



HONEYBEE CAPITAL

HONEYBEE PUBLICATION #15:

ROBO-BEE ISSUE! THE INTERSECTION OF SCIENCE AND HUMANITY

What better way to illustrate the intersection of people and science than.... ROBOTS?!? They might seem goofy and cute, but robots are serious business. For one thing, there seems to be a huge surge in their popularity lately. Roboticists have been constantly featured at TED, PopTech, and other cool-thinker-type places, and why? Because they bring together fantastically interesting scientific questions and fantastically interesting human questions. In many ways, robots can illuminate the bridge – and the gap – between science and humanity.

KEY TOPICS:

- **Our friends, the robots: cool current projects**
- **Human themes raised by robo-projects**
- **Danger, Will Robinson! Investor note**
- **Media highlights of all sorts**

QUOTES OF THE MONTH:

Life is a selection, no more.

- Ralph Waldo Emerson

The borders of our minds are ever shifting, and that many minds can flow into one another, as it were, and create or reveal a single mind, a single energy.

- John Keats

What gives someone the high moral ground is that he or she is right, not that he or she is fair.

- Stanley Fish, NY Times

When I was younger, I was a robot. Wind her up and she plays tennis.

- Chris Evert

There is a recurring temptation to feel that some spectacular and costly action could become the miraculous solution to all current difficulties. But each proposal must be weighed in the light of a broader consideration: the need to maintain balance.

- Dwight D. Eisenhower, in his farewell address

Unless mankind redesigns itself by changing our DNA through altering our genetic makeup, computer-generated robots will take over our world.

- Stephen Hawking

Oh my goodness, shut me down! Machines making machines. How perverse.

- C3PO, upon seeing the droid factories

Domo arigato, Mr. Roboto!

- Styx

OUR FRIENDS THE ROBOTS, PART ONE: EXAMPLES OF COOL ROBO-STUFF

Robots seem to be everywhere! A joke-telling robot has been all the rage on the creative-thinking circuits, a new age opera featured robots as main characters this year, and a whopping 14% of a new government fund has been targeted towards our mechanical pals. While a great deal of fascinating work is being done on what I'd call 'purely mechanical' robotics (like those to perform medical procedures or take on high risk tasks like disarming explosives), we are most interested in the intersection between robots (that is, machines), and people. Here are some very quick highlights of the above endeavors:

- **Robo-research:** Two of the biggest academic centers for robotics are MIT and Carnegie Mellon, so if you'd like to learn more, just snuggle up to their research centers. At Carnegie Mellon, one of the highest profile researchers is Heather Knight, who's been featured by Fast Company, Poptech, and the TEDWomen conference. Why is her work so compelling? Heather describes herself as a "social roboticist", and her work places particular emphasis on enabling robots to handle (human) social situations - she's created one that can tell a stream of jokes that adjusts to audience feedback, for example. Knight is interested in "developing robot personalities" – this is no Roomba! (For fans of OK Go, Knight also helped create the Rube Goldberg machine for their "This Too Shall Pass" video, which is really pretty cool.)

<http://www.marilynmonrobot.com/>

<http://www.okgo.net/this-too-shall-pass-rube-goldberg-machine/>

- **Robo-opera:** This fall the new opera Death and the Powers played in Boston (and earlier in Monaco) to sold-out crowds. It was fascinating on two levels: first, the technical advances were impressive – for example, the robot characters were not pre-programmed to move, but rather responded to the movement of the other (people-resident) characters. Second, the topic addressed in the storyline was mirrored in the production itself: what does it mean to be human? Can we ever really replicate the human mind... should we try? Is there a soul? Tod Machover from the MIT Media Lab is the composer, poet Robert Pinsky did the libretto, and my incredible friend Bob Hsiung designed the killer robots (killer in a good way - they didn't actually run amok and crush the audience).

<http://www.media.mit.edu/research/groups/opera-future>

- **Federal robo-funding:** even the President loves robots! He's giving 'em \$70m in funding from a new technology pool:

http://www.nytimes.com/2011/06/25/us/politics/25obama.html?_r=1&hpw

OUR FRIENDS THE ROBOTS, PART TWO: HUMAN THEMES FROM ROBOT RESEARCH

THEME 1: THE THEME OF FALSE PRECISION. Robots are incredibly helpful here, and especially the robots that try to mimic human behavior. Listen to a pitch from a hedge fund full of PhD's who have a complex formula for measuring market sentiment and you might be convinced – but look at a robot that is struggling to compose an appropriate facial expression and you see just how hard it is to quantify and mechanize emotion. Just as science and math can illuminate concepts that are “beyond us”, they can also illuminate (through these R&D struggles) the most wondrous and complex elements “within us”.

THEME 2: IF IT WALKS LIKE A PERSON, AND TALKS LIKE A PERSON, AND MAKES AWKWARD JOKES LIKE A PERSON.... Well, it's still not a person!

Two examples highlight important corollary points:

- A Furby is not a hamster.** Some researchers have worried that the line between biological and mechanical beings is getting too blurry. To check this, they did an experiment where kids were asked to hold 3 “toys” upside down for as long

as possible: a Barbie, a Furby (fuzzy robotic toy), and a real live hamster. I would've guessed that the Furby would be flipped back first – it whimpers a little and says over and over, “me scared” when inverted, just like a lot of kids would do. But the hamster’s decidedly non-verbal and non-human response to upside-down-ness was far more effective, and the kids turned it over almost right away. It seems that we are still a long way from confusion in the “empathy for living creatures” department – whew! (By the way, Barbie was held upside down “until forever” – she’s not fooling anyone.)

See this great report from Radiolab on the experiment noted here as well as several others, like the surprisingly successful robo-therapist:

<http://www.radiolab.org/2011/may/31/>

b) A missile is not a mind. I am a big fan of examining farewell remarks of all sorts, as they often reveal priorities and beliefs that are papered over in the hubbub of the everyday. The 50th anniversary of Eisenhower’s farewell speech was in January; many call it the “military-industrial complex speech”, but the detail beneath that headline is crucial. Eisenhower was not chiefly worried about evil Iron-Man-style megacorps of weapons production, but rather about the effects of this intertwined complex on broader society. Specifically, he worried about the role of the independent tinkerer when surrounded by giant specialized R&D teams, and he worried about the risk that “public policy itself could become the captive of a scientific-technological elite”. Most of all, he worried that the military industrial backdrop would truncate our notion of time, eroding our sense of responsibility for the future. He noted, “we want democracy to survive for all generations to come, not to become the insolvent phantom of tomorrow.” What are his last words as President? A hope that “all peoples will come to live together in a peace guaranteed by the binding force of mutual respect and love.” Think about it – this was a completely voluntary address, made after deep personal reflection. This was not a required report to Congress, or a public address on a specific issue – this is what he *wanted* to say, what he thought was most important for the country to hear as he left office. What he chose to talk about – General Eisenhower! President Eisenhower! - was balance, and the long term, and love. Not the glory of machines and quick-fix promises of new technologies.

Links to the full text of the speech (short and great), plus an interesting New Yorker article on the writing of it, are here:

<http://www.americanrhetoric.com/speeches/dwightdeisenhowerfarewell.html>

http://www.newyorker.com/talk/2010/12/20/101220ta_talk_newton

“DANGER, WILL ROBINSON!”

INVESTOR CORNER

Readers who are investors will surely have noticed these two publications already – I highlight them because in some ways they are “so obvious” that many seem to think they are already discounted in the market. The last time I remember alignment like this was in mid/late 2007, when I wrote a quick note to colleagues titled, “Three of the best US investors are very bearish”, or something to that effect. Interestingly, my colleagues in the UK, being less familiar with who was saying what in the US, were quite interested in this summary, while those in the US found it to be, well, boring - just reiterating stuff they already knew. And they DID already know it, that’s the point – sometimes it is hard to objectively review ground we have covered over and over before.

I really don’t know if this is a similar time, but I do know that two of the most thoughtful investors around (plus many others) have commented on long term commodity inflation – and they’ve commented recently, not as a continuation of a go-go boomtime momentum trade (lots of the bulls from that earlier run-up have now moved to other pastures). Additionally, these are not folks who have ideas du jour that they tout constantly on CNBC – they have a couple of key points to make, and make them thoughtfully and thoroughly.

So, links to Jeremy Grantham/GMO’s commentary and to Pimco’s (do note it’s Pimco, not Bill Gross’ personal commentary) are below – you might need to register for GMO access, but it is easy and worthwhile. I am especially concerned with food inflation, as food is something around 15% of US household spending but multiples of that in other parts of the world. Perhaps this is a mis-timed theme, or just plain wrong. But when thoughtful people seem to agree, it’s worth at least trying to take a fresh look at the issue.

<https://www.gmo.com/America/CMSAttachmentDownload.aspx?target=JUBRxi51IICi3XDk3kgSh6vLtzpWjWv9j9b13l0dYjF9rvqA%2bOemQJnKCUtBlLDDT%2fh8Vj%2fLziezC4nF7YfHbgtGQ%2bonQ11B9fB4K%2fEAsE%3d>

<http://www.pimco.com/EN/Insights/Pages/Higher-Commodity-Prices-and-the-End-of-Economic-Growth-Without-Inflation.aspx>

SUMMER LISTENING:

REITH LECTURES

Does your head feel full of goo after just a few days of sunshine? If so (and even if not), this is a great time to tune into the Reith Lectures of the BBC. This year they feature Aung San Suu Kyi, in talks that have been smuggled out of Burma (there is also live Q&A at the end). The first one has just been released for listening online, and includes references to everyone from Burmese rappers to Anna Akhmatova:

<http://www.bbc.co.uk/programmes/b00729d9>

The next series, this fall, will be by the former head of MI-5, the British intelligence agency. Older lectures are also now available via podcast, and include remarks (recently) by Michael Sandel, Jeffrey Sachs, Wole Soyinka, and (less recently) Bertrand Russell and Robert Oppenheimer.

DISTRACTING WEBSITE OF THE MONTH:

BIGTHINK.COM

Have you already watched all of the TED talks, and seen all of the RSA animations? Check out bigthink.com – the layout makes it look a little bit busy, like any one of a number of “curated” news sites, but the contributors and topics are more unusual – professors, authors, folks who seem to have a slightly longer time horizon and/or unusual mental perch, and thus a more interesting range of opinions. You might not agree with them all, but they present intriguing and provocative points of view. Recent titles include “Why Quantum Physics Ends the Free Will Debate” by Dr. Kaku of CUNY, where he pits Einstein against Heisenberg; and “How to see the World Like Malcolm Gladwell” by the king of cleverness himself.

www.bigthink.com

MEDIA OF ALL SORTS – BOOKS, MOVIES, ART:

BAD SCIENCE, by Ben Goldacre

If you are looking to become more science-literate, this book is a good start. Goldacre (also a columnist for The Guardian) is a funny and engaging writer, but his topic is serious: he shows through a long line of vivid examples just how wrong we have often been on topics of science and

health, sometimes through honest ignorance and sometimes through willful ignorance. Putting infants to sleep on their tummies, eating beets as an HIV cure... the list is long and sometimes amazing. Goldacre will leave you feeling a bit more suspicious, but also better equipped to analyze medical and scientific claims of all sorts. Stop reading those bogus weight-loss ads in the back of Men's Journal and Us Magazine, and read this book instead!

http://www.amazon.com/Bad-Science-Quacks-Pharmaceuticals/dp/0865479186/ref=sr_1_1?s=books&ie=UTF8&qid=1309734402&sr=1-1

THE TEN MOST BEAUTIFUL EXPERIMENTS, by George Johnson

This book helps to connect science and people – Johnson enlivens the experimenters as well as their experiments. I remember reading about many of these breakthroughs in school, but even if you thought the science was neat, textbooks rarely gave any glimpse of the people behind the work – what motivated them, what obstacles they faced, what led them to pursue their quirky and path-forging paths... Did you know that Pavlov intended to become a priest, but then started sneaking into the library to read Darwin? That he was deeply concerned with the ethical issues surrounding animal experimentation? If you are a science geek, this is a fun and light skip through history; if you are a humanities lover, this is a great reminder that science and people are not two different subjects.

http://www.amazon.com/Ten-Most-Beautiful-Experiments-Vintage/dp/140003423X/ref=sr_1_1?s=books&ie=UTF8&qid=1309734881&sr=1-1

Next up for me is a tag-team reading of Johnson's book about physicist Murray Gell-Mann, **Strange Beauty**, along with Gell-Mann's own **The Quark and The Jaguar**, which deserves more attention than I gave it on the first go-round. Many readers will know that Gell-Mann is a pioneer in complexity science and complex adaptive systems: his work provides the scientific basis for much of the other complexity-related work that we admire.

http://www.amazon.com/Strange-Beauty-Gell-Mann-Revolution-Twentieth-Century/dp/0679756884/ref=sr_1_1?s=books&ie=UTF8&qid=1309737696&sr=1-1

http://www.amazon.com/Quark-Jaguar-Adventures-Simple-Complex/dp/0805072535/ref=pd_bxgy_b_img_b

THE ATLAS OF SCIENCE, by Katy Borner

Take Tufte's data visualization and apply it to some of our most interesting scientific questions and you have Borner's **Atlas of Science** - I have only seen excerpts thus far, but can't wait to get my hands on the whole thing. Check out the Seed Magazine link below for a map of the intersection of various scientific disciplines, then imagine how this morphs over the course of the decades, with some pieces more and more tightly interwoven and others unraveling before our eyes. Then ponder the implications.

http://seedmagazine.com/content/article/mapping_science/

http://www.amazon.com/Atlas-Science-Visualizing-What-Know/dp/0262014459/ref=sr_1_2?ie=UTF8&s=books&qid=1276192523&sr=8-2

SURELY YOU'RE JOKING, MR, FEYNMAN! by Richard Feynman

This conversational account of Richard Feynman's development as a physicist is disarming: you are so busy shaking your head over his goofy practical jokes and constant curiosity that you almost forget this is one of the most brilliant scientists of our time. No matter what the puzzle, Feynman wanted to figure it out. A must-read for anyone hoping to solve puzzles of their own.

http://www.amazon.com/s/ref=nb_sb_ss_i_0_32?url=search-alias%3Dstripbooks&field-keywords=surely+you%27re+joking+mr.+feynman&x=0&y=0&prefix=surely+you%27re+joking+mr.+feynman

THE IRON GIANT (both movie and book):

Continuing with our robot/human theme... if you liked E.T., you will LOVE the Iron Giant! This story shows the triumph of personal connection over machinery (both the metal kind and the structural kind), and illustrates the shortcomings of rules and bureaucracies when faced with new and different circumstances. The film is so effective that it may or may not have made my super-tough brother cry – don't bother asking him about it, he will crush you like a bug. Curiously, the movie is gentler and less heavy-handed than the book (whereas usually it seems movie versions are more clunky) – this is likely just due to context, since the book (by poet Ted Hughes) was written in 1968, when the anti-war movement and other social critique was more heightened (or perhaps differently focused) than today. The animated movie was released in 1999, so is widely available for streaming, rental, purchase,

you name it. There is a newly illustrated version of the book coming out in September, and several older editions are also available from various venues. Fun for the whole family! Seriously.

http://movies.netflix.com/WiMovie/The_Iron_Giant/70015683?trkid=2361637

http://www.amazon.com/Iron-Giant-Ted-Hughes/dp/0375871497/ref=sr_1_3?s=books&ie=UTF8&qid=1309733454&sr=1-3

THE JOHNNY CASH PROJECT:

This is a super-cool crowd-sourced art/film project, coupled with one of the best recordings ever, Johnny Cash's "Ain't No Grave". You can vote for your favorite images to be used in the video, contribute your own frame for consideration, or just lean back and watch it roll by...

www.thejohnnycashproject.com

EL ANATSUI:

Sometimes I'm discouraged when I realize there's yet another amazing artist who is unknown to me – but then I think, how wonderful! El Anatsui's more recent metalworks are almost quilt-like, but with a rougher (literally) edge to them, and his older wooden pieces are amusing, calming, and full of gravitas, all at once. All of his work is fiercely contemporary, reflecting questions of globalization and colonialization, and it all also builds on local materials and traditions from West Africa (he was born in Ghana and has lived in Nigeria for many years). I just caught the tail end of the fantastic exhibit at the Davis Museum at Wellesley College – its sister exhibit is showing at the Clark Museum in Williamstown, MA this summer, so if you are heading that way be sure to check it out. Later showings of the full retrospective are scheduled for U Michigan, the NC Museum of Art, and the Denver Art Museum.

<http://clarkart.edu/exhibitions/anatsui/content/exhibition.cfm>

EASIEST AND BEST SUMMER COCKTAILS EVER:

THE FAMOUS COLLINS LEMON-RUM SLUSH!

*1 can frozen lemonade
1 can frozen limeade
2 cans water
1 can light rum (vodka is also very very good)
1 can seltzer or sprite*

- Mix together and freeze! If you use one of those frozen cores from an ice cream maker it will be ready much quicker, which could save the day.
- Scrape with a fork and serve (with more seltzer, if needed).

...AND A FAVORITE NON-TIPSY REFRESHER:

*1 quart lemonade
1 quart seltzer
1-2 T grated fresh ginger
5-6 sprigs of mint, slightly crushed*

OR

If you can find elderflower syrup, just mix a dash of that with the lemonade and seltzer. Fresh as a daisy! Or an elderflower.

COMING UP NEXT:

Our next issue will focus on key themes from two “out there” endeavors: my recent studies at divinity school, and upcoming 500-mile pilgrimage walk in Spain. Though these activities are decidedly non-business-y, the biggest surprise of my academic adventures was that so much of the material was applicable to my professional work, and not in a far-afield way, but in a directly relevant way. This upcoming issue will be a bit less comfortable to write than usual, so I hope you will find it of use.

Among other topics, we'll discuss:

- bravery vs. courage
- optimism vs. hope
- fearlessness vs. being free from fear

Until then, best wishes for a wonderful summer!