

# Strategic Uncertainty, Digital Technology and Formal Cause

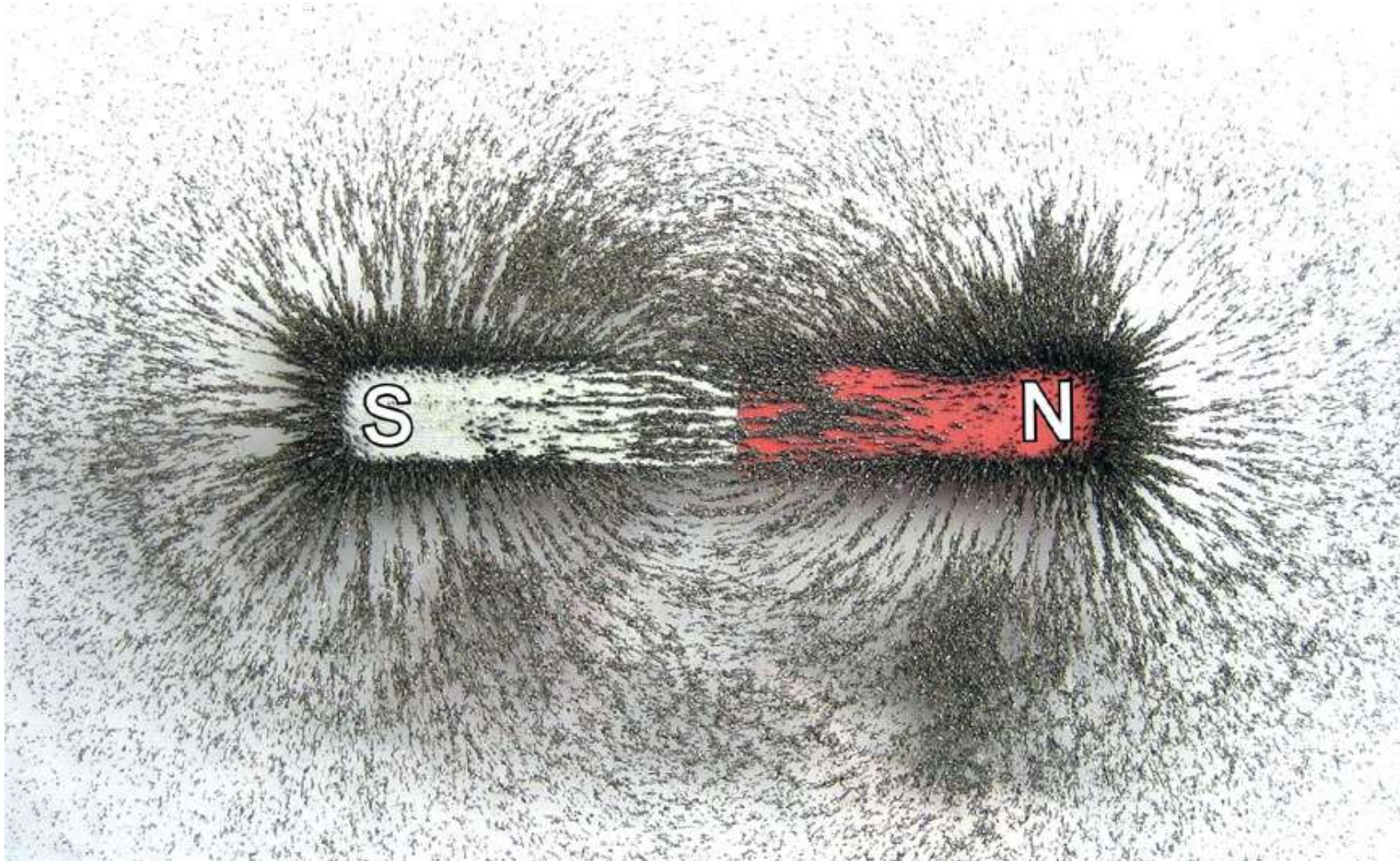
**Strategic Uncertainty in National Security**

Tuesday, 26 June 2018

Samuel Neaman Institute, Technion

Dr. Milo Jones

# The Role of Theory (and Speculation)



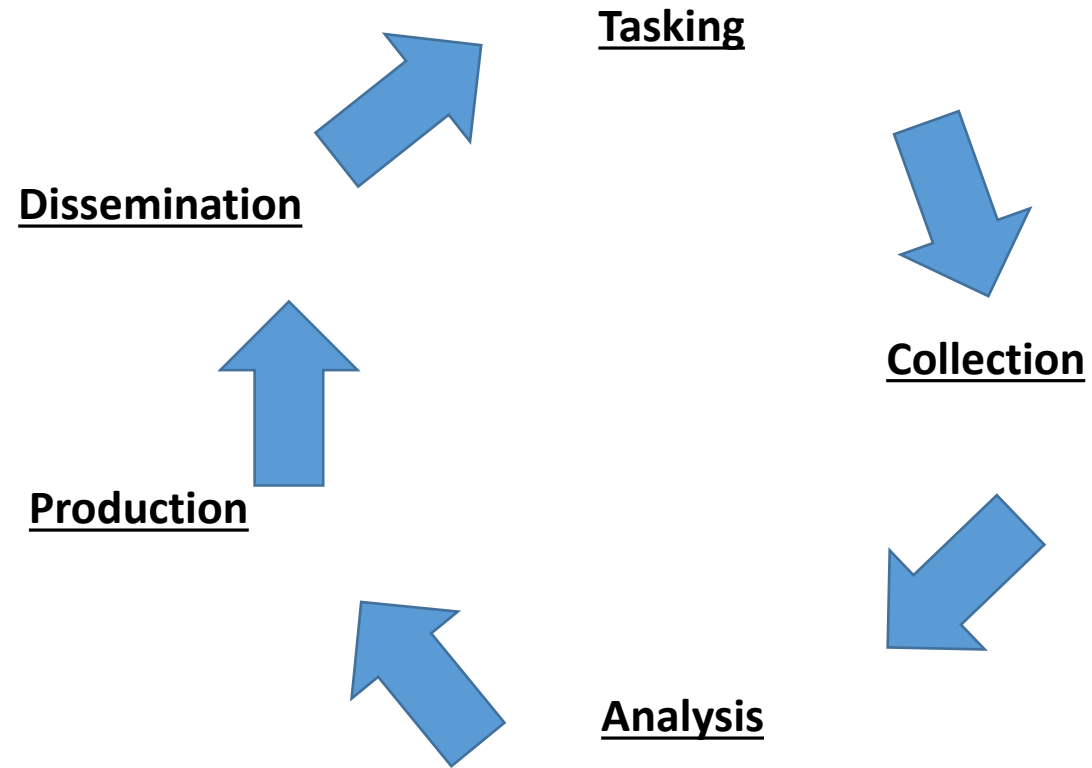


**CONSTRUCTING  
CASSANDRA**

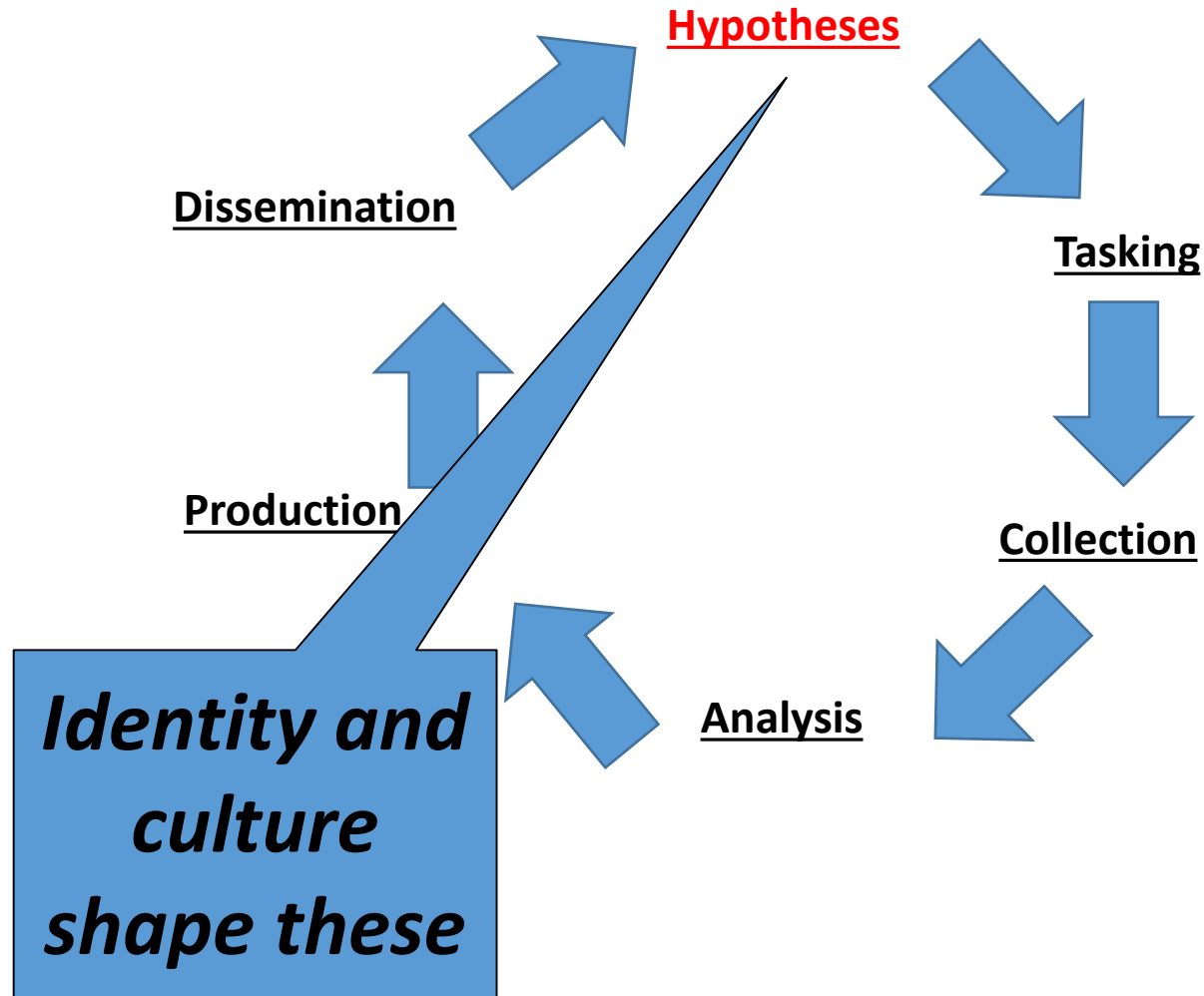
REFRAMING  
INTELLIGENCE FAILURE  
AT THE CIA,  
1947-2001

MILO JONES AND  
PHILIPPE SILBERZAHN

# The Old Intelligence Cycle

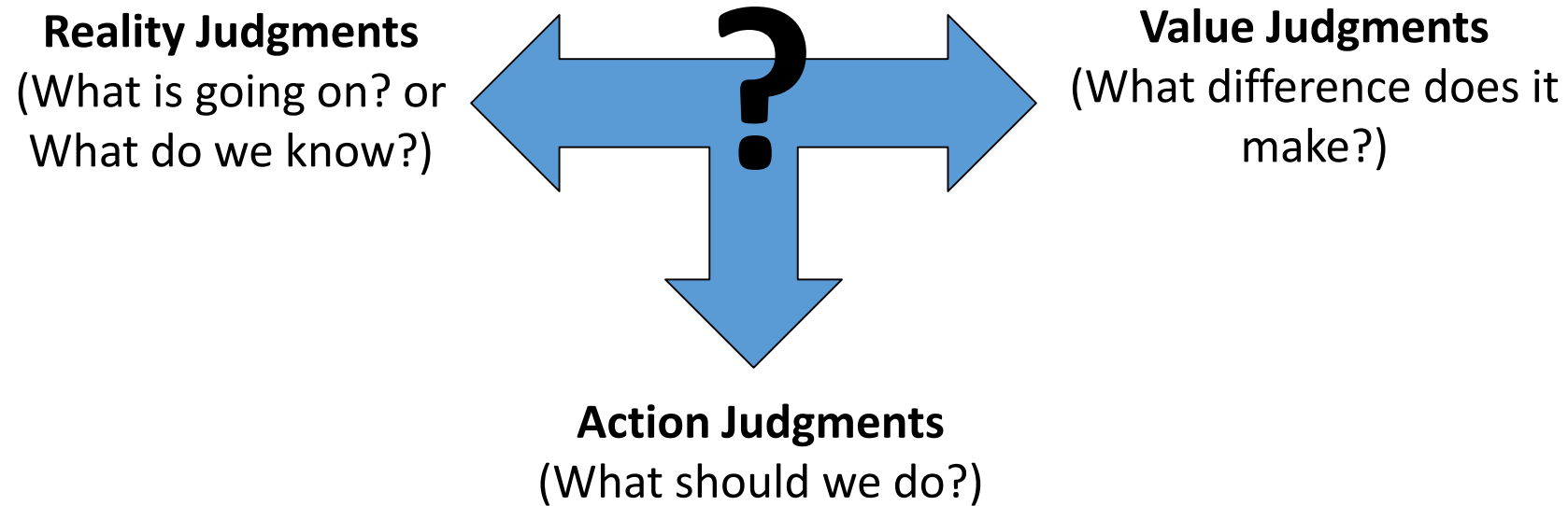


# A New Intelligence Cycle

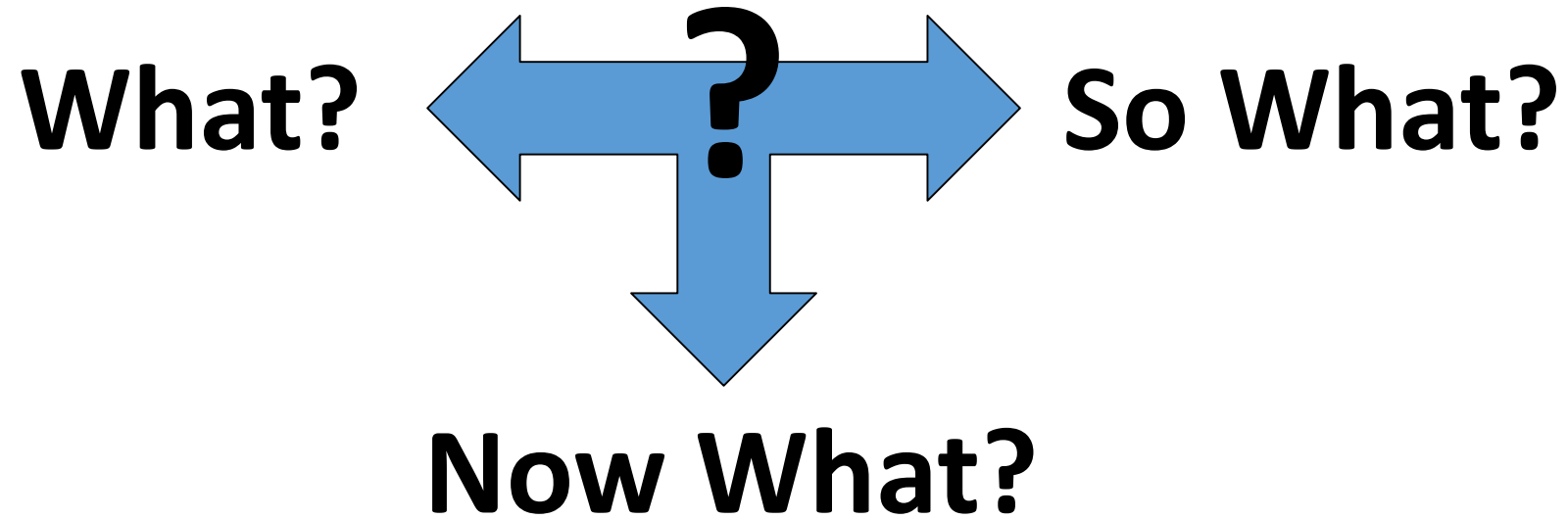


# Surprise Reaction Framework

- The Surprise Reaction Framework has three basic parts:



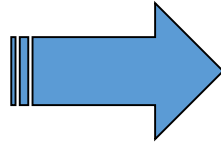
# Surprise Reaction Framework Simplified



What?



# From Analogue/Electric to Digital Geopolitics?



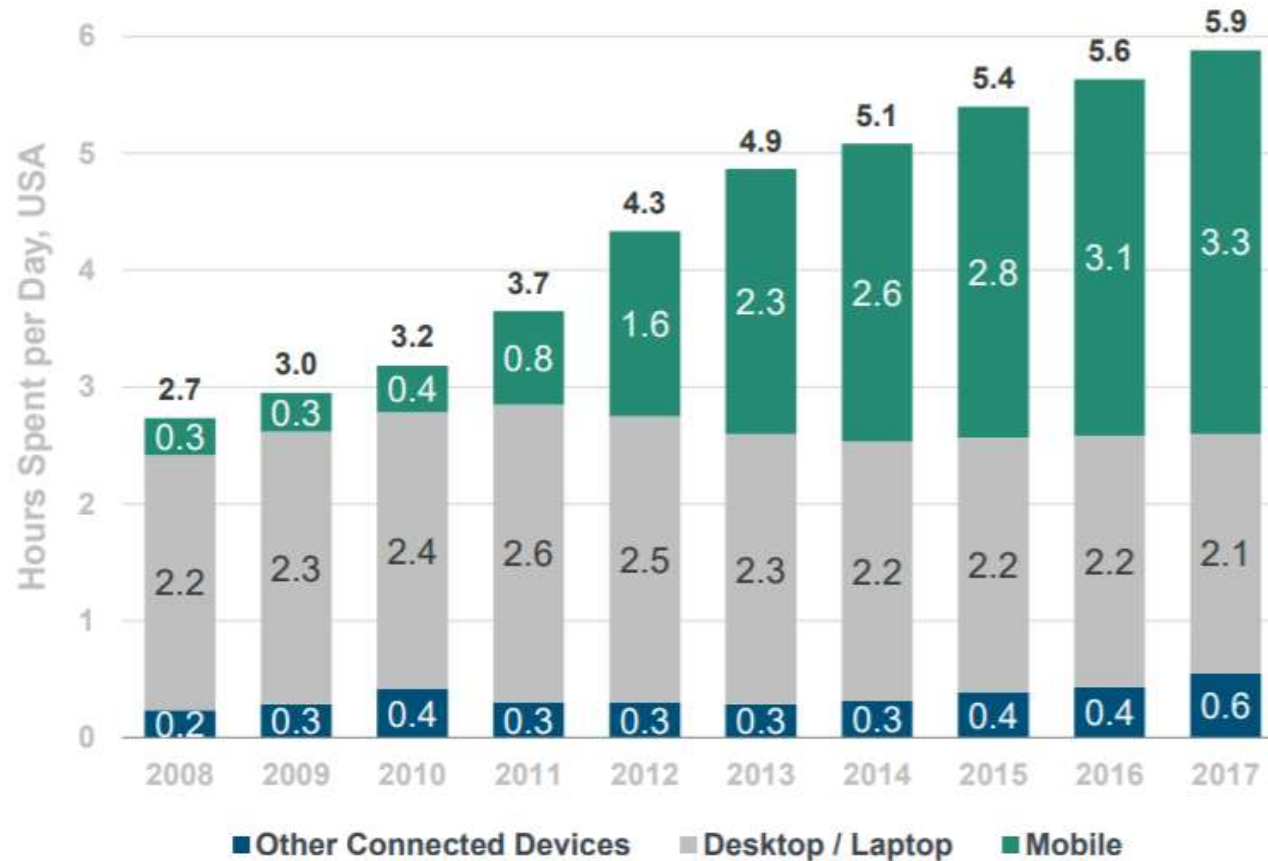
- From hand-written script to mechanically-printed type (circa 1450) to electrically-transmitted codes (circa 1850), to voice and picture transmission (radio & TV) to digitally-stored memories, society has been shaped and re-shaped by changing technological structures.\*
- Digital Technologies are now shaping and driving strategic uncertainty in all realms, and will continue to do so at an accelerating pace.
- They are becoming a **“Formal Cause”**, i.e. they are structuring to our choices
- Formal causes are in contrast to “Efficient Causes”, that just have effects
- Formal Causes are also not “Material Causes”: absent human agency or intellect, there is no Formal Cause

# From Analogue/Electric to Digital Geopolitics?

- This is another way of saying that I take a “technological constructivist” approach to the sources of strategic uncertainty
- This means, in John Culkin's formulation, that I hold that, "We shape our tools and, thereafter, our tools shape us."
- In short, technologies are not neutral: they have psychological and sociological consequences
- More and more of our real existence is mediated by digital devices
- Any approach to strategic uncertainty which does not begin by attempting to grasp how our subconscious and our societies are shaped by the technologies we use and then how our subconscious defines what we believe and how we act will misunderstand the nature of strategic problems
- Forget “Virtual Reality” - think **The Reality of the Virtual\***

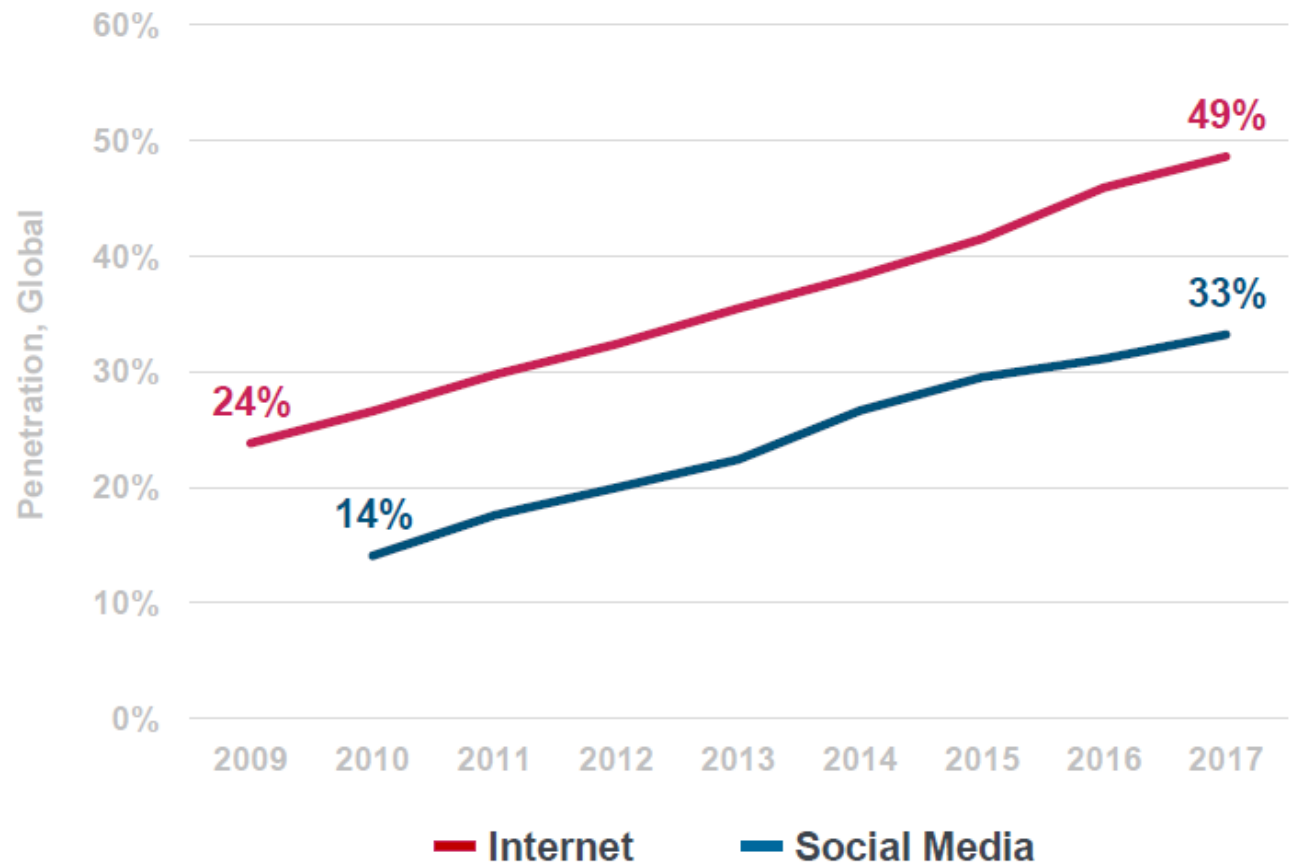
# The latest from Mary Meeker

Daily Hours Spent with Digital Media per Adult User



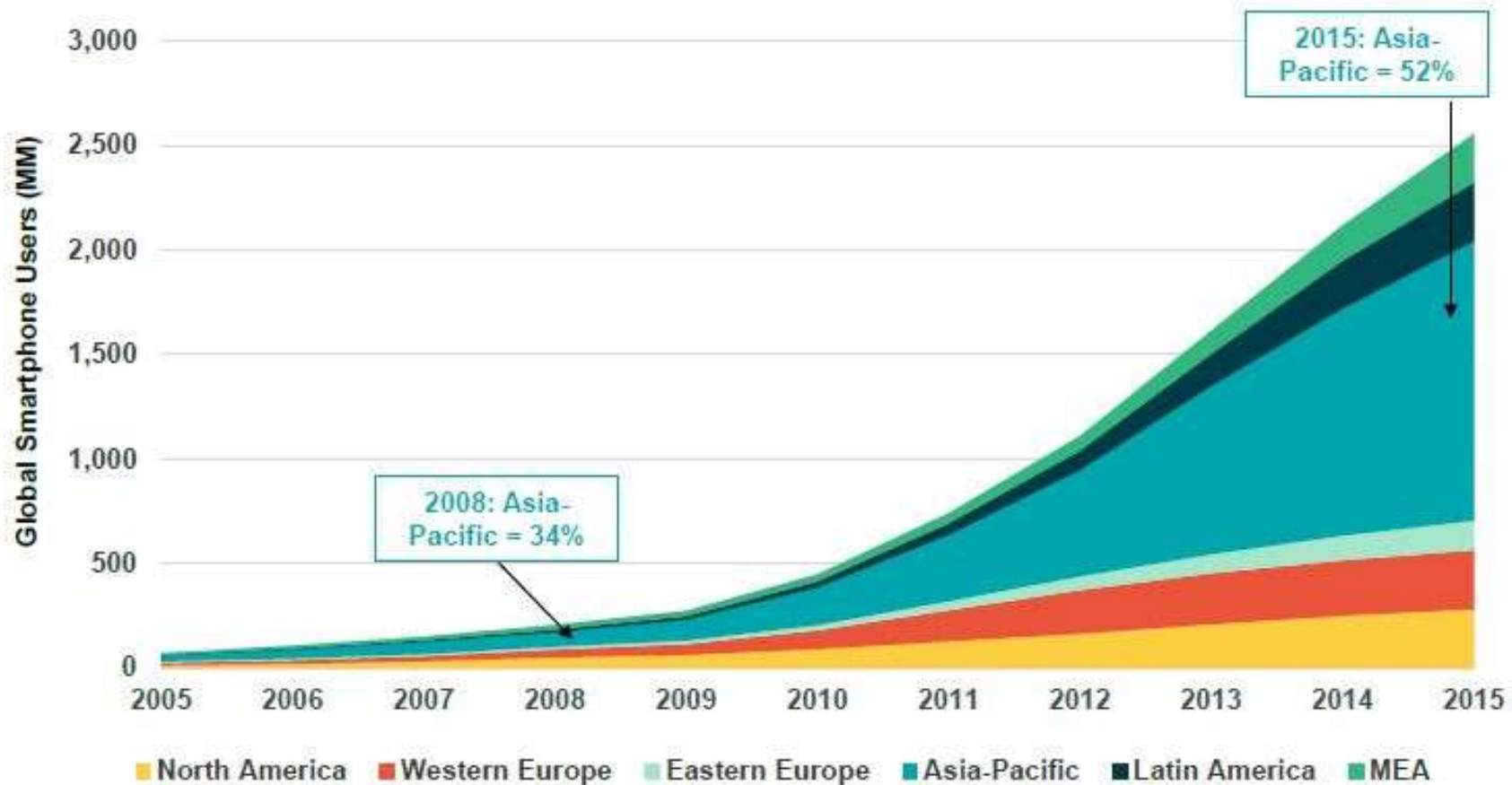
# The latest from Mary Meeker

## Internet + Social Media – Global Penetration



# The latest from Mary Meeker

Smartphone Users, Global, 2005 – 2015



# Media Effects

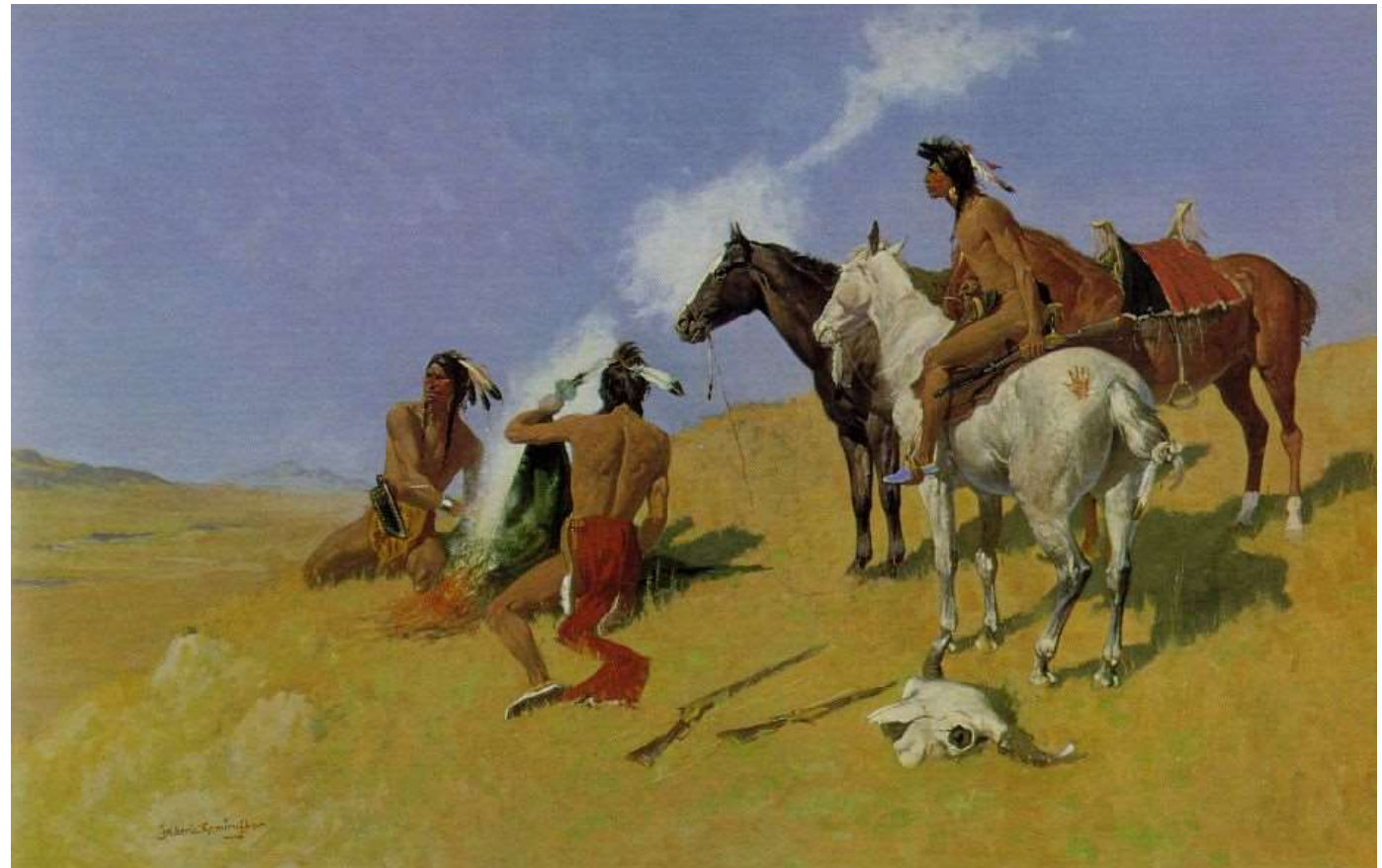
## PERICLES' FUNERAL ORATION THUCYDIDES (c. 470–c. 400 BC)

*During a twenty-year exile from Athens which he incurred as the leader of a failed military campaign in 427, Thucydides spent his time writing a history of the Peloponnesian War. In the first book of his History, he tells us about his method and purpose:*

Of the events of the war I have not ventured to speak from any chance information, nor according to any notions of my own; I have described nothing but what I either saw myself, or learned from others of whom I made the most careful and particular inquiry. The task was a laborious one, because eye-witnesses of the same occurrences gave different accounts of them, as they remembered or were interested in the actions of one side or the other. And very likely the strictly historical distances of my narrative may be disappointing to the ear. But if he who desires to have before his eyes a true picture of the events which have happened, and of the like events which may be expected to happen hereafter in the order of human things, shall pronounce what I have written to be useful, then I shall be satisfied. My history is an everlasting possession, not a price composition which is heard and forgotten.

*Thucydides looked for rational causes for events because he believed, as he tells us in the paragraph just quoted, that similar events would occur in the future if the same causes were present. He used speeches invented in his narrative as vehicles for conveying his analysis, as we see in Pericles' Funeral Oration, in which Thucydides had Pericles compare Athens and Sparta. However, as he wrote in Book I, "I have... put into the mouth of each speaker the sentiment proper to the occasion, expressed as I thought he would be likely to express them, while at the same time I endeavored, as nearly as I could, to give the general purport of what was actually said." The ideals Pericles paints so well clearly those of mid-fifth century Athenians.*

Thucydides, *History of the Peloponnesian War*, trans. Eric Vieuve (London: Penguin, 1972), 145–51. Reprinted with permission.



# Media Effects

**The Address**

Fourteen and seven years ago our fathers brought forth on this continent a new nation conceived in liberty and dedicated to the proposition that all men are created equal.

Now we are engaged in a great civil war testing whether that nation, so conceived and so dedicated, can long endure. We are met on a great battlefield of that war. We have come to dedicate a portion of this land as a final resting-place for those who here gave their lives that that nation might live. It is altogether fitting and proper that we should do this.

But, in a larger sense, we cannot dedicate, we cannot consecrate, we cannot hallow this ground. The brave men, living and dead, who struggled here have consecrated it far above our poor power to add or detract. The world will little note our long remember what we say here, but it can never forget what they did here. It is for us the living rather to be dedicated here to the unfinished work which they who fought here have thus far so nobly advanced. It is rather for us to be here dedicated to the great task remaining before us—that from these honored dead we take increased devotion to that cause for which they gave the last full measure of devotion—that we here highly resolve that these dead shall not have died in vain, that this nation under God shall have a new birth of freedom, and that government of the people, by the people, for the people, shall not perish from the earth.



# McLuhan's Media Effects

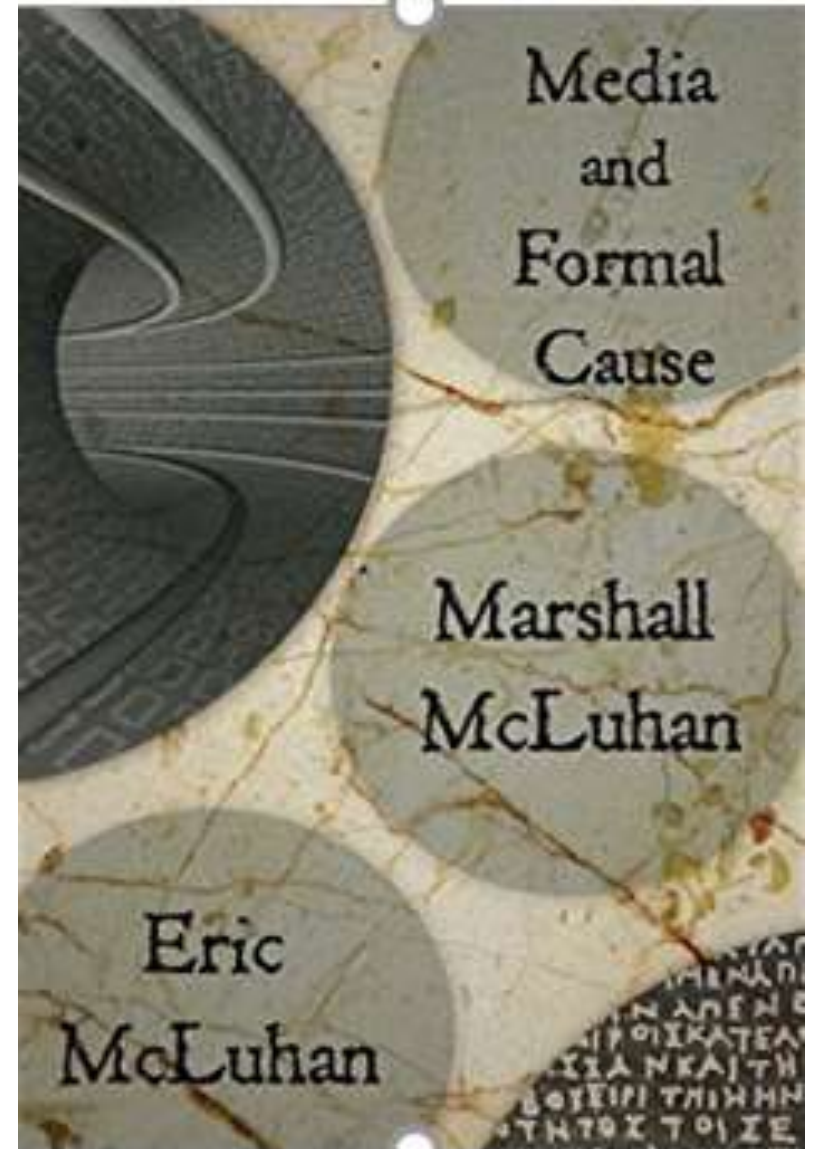
- Marshall McLuhan is famous for the phrase, "The medium is the message"
- He meant that media influences both what messages are sent AND how messages are perceived
- Here the Message is the writing
- The Medium is the bomb!
- But the bomb and its effects are usually ignored or invisible as everyone focusses on the "content" of media





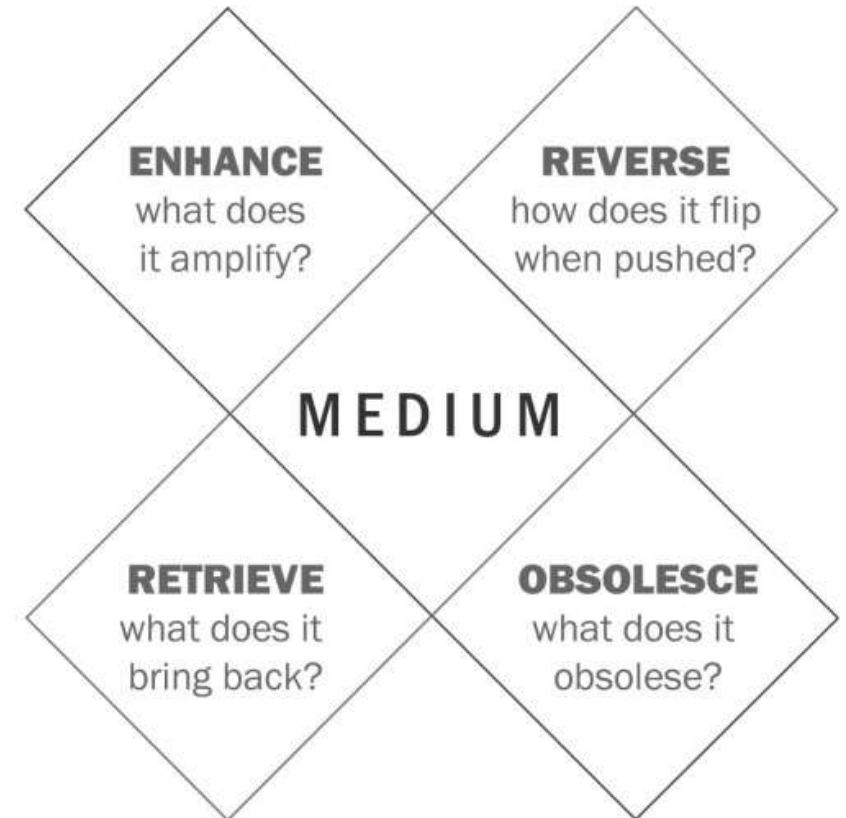
# McLuhan's Media Effects

- McLuhan says that technologies have massive pre-conscious psychological effects on those who use them habitually
- They are “extensions of the self” that highlight some human faculties and deaden others
- New technologies create a completely new human environment in which peoples' views of themselves and of the world change



# McLuhan's Tool to Probe Effects

- Every artifact, medium, or technology enhances some human function.
- It thereby obsolesces some former medium or technology, which was used to achieve the same function earlier.
- In so doing, the new medium or technology retrieves some older form from the past.
- When pushed far enough, the new medium or technology reverses or flips into a complementary (or contradictory) form.

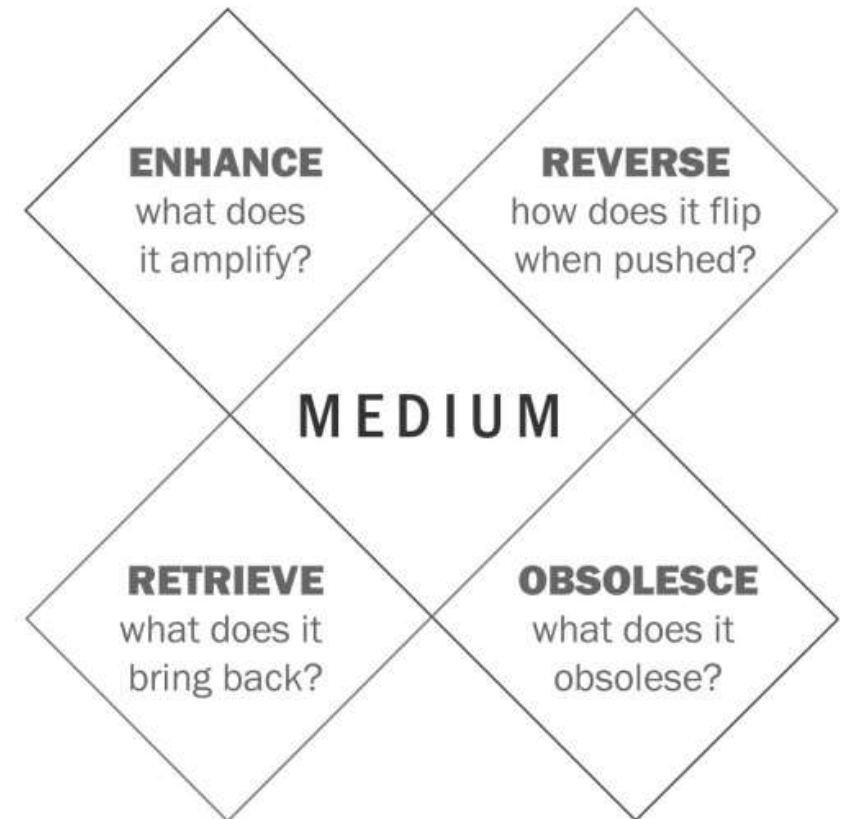


Tetrad of Media Effects

McLuhan (1988)

# McLuhan's Tool to Probe Effects

- Example of the Tetrad to probe a media/technologies effects: the invention of money.
- Money:
- Enhanced trade and commerce
- Obsolesced the barter system
- Retrieved the conspicuous consumption of hunter-gatherers
- Flipped into credit, a complementary form



Tetrad of Media Effects

McLuhan (1988)

So What?

# New Media are changing tactics



## THE AGE OF SELFIE JIHAD: HOW EVOLVING MEDIA TECHNOLOGY IS CHANGING TERRORISM

November 30, 2016

Author(s): Jason Burke

*Abstract: Extremists have sought to exploit the latest media technology to instill fear in target populations and elicit support from sympathetic audiences. In order to aid their recruitment, they adapt their tactics and strategy and structure their organizations accordingly. Recent rapid technological change that allows terrorists to reach a large audience quickly and directly has enabled them to achieve their messaging goals without launching large-scale attacks that demand significant physical infrastructure. Increasingly, thanks in part to the digital revolution, they can rely on what the Syrian jihadi strategist Abu Musab al-Suri called "individual terrorism." With the Islamic State losing territory and the al-Qa`ida network increasingly decentralized, individuals and small autonomous cells may increasingly take the initiative in both the murderous and messaging dimensions*

# “Digital technologies” extend beyond media

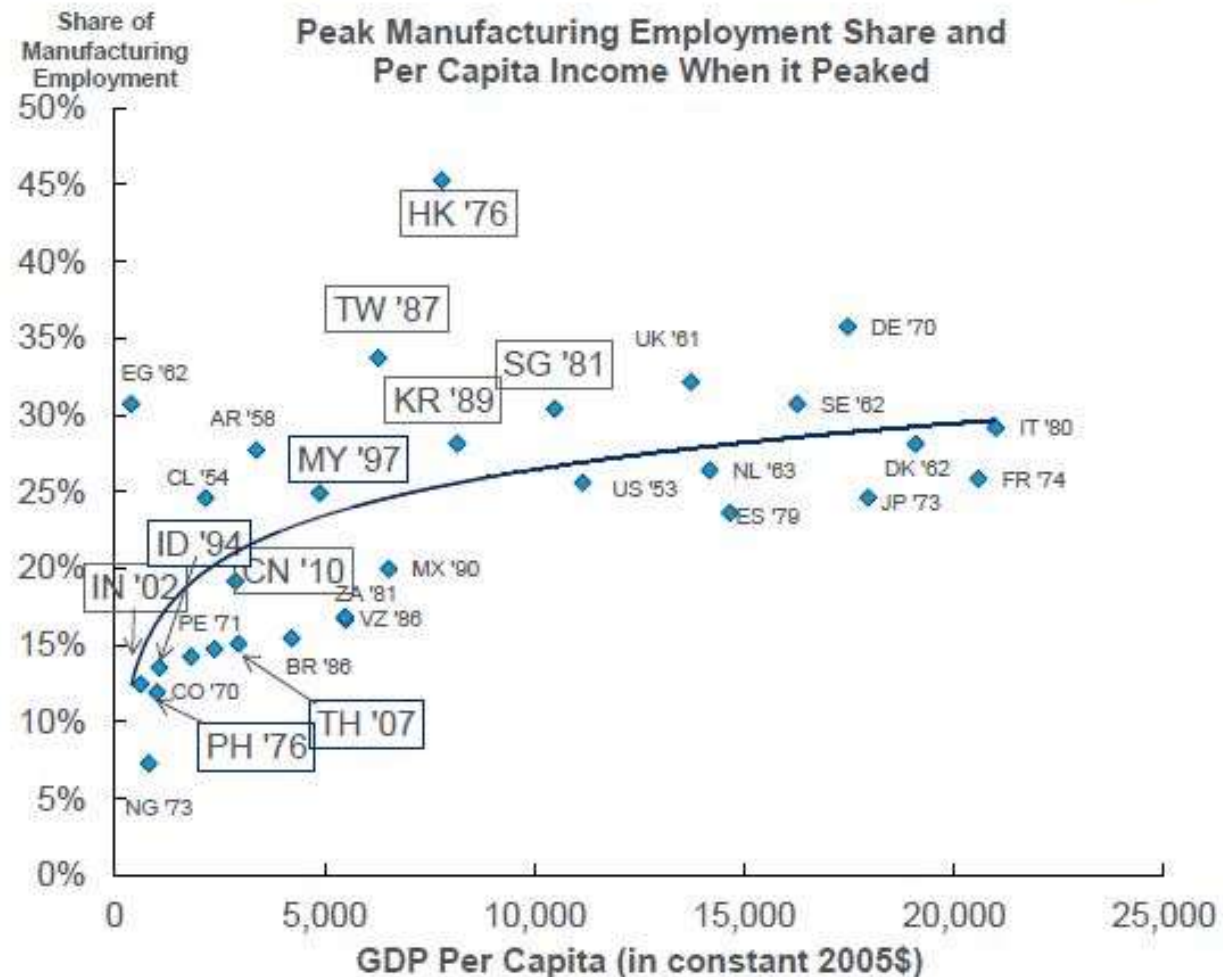
Figure 48. Employment share at risk by industry

	Low Risk (%)	Medium Risk (%)	High Risk (%)
Accommodation & Food Services	2.8%	10.5%	86.7%
Administrative & Support Services	1.6%	36.2%	62.2%
Agriculture, Forestry, Fishing & Hunting	75.6%	12.0%	12.3%
Arts, Entertainment & Recreation	47.9%	12.5%	39.6%
Construction	21.6%	19.8%	58.6%
Educational Services	63.1%	19.7%	17.2%
Finance & Insurance	28.9%	17.3%	53.7%
Government	46.2%	30.6%	23.2%
Health Care & Social Assistance	39.4%	25.0%	35.6%
Information	51.6%	38.3%	10.1%
Management of Companies & Enterprises	82.8%	6.2%	11.0%
Manufacturing	19.9%	18.4%	61.7%
Mining, Quarrying and Oil & Gas Extraction	7.8%	46.3%	45.9%
Other Services (ex Public Admin)	44.9%	24.7%	30.4%
Professional, Scientific & Technical Services	54.0%	10.9%	35.1%
Real Estate and Rental & Leasing	0.7%	32.0%	67.2%
Retail Trade	14.5%	18.9%	66.6%
Self-Employed	60.4%	8.9%	30.7%
Transportation & Warehousing	5.5%	19.4%	75.0%
Utilities	40.3%	27.8%	31.9%
Wholesale Trade	15.9%	18.4%	65.7%

Source: Oxford Martin School

# “Digital technologies” extend beyond media

Figure 1. Peak Manufacturing Employment Share and GDP per Capita When It Peaked



Source: GGDC-10 Sector database, World Bank Development Indicators, Citi Research

# Premature Deindustrialization?





# Premature Deindustrialization?

SEWB 

CAREERS PRESS KIT

**Sewbo, Inc. is pleased to announce that it has used an industrial robot to sew together a T-shirt, achieving the long-sought goal of automation for garment production.**

Sewbo's technology will allow manufacturers to create higher-quality clothing at lower costs. It will shorten supply chains and lessen the long lead times that hamper the fashion and apparel industries, helping to reduce the complexity of today's intricate global supply network.

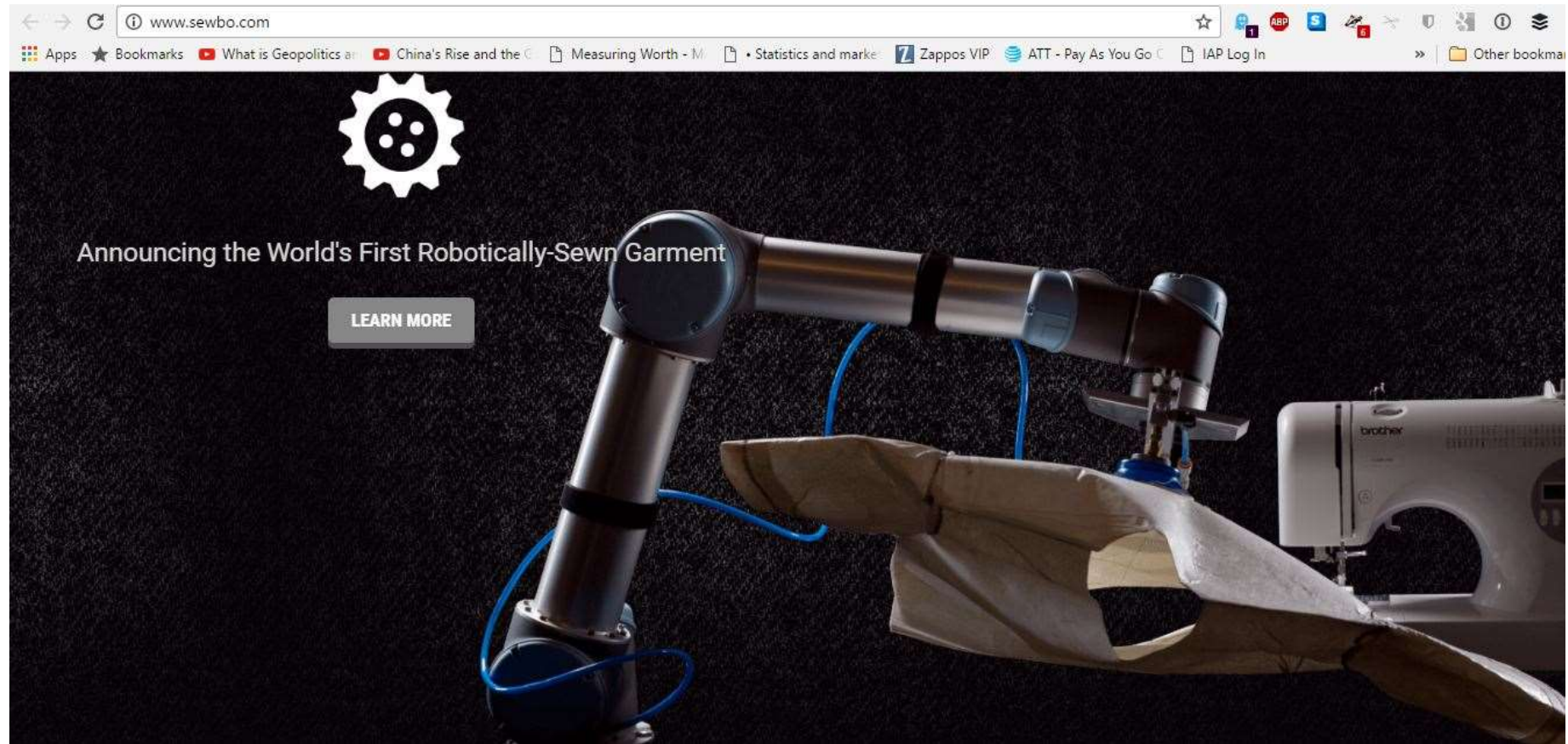
## How it Works

Despite widespread use in other industries, automation has made little progress in clothing manufacturing due to the difficulties robots face when trying to manipulate limp, flexible fabrics.

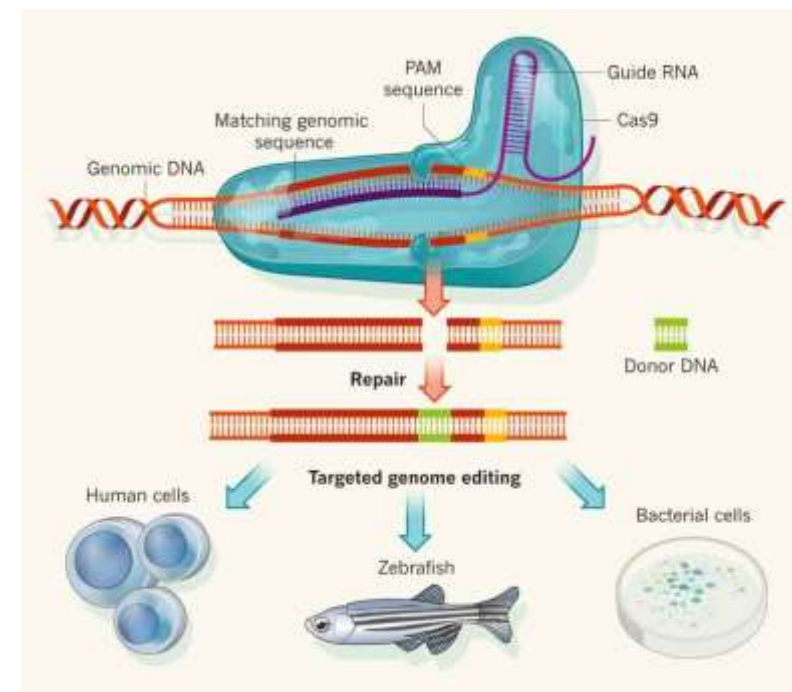
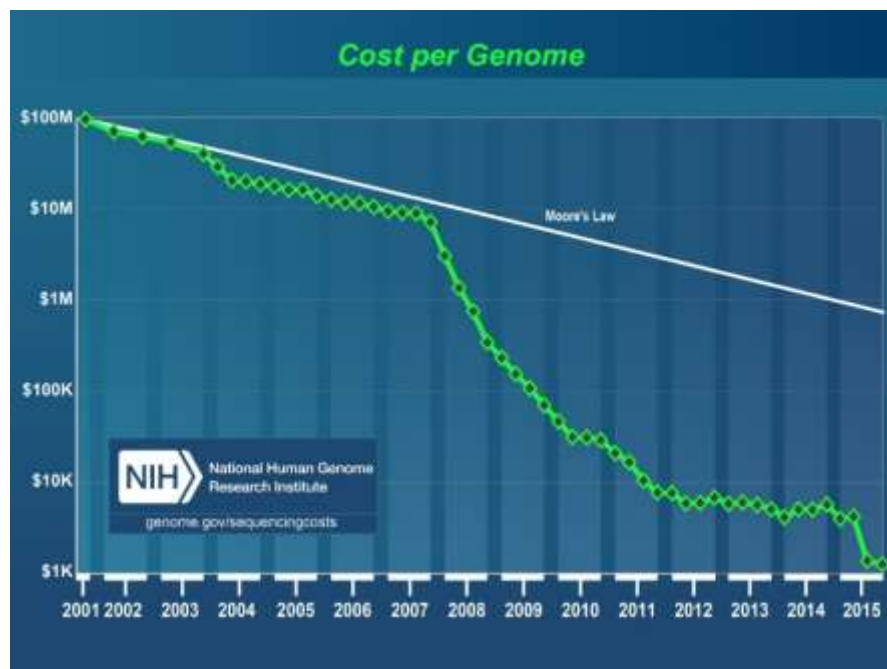
Sewbo avoids these hurdles by temporarily stiffening fabrics, allowing off-the-shelf industrial robots to easily build garments from rigid cloth, just as if they were working with sheet metal. The fabric



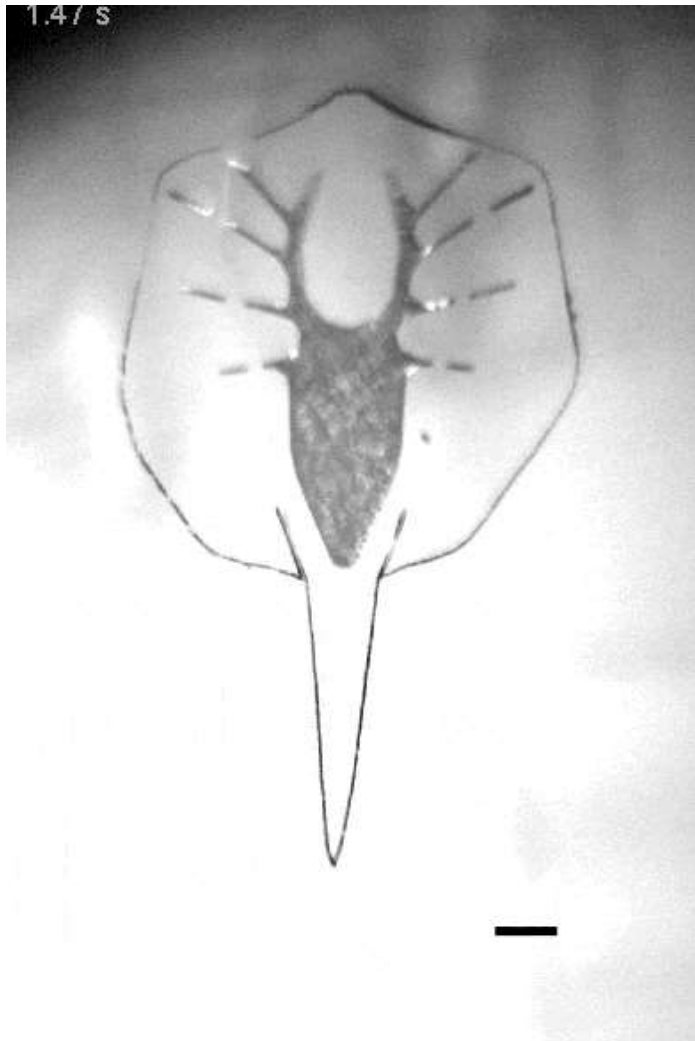
# Premature Deindustrialization?



# “Digital technologies” extend beyond media



# Future Dual Use Technologies?!



## MIT Technology Review

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Robotics

### Robotic Stingrays Made with Rat Heart, Algae, and Plastic Fins

Scientists control the bionic fish with light.

by Ryan Cross July 7, 2016

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**Scientists have built a robotic stingray made of heart muscle cells from a rat, a skeleton of gold, plastic fins, and light-activated algae proteins—because, why not?**

# “Digital technologies” extend beyond media

from *The Internationalist and International  
Institutions and Global Governance Program*



## A Sputnik Moment for Artificial Intelligence Geopolitics

Blog Post by Guest Blogger for Stewart M. Patrick

September 7, 2017



EQUITY RESEARCH | August 31, 2017



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## China's Rise in Artificial Intelligence

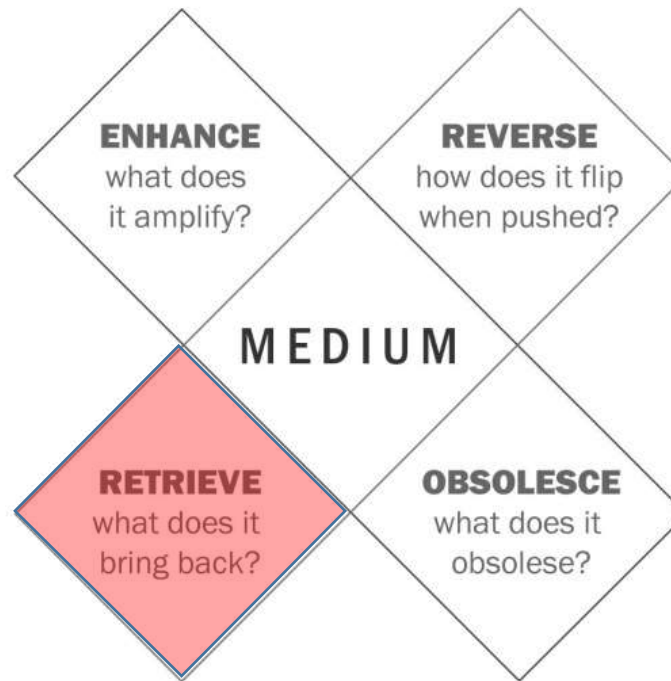
### The New New China

China has emerged as a major global contender in the field of AI, the apex technology of the information era. In this report, we set out China's ambitious top-down plans, the factors (talent, data and infrastructure) that make China unique and the companies (Baidu, Alibaba and Tencent) that are making it happen. We believe the development of an 'intelligent economy' and 'intelligent society' by 2030 in China has the potential to drive productivity improvement and GDP growth in the next two decades.

Now What?

# Digital retrieves the medieval?

- Does “Digital retrieve the Medieval” in national security/geopolitics?



Tetrad of Media Effects

McLuhan (1988)

# Digital retrieves the medieval?

- Things won't "settle down" – we are still at the "horseless carriage" stage of digital technology, where the new form is largely used in old ways
- Most nation states in existence are products of previous media: print, radio and TV
- How will they fare under digital conditions?



# Implications?



- Some parallels:
  - Transnational aristocracy (elites) of concentrated wealth and ambiguous nationality (and new allegiances)
  - States lack a monopoly on “legitimate” violence
  - Non-state actors capable of challenging states
  - A shift from global to local allegiances
  - New industries and technologies
  - New ideologies
  - New plagues
  - Amplified strategic uncertainty!

# Implications for strategic uncertainty

- Nations are courting “Barons”, powerful non-state actors



OFFICE OF DENMARK'S TECH AMBASSADOR  
Silicon Valley | Copenhagen | Beijing

[TECHPLOMACY](#)

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The Office of the Danish Tech Ambassador has a global mandate and a physical presence across three time zones in Silicon Valley, Copenhagen and Beijing - transcending borders and regions and rethinking diplomacy.

Tech and digital diplomacy, in short TechPlomacy is an acknowledgement of the key role tech plays and will increasingly play in the future for individuals and societies alike.

This new diplomatic approach is spearheaded by the world's first ever Tech Ambassador, Mr. Casper Klynge, supported by a global diverse team spanning three continents.

# Implications for strategic uncertainty

- We can expect more migration...(there's an app for that!)

## Main migration routes into the EU



Source: Frontex \*Jan - Aug

AFP



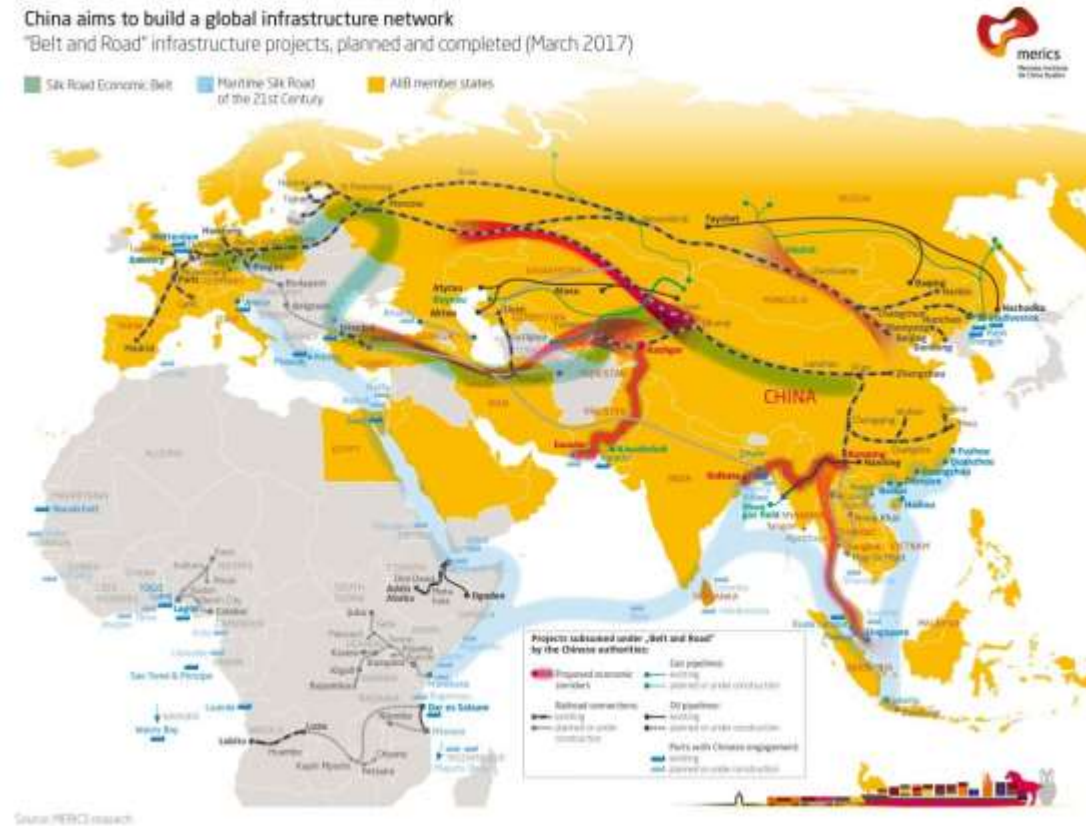
# Implications for strategic uncertainty

- We are building walls again...



# Implications for strategic uncertainty

- The Tang Dynasty “Silk Route” is being rebuilt...



# Implications for strategic uncertainty

- Medieval Islam is back on the march? ISIS suggests it is!



# Implications for strategic uncertainty

- Medieval Persia perhaps returning?



# Implications for strategic uncertainty

- The Ottomans are perhaps returning?





# Implications for strategic uncertainty

- At the very least, the cost of creating new affiliations just as the old ones are under strain is dropping



# To get (even more?) speculative...3 Spheres

- The CSDL\* posits that under digital conditions, Three Spheres (Operating Systems for Societies with global reach) are forming (somewhat like Huntington's "civilizations", but fewer)
- The basis of each sphere is written language, which lies at the root of our technology-driven communication and mental habits
- Each sphere is being led by distinct groups of elites, racing to make use of the digital



# The “West”: Alphabetic

- Is the West particularly vulnerable to digital effects?

A B C D E F G  
H I J K L M N O  
P Q R S T U V  
W X Y Z

a b c d e f g h i j  
k l m n o p q r s t  
u v w x y z

(a) English

А а (A)	Р р (R)
Б б (B)	С с (S)
В в (V)	Т т (T)
Г г (G)	У у (U)
Д д (D)	Ф ф (F)
Е е (E)	Х х (KH)
Ё ё (YO)	Ц ц (TS)
Ж ж (ZH)	Ч ч (CH)
З з (Z)	Ш ш (SH)
И и (I)	Щ щ (SHCH)
Й й (Y)	Ъ ъ (-)
К к (K)	Ы ы (Y)
Л л (L)	Ь ь (')
М м (M)	Э э (E)
Н н (N)	Ю ю (YU or IU)
О о (O)	Я я (YA or IA)
П п (P)	

(b) Cyrillic

# The “East”: Ideo/pictographic

- Is the East better-suited to digital conditions due to its traditional abhorrence of technology that disrupt social cohesion?

	oracle bone <i>jiaguwen</i>	greater seal <i>dazhuan</i>	lesser seal <i>xiaozhuan</i>	clerkly script <i>lishu</i>	standard script <i>kaishu</i>	running script <i>xingshu</i>	cursive script <i>caoshu</i>	modern simplified <i>jiantizi</i>
rén (*nin) human	𠤎	𠤎	𠤎	人	人	人	人	人
nǚ (*nra?) woman	𡗗	𡗗	𡗗	女	女	女	女	女
ěr (*nha?) ear	𦊮	𦊮	𦊮	耳	耳	耳	耳	耳
mǎ (*mrā?) horse	𠩺	𠩺	𠩺	馬	馬	馬	馬	马
yú (*ŋha) fish	𩺰	𩺰	𩺰	魚	魚	魚	魚	鱼
shān (*srān) mountain	𠩺	𠩺	𠩺	山	山	山	山	山
rì (*nit) sun	𠄎	𠄎	𠄎	日	日	日	日	日
yuè (*ŋot) moon	𠄎	𠄎	𠄎	月	月	月	月	月
yǔ (*wha?) rain	𠄎	𠄎	𠄎	雨	雨	雨	雨	雨
yún (*wan) cloud	𠄎	𠄎	𠄎	雲	雲	雲	雲	云

# The “Digital”: Binary

- Culturally: “the end of humanity-as-we-know-it” (a “Post-human future)
- Economically: endless “disruption” and “exponential growth”
- Security: a panopticon, with public/private-sector-enabled algorithms watching everyone as potential targets
- Politically: neo-eugenics? Certainly the idea of assumed equality under the law and democracy come under strain!



# At the very least, ask....

- Are technologies really as “neutral”, psychologically and sociologically, as science usually assumes?
- Can the new matrix of causal factors which digital technologies bring about – a new structure for our choices – really be ignored?
- Is a “One world” or “Global order” paradigm of future international relations getting more or less likely?
- Is it time to start thinking about “Strategic uncertainty under digital conditions”?

Thank you

Questions?