

The University of Michigan Department of Urology

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What's New January 1, 2016

Happy New Year

Things we carry & related considerations.

A version of this monthly email to faculty, residents, staff, alumni, and friends of the University of Michigan Medical School Department of Urology is alternatively published and archived at the website matulathoughts.org.



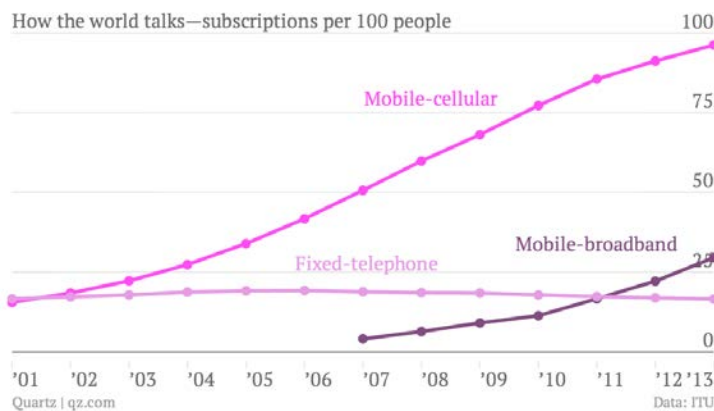
10 Items, 25 Minutes



[Above: ancient Egyptian calendar, Karnak Temple. Below: sundial clock, Suffolk England Moot Hall. Neither of these was easily carried.]



1. *Calendars and clocks indicate a new year begins today. Most of the 7 billion people on Earth have aligned themselves to this fact and it is likely that most of them made that alignment with the phones they carry. The number of cell phone subscriptions to date is 6.8 billion, nearly one per person on the planet - an astonishing fact. Whether you are a hedge fund billionaire, a Syrian refugee, a micro-economy street vendor in Africa, a fisherman in Argentina, or a physician in Asia your cell phone is one of the most indispensable things you carry.*

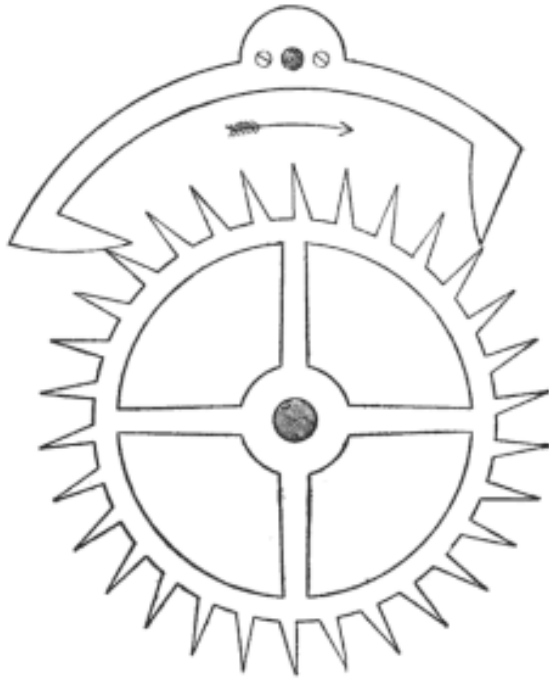


[Figure from UN Telecommunications Agency. Topline - mobile cellular phone subscriptions per 100 people. Middle flatish line indicates fixed telephone. Bottom rising line - mobile broadband.]

This new year begins on the first Friday of the month when we send this electronic message *What's New* and its alter ego, the blog *Matula Thoughts*. These communications help me navigate the calendar of life in general and academic urology in particular. *Matula Thoughts* is my personal dab at considering *the nature of things*, as did a better author, Lucretius, thousands of years ago.

2. *Calendars* are a convenient way to measure our days, although heartbeats are life's ultimate metronomes. Pulse, a primary indicator of personal health since well before the time of Hippocrates, could only be assessed qualitatively (slow or fast) and it didn't connect people, in a practical sense, to daily life. Nonetheless, as long as our pulses keep on ticking we carry out our private lives, our social lives, and our work lives, grooming our identities from our values, our relationships, and the things we carry along through life.

Like all living creatures we need to know where we are *physically* in space at any time, this is the essential matter of proprioception. Yet we humans also require a sort of temporal proprioception - that is to know where we are *in time*. Calendars, of various sorts, coordinated days and seasons since the dawn of mankind. Mechanical clocks extended human temporal-perception more precisely within the day, down to the hour and its rough quarters, thanks to the anchor escapement mechanism likely invented by Robert Hooke around 1657. I'll return to him shortly.



[Top piece is the anchor, the bottom is the escape wheel. From George Henry Abbott Abbott's American Watchmaker and Jeweler, Hazlitt & Co. Chicago. Fig 5, p.19. 1898. Google Books]

The minute hand (strictly speaking called the *second hand*), a further refinement of the anchor escapement around 1690, divided the hour into 60 precise parts and allowed measurement of pulse rate. That 60th part of the hour, the *minute*, is named for its sense of the smallest known interval, but even that was to be subdivided into 60 smaller parts, the *seconds*, marked off in due time by a third hand on clocks and watches. My grandfather often pulled out his pocket watch to check the time and for me, growing up in Buffalo, a watch seemed to be an expected part of adult life. Timex and now Shinola (joyfully for Detroit) serve that function well for me now. Millennials and other newcomers, however, are likely to dispense with the wristwatch in favor of their cell phones, although Fitbits, Garmins, and Nike Bands may reconnect time to the wrist.



[Shinola also makes Filson watches that have the advantage of waterproofness.]

However you measure it, or even disregard it, *tempus fugit* and another year has quickly passed. This year, today, Michigan football has a notable cameo at 1:00 PM facing Florida in the Citrus Bowl - officially the *Buffalo Wild Wings* Citrus Bowl. This stadium in Orlando had its origin in 1936 as a Works Project Administration (WPA) project of the New Deal with a capacity of 8,900, but now 80 years later holds 60,000.



[Cartoon in Chicago Daily News 1935 by Pulitzer Prize x 2 winner Vaughan Shoemaker who also created the taxpayer character John Q. Public.]

3. *This leap year* brings change to the University of Michigan Health System, the Medical School, and the Department of Urology. Michigan Urology will grow, consistent with our larger UM health system plans. We intend to be appropriately deep in all our seven clinical divisions and match our educational mission to an appropriate clinical footprint. Yet as we grow, some attrition necessarily happens and sadly we will be losing two pivotal faculty members. Stu Wolf will be moving to Austin, Texas and Gary Faerber to Salt Lake City. We have had a longer "heads-up" with Stu's move, as this has been a planned family transition, while Gary's move came much more suddenly with a chair position for his wife, our joint faculty member Kathy Cooney. Both locations are lucky to get these extraordinary medical talents and superb Michigan people.



[Above: the Faerbers c. 2005. Below: the Wolfs.]



Before jumping totally into 2016 I want to mention the 2015 Michigan holiday party, held this year again under the gracious hospitality of Fox Hills, entertained a record number- 292 in fact (193 faculty, staff, and guests) and children (99). Santa, who has been with us for the past dozen years, patiently balanced expectations and annual behavioral performance reviews of youngsters on his lap. The evaluations must have been good since all kids carried gifts home along with full tummies. Jim and Jeanne Montie started this event around 14 years ago. A few years later as the world economy was crashing in 2007 Jack Cichon, our departmental administrator, worried whether we

could afford the event with finances so uncertain, but Jack said something like "If we can't do this for our urology employees and their families, we really aren't much of anything." Those weren't exactly his words, but that is what I recall. Anyway, we've been continuing to have the party, year by year so far. Pat Soter, Sandy Heskett, and April Malis did most of the work behind the scenes. Mr. Claus was channeled by Joe Homick from Cadillac, Michigan. Special thanks to Kathy & Mike Aznavorian and the Fox Hills Team.



[Above: Jill & Evan Keller, Takahiro & Rinko Osawa and children Noelle Keller, Kazuki & Yuki Osawa]

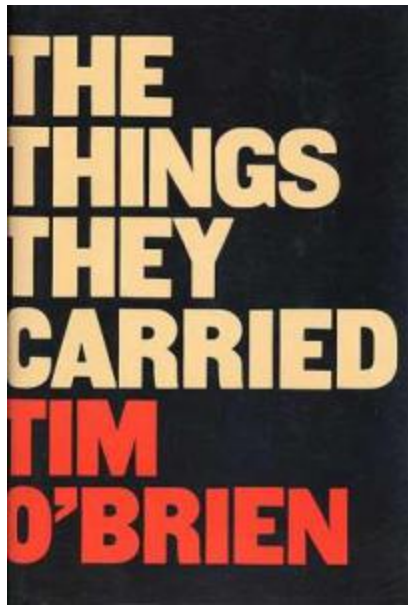


[Above: Santa & company]



[Above: the dance floor]

4. *Some readers will recognize* I've lifted the title of this month's communication from the book by Tim O'Brien in 1990. *The Things They Carried* is a collection of short stories based on O'Brien's experiences as a soldier in the 3rd Platoon, 23rd Infantry Division, during the Vietnam War. O'Brien begins the book with descriptions of the actual things carried by the young men on jungle trails. Some of the things carried were large, some small, and others intangible. The men carried dog tags, backpacks, weapons, food, clothing, and protective gear. They also carried cherished items in pockets and wallets: photographs, letters, good-luck charms, or souvenirs. It's not so different today for physicians, nurses, PAs, MAs, and students who carry stethoscopes, note books, pens, ID badges, cheat sheets, cell phones, iPads, and likely some cherished photos as well.



**THE
THINGS
THEY
CARRIED**
**TIM
O'BRIEN**

As you read O'Brien's book, however, you soon realize that the most essential things the young men carried were the intangibles of their beliefs, values, memories, personalities, and relationships. Ultimately, these soldiers were simply naïve young people, no different from young people today, but for the fact that they had been thrust into an unwinnable conflict by politicians and leaders who themselves were surprisingly naïve in retrospect. Robert McNamara, then Secretary of Defense later wrote: "We were wrong, terribly wrong. We owe it to future generations to explain why." McNamara coincidentally was a close friend of my old professor at UCLA Willard Goodwin and lived in Ann Arbor while working at Ford Motor Company before the stint in Washington. McNamara's career rise was based on his proficiency as an accountant and uncanny skills with numbers, believing in their primacy as a management tool. While, no doubt, a good man at heart, this misplaced belief was the root of tragic mistakes.

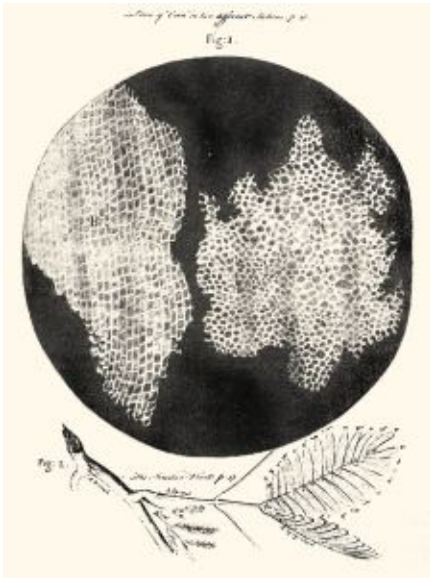
So let me begin 2016 repeating a belief that numbers are a wonderful human artifact, but numbers and their manipulation cannot by themselves lead to wisdom. Other forms of information, sensory and narrative (including values, stories, heuristics,

experiences, experiments, skepticism, and the wisdom of crowds) are equally if not more essential to informing wise courses of actions and beliefs. The sole sourcing of wisdom by accountancy, you could call it *metric-theism*, is dangerous.

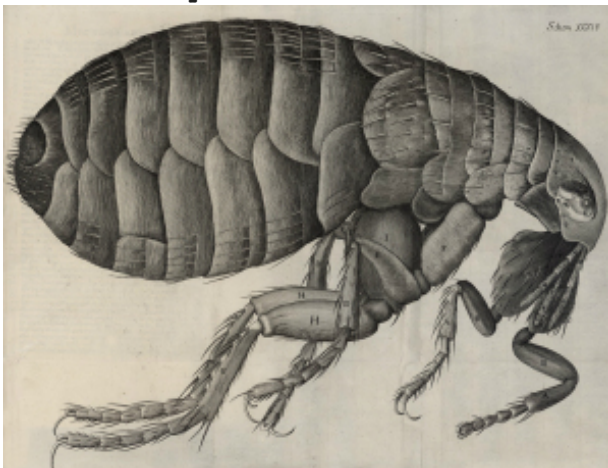
5. *We carry individually forward* into 2016 a boatload of creatures with us, although perhaps less than those young soldiers hosted in Vietnam's jungles. We carry viruses, bacteria, yeast, mites, and even fleas. Fleas (Order: Siphonaptera) have been around much longer than we mammals and have adapted well. Over 2,000 species of these wingless insects (1.8-3.3 mm long) live off blood of mammals and birds (hematophagy), but for all their nuisance to mankind we never knew what fleas really looked like until January, 1665 when Robert Hooke published a drawing in his book *Micrographia*, based on observations with a microscope specially built for him. Hooke was an extraordinary polymath whose work extended from the anchor escape mechanism to the biologic world. In *Micrographia* he was the first to use the term *cell* in the biologic sense (as he noted in microscopic examination of cork) for its resemblance to honeycomb cells or to monastery rooms of monks.

A flea, by the way, has around 250 million cells (2.5×10^9) whereas the average human has around 37 trillion cells (3.7×10^{13} cells). [E Bianconi, A Piovesan, F Facchin et al. An estimation of the number of cells in the human body. *Ann Hum Biol* 40:463-471, 2013] Thirty seven trillion is an almost unimaginable number, but when you consider the number of predecessor cells in the embryology and lifelong maintenance of that number of cells, the approximate number of cells and cell replications is truly incomprehensible. So it is logical among the things we carry forward in time are genetic mutations occurring from routine

errors of chance, familial tendency, occupational hazard, and environmental damage.



[Above: cork cells drawn from microscopic studies of Robert Hooke. Below: Hooke's flea]





[Above: Microscope built for Hooke by Christopher White in London]

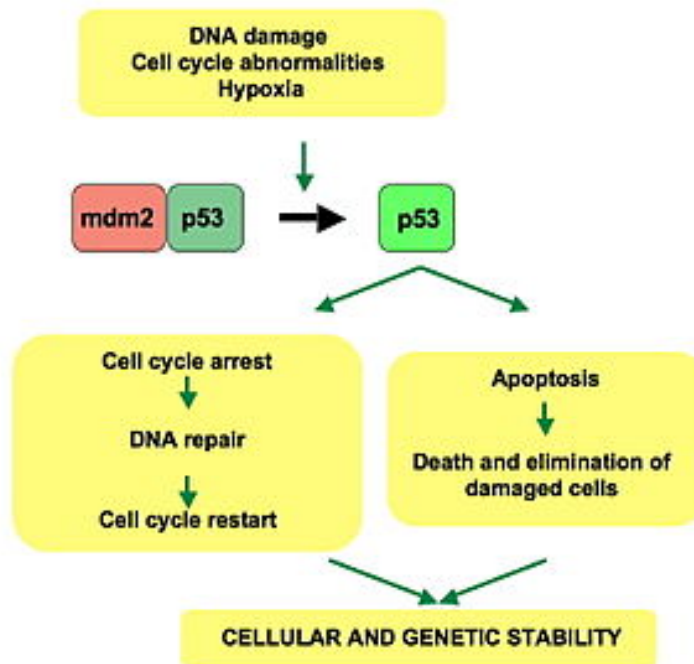
6. *Stethoscope bicentennial.* Until the last century the practice of medicine was largely sensual such that sight, smell, and sound provided practitioners essential evidence. For uroscopists the color, consistency, smell, and even taste of urine were clues to diagnosis and prognosis. In fact, it was the uroscopist's matula and the inspection of urine that symbolized the profession of medicine in art for hundreds of years before the stethoscope took over in 1816, invented by Laennec in Paris. Until then, physicians had to place an ear to a patient's chest to hear the lungs or heart, hoping to avoid any coincidental fleas or lice.



Necessity is the mother of invention and perhaps Laennec craved some personal space between his ear and his patients so he developed the monaural wooden tube shown above. Just as likely, he wanted to improve the acuity of auscultation, but in either case his invention filled a more universal need and the modern stethoscope has supplanted the matula as *badge of office* for physicians, nurses, or other health care providers. The stethoscope is one the most obvious things we carry at work. I recently asked our residents: "What's in your lab coat?" and learned first and foremost they carry cell phones. Then they carry pens, notes, perhaps a stethoscope, and an increasing number are carrying iPads or other tablets where they can find any microscopic images they need to understand an ailment. Some residents carry 2 phones, the additional one being the on-call Cisco phone. We all carry the fruits of human ingenuity - Hooke, Laennec, and Steve Jobs reverberate in our pockets.

7. *Far from the flea* toward the opposite end of the life-form scale sits the elephant. Our eyes allow us to see and understand this grand animal in great detail, yet even here the microscope has found utility at the cellular level. As I was collecting my thoughts for this *Matula Thoughts* I came across an intriguing

article in *JAMA* that brought up the *Peto paradox* - the observation that cancer risk does not seem to scale with size in the animal kingdom. [R Peto. Quantitative implications ... *Philos Trans R Soc Lond B Biol Sci* 370 (1673):2015] With a hundred times as many cells turning over on a regular basis and subject to genetic change, why aren't elephants much more susceptible to cancer than humans? The paper from the Huntsman Cancer Institute in Salt Lake City found that the answer relates to the elephant's greater ability to identify and destroy DNA that goes bad in the continuing processes of body maintenance. [LM Abegglen, AF Caulin, A Chan et al. Potential Mechanisms for Cancer Resistance in Elephants... *JAMA* 314:1850, 2015 and M Greaves & L. Ermini. Evolutionary Adaptations to Risk of Cancer. *JAMA*. 314:1806, 2015]



[In normal cells p53 is inactivated by a negative regulator that DNA damage or other stress uncouples leading to cell repair or destruction. Source: Public domain - Thierry Soussi, *Wikipedia*]

The pachyderm has multiple copies of a gene that makes a protein essential in knocking off mutant DNA. The gene is *TP53*,

the protein is p53, and the knocking-off-process is the increased apoptotic response following DNA injury. Humans contain a single copy (2 alleles) of TP53 and both are necessary for normal cancer prevention. Absence of one of the 2 alleles produces the Li-Fraumeni Syndrome with its greatly increased risk of malignancy, beginning in early childhood. Elephants studied at zoo necroscopies had as many as 40 copies of the gene.

8. *We accumulate and carry* much "stuff" in our lives - a sobering observation when you consider the 62 million or more refugees trying to cross borders and navigate oceans to escape genocide, war, persecution, hunger, and disease. Most of the precious stuff they've accumulated in life has been plundered or left behind and what remains is the little they can carry. As a species we discard much garbage and landfills are getting larger. Incredible amounts of debris in terms of chemicals, plastics, and soot surround us on land, in the air, and in the waters. When mankind's scale was small environmental debris was nearly insignificant in relationship to the planet, although that ancient human debris provides a rich source of study for anthropologists. Today 7 billion humans produce a lot of stuff and most of it is discarded eventually in one form or another. With a cell phone subscription for nearly every human, consider how many actual cell phones have been owned and discarded to date, not including the latest model people carry. The phenomenon of oceanic garbage is another matter. Patches of floating oceanic debris are just one more example of the existential threat of our litter. The so-called *5 gyres* of the oceans have corralled visible and invisible marine litter into vast islands of trash.



[Above: marine debris, Hawaiian coast. Below: marine debris from underwater, near Hawaii. US Department of Commerce. NOAA Marine Debris Program]



9. *The National Organic and Atmospheric Administration* and its NOAA Marine Debris Program website illustrates the issue.

As the rhetoric about government scale heats up this year of presidential elections don't be taken in by either of the simplistic polarities. The founding fathers could never have anticipated the need for NOAA *per se*, although they provided a framework to create such agencies, recognizing that government needs to regulate commerce at some level and commerce changes with technology. However the founders would likely be appalled at the forced inefficiencies of the doctor-patient relationship and workflow caused today by governmental overreach with the HITECH Act of 2007 and the current mandated EHRs. The right balance of regulation and liberty is an ongoing responsibility of modern humanity, although we will never get it perfectly right since the environment, technology, and human aspirations are always changing. It is a precious, although precarious, circumstance that many of us on the planet live in societies affording the ability to adjudicate that balance. We need to guard that opportunity more responsibly and then seek to extend it to the rest of the 7 billion around us.

10. *We leave 2015* behind amidst great cynicism in the world so I think McNamara's full quote on Vietnam is worth reconsideration. *"We were wrong, terribly wrong. We owe it to future generations to explain why ... I truly believe that we made an error not of values and intentions but of judgment and capabilities. I say this warily since I know that if my comments appear to justify or rationalize what I and others did, they will lack credibility and only increase people's cynicism. It is cynicism that makes Americans reluctant to support their leaders in the actions necessary to confront our problems at home and abroad."* [McNamara. *In Retrospect. The Tragedy and Lessons of Vietnam*. P. xx., 1995]

These comments apply to our efforts to reconstruct health care delivery in this complex world of specialty medicine, expensive technology, poverty, and aging populations. They apply to our national political debates as well as those regarding international calamities. Cynicism is rampant and somewhat natural, but it impedes meaningful efforts at solutions. McNamara's book is a brutal self-examination and a testimony to his ultimate integrity. It is easy for us, in fact it is our human nature, to paint those around us as good or bad, black or white, native or foreign, straight or gay, liberal or conservative, Democrat or Republican, socialist or capitalist, scientific or non scientific, atheist or believer. Civilization cannot endure unless that basic human nature of "us versus them" refines into a cosmopolitan view of the world. The synergism of "*judgment and capabilities*" (that McNamara found lacking) with *data* (that was so plentiful) is not automatic, but that synergism is the basis for wisdom. The wisdom we need comes from democratic and diverse crowds, from engaged citizens, from education, and from good leadership.

If I can use Daniel Pink's metaphor from his book *Drive*, the bipolar view of the world may be a product of our *ancient hominid operating system 1.0*, a system that worked well enough at our more rudimentary social levels of colonies, tribes, and even villages. That system, however, no longer works well for us and we must leave it behind. In 2016 with an interdependent global civilization of 7 billion, we need *Human O.S. 2.0*, a system that, by the way, needs continuous upgrades. Those upgrades are simultaneously personal in terms of values and behaviors as well as societal in terms of governments and laws. 2016 may well be a pivotal year for human civilization. Come what may, however, you can expect the clinics, operating rooms, investigators, educators, and leaders of Michigan Urology to continue their best efforts

for another year - 24 hours a day and seven days a week. (That represents 31,536,000 seconds, nearly 525,949 minutes, and 8,760 hours).

Thanks for looking at *What's New and Matula Thoughts*. We welcome your comments, your predictions, and your observations regarding the triumphs, tragedies, flea circuses, and goat rodeos of world events that 2016 will provide. Such is the nature of things.



[1919 Seattle Times photo of a flea circus curiosity on display at Ye Olde Curiosity Shop. Scanned from reproduction in Kate C. Duncan, *1001 Curious Things*, University of Washington Press, 2000, [ISBN 0295980109](#), p. 144. Source: *Wikipedia*]

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