiority. And how can physical stuff have that?

15.5 CAPTION:
According to Sam Harris, neuroscientist and famed athiest…

Panel 4
…leaking through Sam Harris' ears and bleeding into the panel border. He's reaching out to grab the suitcase.

15.6 HARRIS:
We could be living in a universe where consciousness goes all the way down to the bedrock.

15.7 HARRIS:
So that there is some interior subjective dimension to an electron.

(cont'd)

Panel 5
Harris opens the suitcase, and the bat flies out.

15.8 CAPTION:
Or even a chunk of silicon. But it's not easy for us to get in there and see. Maybe not even possible.

15.9 CAPTION:
So, at the risk of making the search for consciousness seem like a game there's no way to win…

Panel 6
Alan Turing, standing behind the Jeopardy podium.

15.10 CAPTION:
…let's join our host for the final segment, Alan Turing.

15.11 TURING:
It is the fundamental question.

Page 16
(3 panels)

Panel 1
Half-splash: We're on the set of "Jeopardy" and our three contestants are Dr. Dolittle, IBM's Watson (i.e., the podium is empty), and a bat. Our host is, of course, Alan Turing. The dollar totals are £1 for Dolittle, $5000 for Watson, and 0 (with no currency symbol, because what do they care for money?) for the bat.

16.1 WATSON (in computer-font, like "OCR A Standard"):
WHAT IS CONSCIOUSNESS?

16.2 TURING:
That is correct.

16.3 TURING:
And with that, we shall take a break.

Panel 2
Turing, loosening his tie, with his back to the contestants.

16.4 CAPTION:
In his seminal paper " Computing Machinery and Intelligence," Alan Turing posed this question…

16.5 TURING:
Can machines think?

16.6 FOOTNOTE:
"Computing machinery and intelligence." *Mind* 59 (1950): 433-460.

Panel 3
Turing, walking off the set as the bat flies at his shoulder and Dolittle pokes at Watson.

16.7 CAPTION:
He was an optimist, I suppose, and assumed we all know what thinking ***is***.

Page 17
(6 panels)

Panel 1
The bat flying into its dressing rooms for the Jeopardy game. Watson's door is already closed.

17.1 CAPTION:
He proposed to answer his own question via something called the "Imitation Game."

17.2 FOOTNOTE:
a.k.a. "The Turing Test."

Panel 2
Dolittle entering his dressing room.

17.3 CAPTION:
In brief, the game goes something like this.

17.4 CAPTION:
Put three…intelligences?…in three different rooms.

Panel 3
We're in with Dolittle, who's sitting in front of a microphone and facing two sets of speakers.

17.5 CAPTION:
If the interviewer can't tell the difference between a machine's response and that of a real person's…

17.6 DOLITTLE:
Will you please tell me the length of your hair?

Panel 4
Here and in the next panel we see Dolittle getting both responses, through his speakers. Watson's response comes from one of them.

17.7 CAPTION:
…and if the machine lies well and consistently enough to fool the interrogator into thinking it's human…

17.8 WATSON:
TEN CENTIMETERS.

17.9 CAPTION:
…well then, how can you say that the machine isn't thinking?

(cont'd)

Panel 5
Dolittle, his top-hat flying off (or some other expression of comic surprise), jerks away from the other speaker as an "EEEEEeeeeeeeeeeee" sound comes out.

17.10 CAPTION:
It's no fair to play with a bat, of course, so the game is played with a computer and a person who can actually ***talk***.

17.11 DOLITTLE:
Oh my!

Panel 6
Turing, in his dressing room, holding a lump of metal in one hand and mashed potatoes in the other.

17.12 TURING:
It also doesn't matter what the machine is made of. It could resemble a biological construct, or be something entirely engineered.

Page 18
(5 panels)

Panel 1
Turing in his dressing room, reading a book. (*The Moon is a Harsh Mistress*, which features one of the great thinking machines ever? Watching or reading *2001: A Space Odyssey*?) Either way, he's eating his dinner, which includes, of course, mashed potatoes.

18.1 CAPTION:
It probably has to have a lot of connected parts, though.

18.2 CAPTION:
The idea that consciousness arises…or arrives…if enough connections get made between processing units is a science fiction mainstay for a reason.

Panel 2
Minsky, leaning against the wall outside the dressing room as Turing continues to eat and watch/read.

18.3 CAPTION:
And it may not matter what those processing units are made of or how they work. Turing had no clue, and Minsky doesn't think it matters.

18.4 MINSKY:
I'm fuzzy on how transistors work, and I bet that it won't matter how each synapse works either.

Panel 3
Now we see the other side of the door, and it's David Eagleman standing there. We're still able to see Turing in his dressing room. He's getting up to leave having finished most, but not all of his food. He carries his plate out.

18.5 CAPTION:
It's enough to have enough of them. How many is that? Neuroscientist David Eagleman…

18.6 EAGLEMAN:
Every neuron is connected to about 10,000 of its neighbors, in very specific ways.

Panel 4
Turing dolloping the tiniest of bits of mashed potatoes in Eagleman's hands. Minsky is amused.

18.7 EAGLEMAN:
In a cubic millimeter of brain tissue there are more connections than there are stars in the Milky Way.

18.8 EAGLEMAN:
Now the weird part is we look at this very complex machinery, you know it's sort of got the consistency of mashed potatoes…

(cont'd)

Page 18
(cont'd)

Panel 5
Wide shot of Eagleman, joined by all our main characters so far looking at the pile of mashed potatoes on Turing's plate.

18.9 EAGLEMAN:
…and somehow all that wet gushy stuff is ***us***.

18.10 TURING:
And we keep searching for consciousness in…here?

18.11 CAPTION:
Hey, it might work. But here's the plan for tracking me down, at least as I heard it told in "The Story of Doctor Dolittle."

Page 19
(3 panels)

Note: If page count turns out to be an issue, we can condense pages 19-21 into two pages. In fact, that's how I originally wrote them, but split the first version of this page into two to give the drawing a little more breathing room and to get a more cinematic look and pace to the story.

Panel 1
Philosophers, including Ken Wilber (from the radio series, in an un-credited cameo here), ruminating on Turing, who's struck a Vitruvian Man pose.

Our focal philosopher is Descartes, and he's pointing at the head. Others pointing at the heart. Make them all in different period dress, so we have an ancient Greek (in a toga) pointing at the heart and an Asian court philosopher in the tradition of Lao Tzu pointing at the various chi points on a human body.

19.1 CAPTION:
"The monkeys set out hunting.

19.2 DESCARTES:
Je pense donc je suis.

19.3 FOOTNOTE:
Or, if you prefer Latin, *Cogito ergo sum*.

Panel 2
Time has passed, so now we now have scientists mixed in with the philosophers (mixed races and genders now, too). They're of course in lab coats, and if we can see some of our previous neuroscientist characters such as Eagleman and Minsky there as well, studying brain scans and neural maps that are lying on the floor (the "tracks"), that would be great.

19.4 CAPTION:
"And after they had gone a good many miles, one of them found peculiar tracks… and they knew it must be very near that spot.

Panel 3
Pull back from the above so we see that in the center of the group is a brain completely surrounded by the other researchers from the story (Eagleman, Kahneman, and now with Nagel on apparent in the group as well.

19.5 CAPTION:
"Then they went along a little way and they saw a place where the grass was high and thick; and they guessed that it was in there.

Page 20
(3 panels)

Panel 1
They're crowded in around it, so we can't see the brain at all. But sneaking out from the between the legs of one of the members of the group (Nagel, I think!) is the pushmi-pullyu from Dr. Dolittle. In fact, if you want to have it crossing the right panel border, with one head looking back at the group, that might be good.

20.1 CAPTION:
"They all made a great circle round the high grass. But it heard them coming and tried hard to break through the ring of monkeys…

Panel 2
Now the pushmi-pullyu is crossing over the left panel border, and encountering the same crowd of scientists. No escape!

20.2 CAPTION:
"When it saw that it was no use trying to escape, it sat down and waited to see what they wanted.

20.3 RESEARCHERS (those looking inward):
Would you go with us and be put on display?

Panel 3
The researchers turn around to look at it, startled that it has escaped them again, and again out the right panel border, just when they think they had it trapped.
This time we can see the whole beast, though.

20.4 CAPTION:
But it shook both its heads hard.

20.5 ONE HEAD OF THE PUSHMI-PULLYU:
Certainly not!

20.6 THE OTHER HEAD OF THE PUSHMI-PULLYU:
You know how shy I am -- I hate being stared at.

Page 21
(4 panels)

Panel 1
Large. A gaggle of scientists in the yard of Dr. Dolittle's house, reprising our first panel which was crowded with animals.

21.1 CAPTION:
"For many days they tried to persuade it. And at the end of the third day it said it would come with them.

21.2 SFX:
[knock knock]

21.3 VOICE (off):
Come in!

Panel 2
Reprise of page 2, panel 1. We see the pushmi-pullyu and the Doctor facing off with each other. The Doctor is shocked, and the bat and the parrot, one on each of his shoulders, cock their heads.

21.4 CAPTION:
"The monkeys very proudly took it inside and showed the Doctor."

21.5 DR. DOLITTLE:
What in the world is it?

21.6 DR. DOLITTLE:
And how does it make up its mind?

Panel 3
The Doctor and the parrot look at the bat in amazement.

21.7 THE BAT:
It doesn't look to me as though it has any!

21.8 THE BAT:
I mean, EEEEEeeeeeeeeeeeeeeeeeeeeeeeeeeee

Panel 4
Borderless, with Pushmi-pullyu addressing the reader. We now need to make it clear that the voiceless CAPTION speaker has been the pushmi-pullyu all along.

21.9 CAPTION:
Hey reader…

21.10 PUSHMI-PULLYU:
…are you going to trust a bat?

21.11 PUSHMI-PULLYU:
What do you think?

21.12 PUSHMI-PULLYU:
And what do you mean when you say "you think"?

Two text pages go here, with references and/or endnotes and/or an overview of the series and/or etc.. The key is to provide a break from the story, and then spring two more pages of comics on them on a new even-numbered page of the book.

Page 22
(4 panels)

Note: These last two pages should be printed on the very last page and the inside back cover, to allow for them to appear on the appropriate even-odd spread.

Panel 1
The pushmi-pullyu addresses the reader. One head is labeled, in the old style of political cartoons, "Mind" and the other head "Brain".

22.1 ONE HEAD OF THE PUSHMI-PULLYU (HEAD ONE):
Okay, I can't resist the last word. Or words.

22.2 THE OTHER HEAD OF THE PUSHMI-PULLYU (HEAD TWO):
First, maybe you ***should*** trust the bat. So far I've resisted capture, and it may be because there are so many dualities to choose from.

Panel 2
Similar, but now the heads are labeled "Memory" and "Self".

22.3 HEAD ONE:
Maybe it's easier to pin down some things rather than others. Like "memory."

22.4 HEAD TWO:
Or "self."

Panel 3
The pushmi-pullyu is half asleep. The sleeping side says "conscious" and the awake side "unconscious."

22.5 HEAD ONE:
Conscious.

22.6 HEAD TWO:
Unconscious.

Panel 4
Finally, "Language" and "Thought". With the word "language" being in a thought balloon, of course, and the latter being in a speech balloon. And, one last bat, screeching its EEeeeeeeeeeeee all through the panel.

22.7 HEAD ONE:
Language.

22.8 HEAD TWO:
Thought.

Page 23/Inside Back Cover
(2 panels)

Panel 1
Large. Pushmi-pullyu with a stack of books around it; use titles written by guests on the show.

23.1 PUSHMI-PULLYU:
But, with apologies to Robert A Heinlein*, here's what I do know…

23.2 HEAD ONE:
Does a virus have a mind?

23.3 HEAD TWO:
No. How about an oyster?

23.4 HEAD ONE:
I doubt it. A cat?

23.5 HEAD TWO:
Almost certainly. A human?

23.6 HEAD ONE:
Don't know about you, friend, but I sure do.

23.7 FOOTNOTE:
* From his classic, *The Moon is a Harsh Mistress*

Panel 2
Inset, lower right. Again, Pushmi-pullyu addresses the reader.

23.8 PUSHMI-PULLYU:
Except I'm just lines on paper. So.

23.9 PUSHMI-PULLYU:
What ***is*** going on here…and in that thing you call your mind?