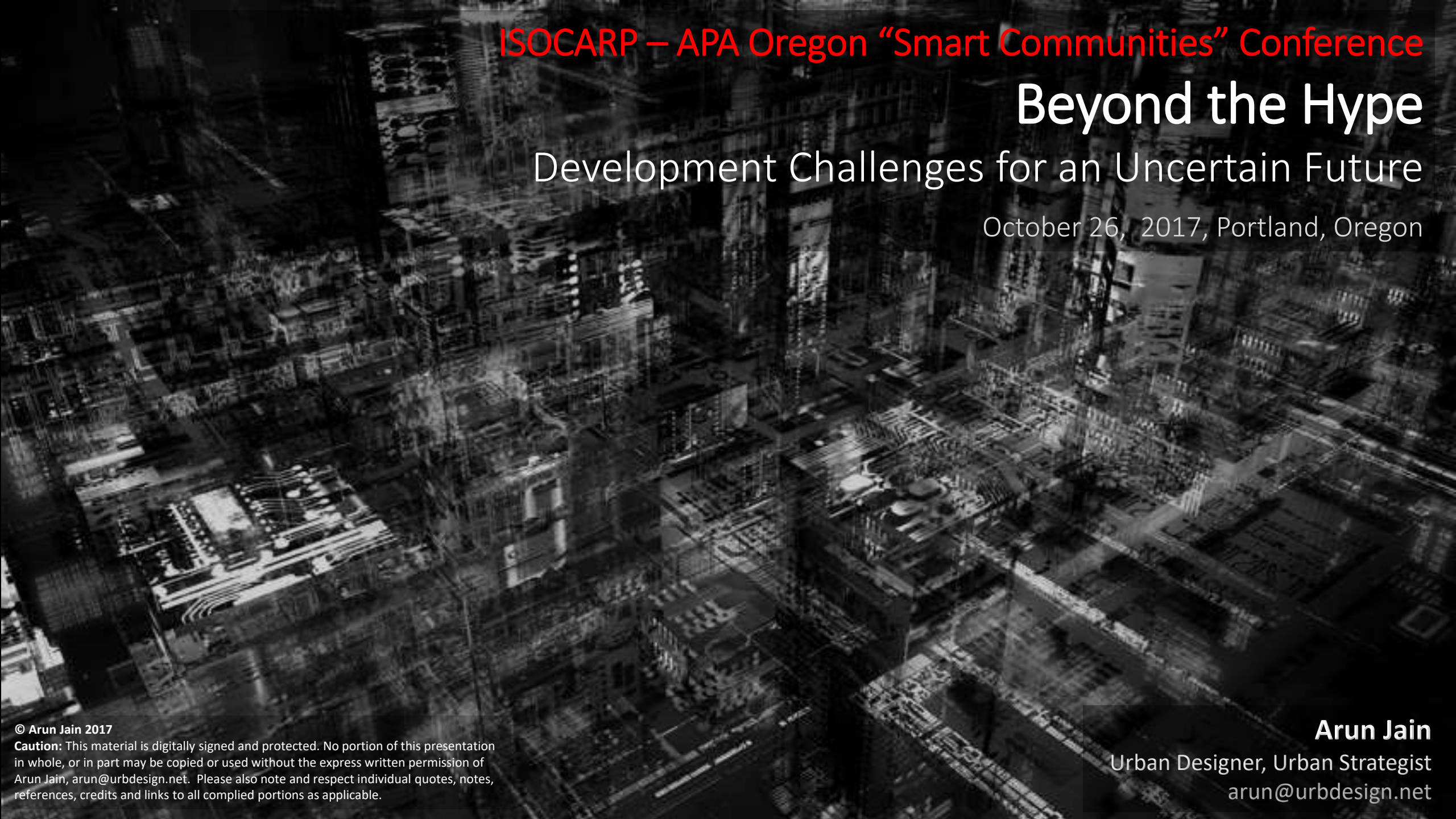

ISOCARP – APA Oregon "Smart Communities" Conference

Beyond the Hype

Development Challenges for an Uncertain Future

October 26, 2017, Portland, Oregon

Arun Jain
Urban Designer, Urban Strategist
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The future is here, it’s just not evenly distributed

William Gibson

People, cities, technology & the market

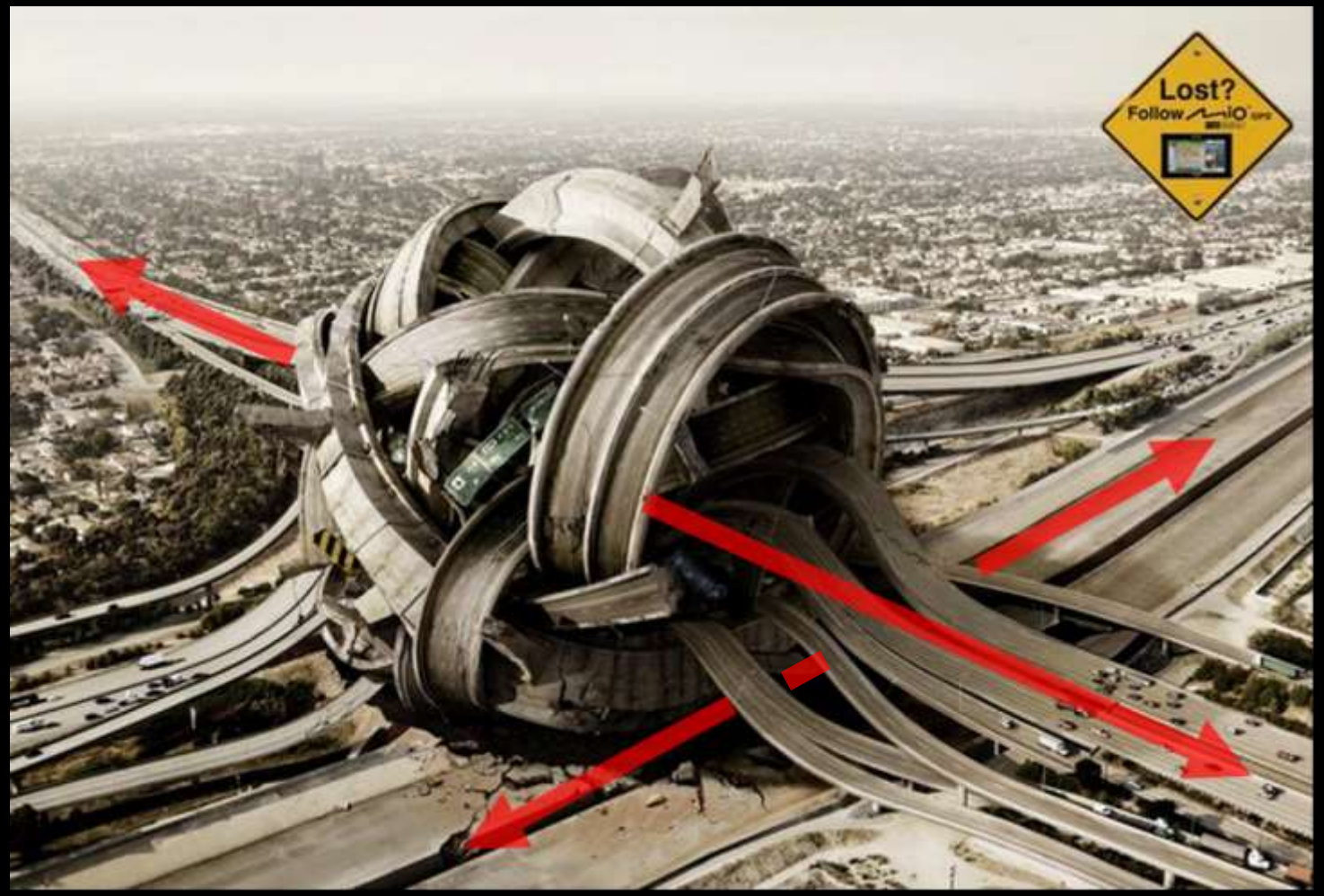
There are inconsistencies between

- What citizens need and expect
- What cities can (or try) to do
- What technology is able (or wants) to do
- How urban development occurs

To bridge these divides we need to understand the dominant drivers

Drivers

- Governance systems
- Human nature/behavior
- Institutional habit/tradition
- Culture/personalities
- How we invest and finance



1

Cities, citizens, technology & complexity

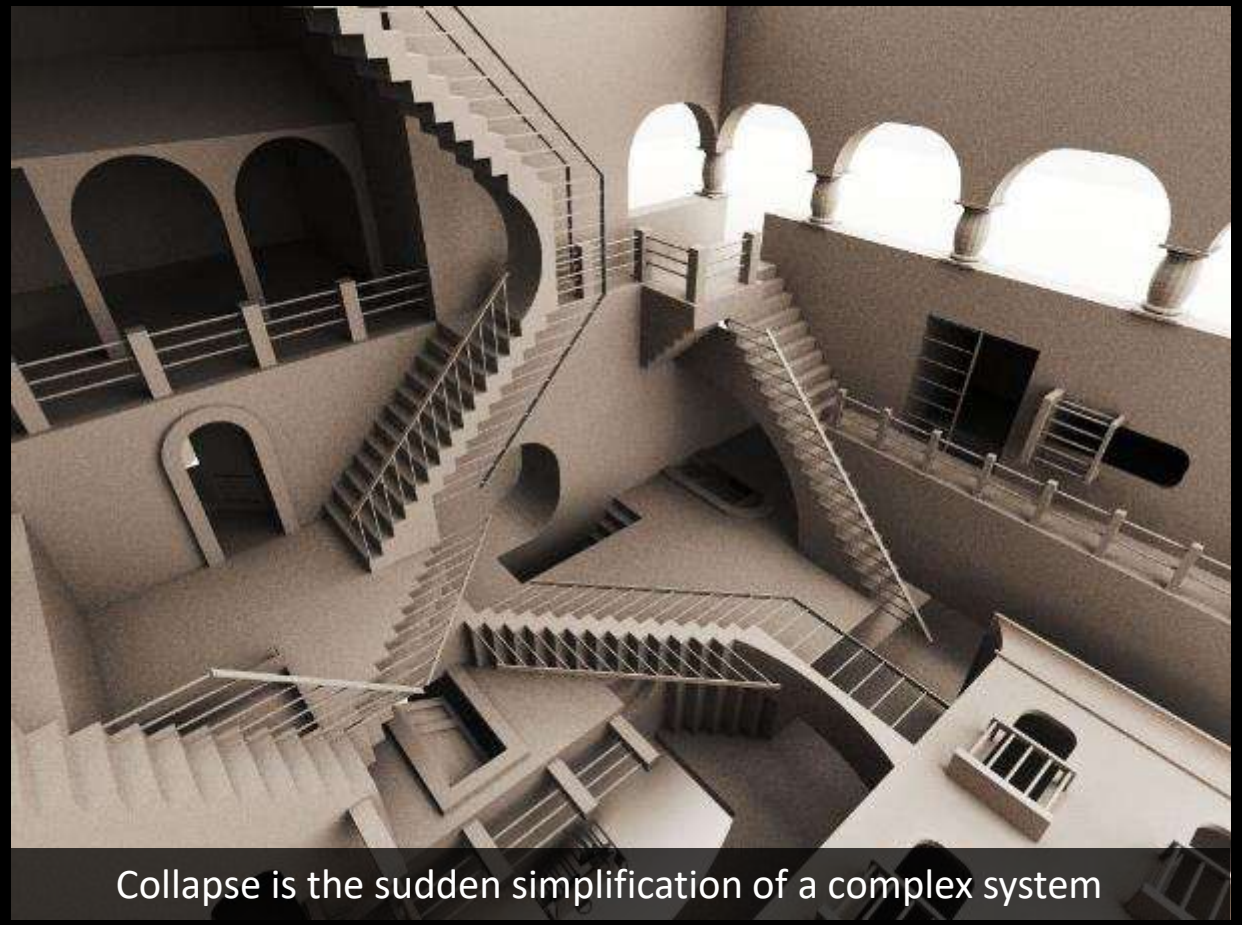
Cities are networks of complex systems

As the external environment becomes more complex, systems also need to become more complex to prosper.

W. R. Ashby (*Introduction to Cybernetics*) 1956

It takes energy to maintain any system in a complex, ordered state – and human society is no exception.

Joseph Tainter
(Complexity and the productivity of innovation) 2010

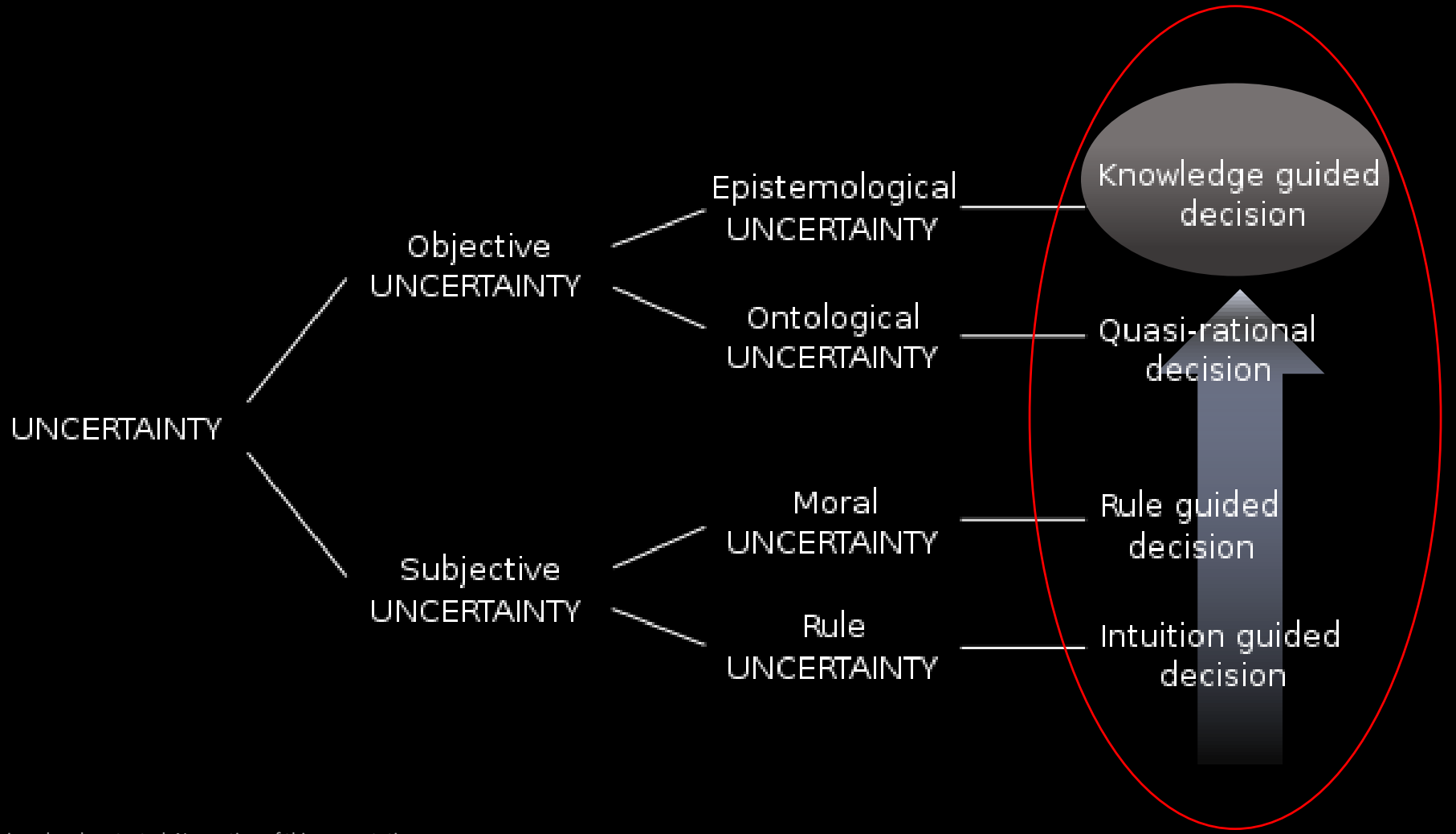


Collapse is the sudden simplification of a complex system

Complexity

- Cities *are* collections of organized complexity
- Cities are incomplete open ended systems
- The key to working with complexity is embracing, *not* trying to (over) simplify it

Uncertainty



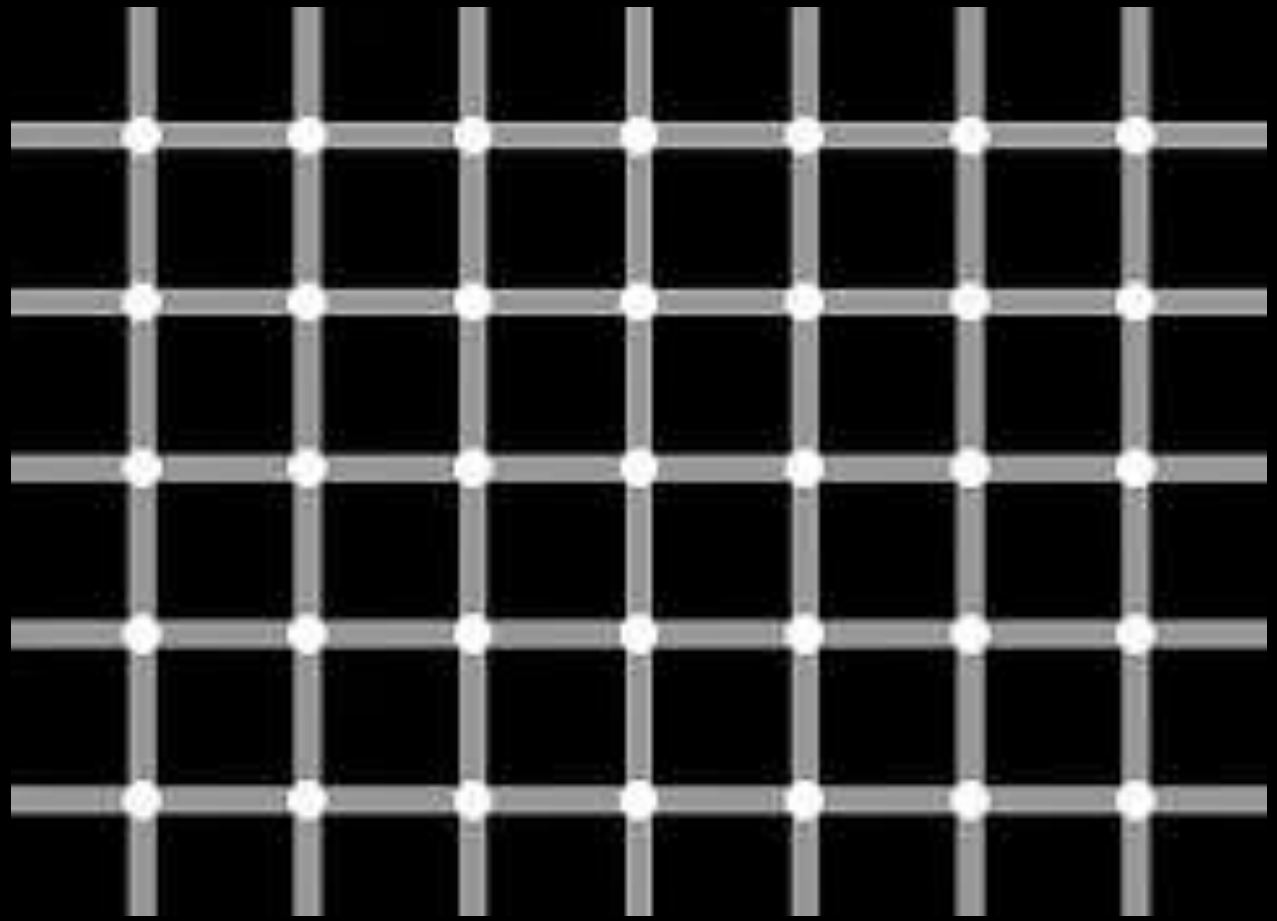
Uncertainty

The quality of your life is in direct proportion to the amount of uncertainty you can comfortably deal with…

Anthony Robbins

Complex (urban) problems are “wicked”

HORST RITTEL



We need to relate our understanding of the problem

with

How far we can go with the solution…

Cities struggle to create balance

- New mandates & expectations need a lot of support
- The scale & speed of change is unprecedented
- Cities and their governments are by nature, inarticulate & fickle

Cities need help to articulate & manage desired change

(we need good default settings)

http://www.newyorker.com/magazine/2017/02/27/why-facts-dont-change-our-minds Illustration by Gérard DuBois

The vaunted human capacity for reason may have more to do with winning arguments than with thinking straight.

Ambiguity

Smart City

A **smart city** is an urban development vision to integrate multiple information and communication technology (ICT) and Internet of Things (IoT) solutions in a secure fashion to manage a city's assets.

The city's assets include, but are not limited to, local departments' information systems, schools, libraries, transportation systems, hospitals, power plants, water supply networks, waste management, law enforcement, and other community services. The goal of building a smart city is to improve quality of life by using urban informatics and technology to improve the efficiency of services and meet residents' needs

Wikipedia

However, the concept is still in the process of maturation and lacks proper formalization.

http://smartcities.ieee.org/articles-publications/ieee-xplore-readings-on-smart-cities/december-2014.html IEEE

Cities are complex ecosystems that rely on multiple stakeholders and core systems to provide wide-ranging services for citizens and businesses.

Ren & Sans

http://www.bing.com/images/search?view=detailV2&ccid=Vg68fFsP&id=2FC01A2C828FDD4728288A4ADC32B6B7F35FBB93&q=Smart+Cities&simid=608028243583896615&selectedIndex=1&ajaxhist=0

Lost purpose?

Architecture used to be about the creation of community, and making the best effort at symbolizing that community.

Rem Koolhaas, "My thoughts on the smart city"
http://ec.europa.eu/archives/commission_2010-2014/kroes/en/content/my-thoughts-smart-city-rem-koolhaas.html

Percent urban

Although the world is over 51% urban, it is *not equally distributed*...

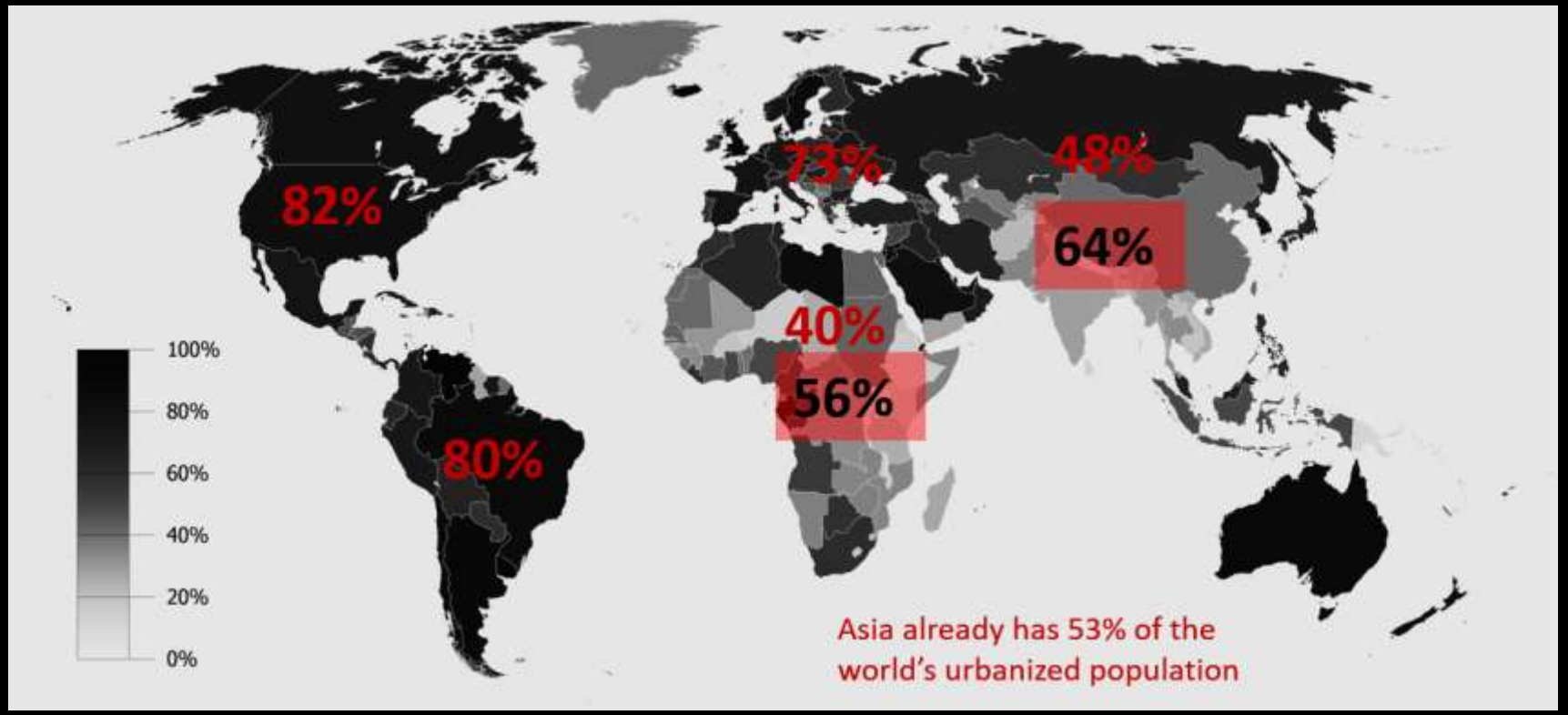
70% of future urbanization will occur in Asia and Africa. It will happen fast…

India

Urban pop today = 377 million
2030 estimate = 5-800 million

China

56% urbanized
Av. urbanization rate 2.5%



Urbanized Population Percentage 2006

World Urbanization Prospects (2014 Revision), United Nations
http://blog.world-statistics.org/2014/07/world-urbanization-prospects-2014-un.html
https://en.wikipedia.org/wiki/Urbanization_by_country#/media/File:Urbanized_population_2006.png

Can tech help the majority?

- More than 50% of the world's urban dwellers are poor
- Informal urban settlements are very hard and expensive to fix

- Tech should be able to help development entities to work at low, and *very* low margins
- Building "communities" should be the basis for housing

Technology is disruptive

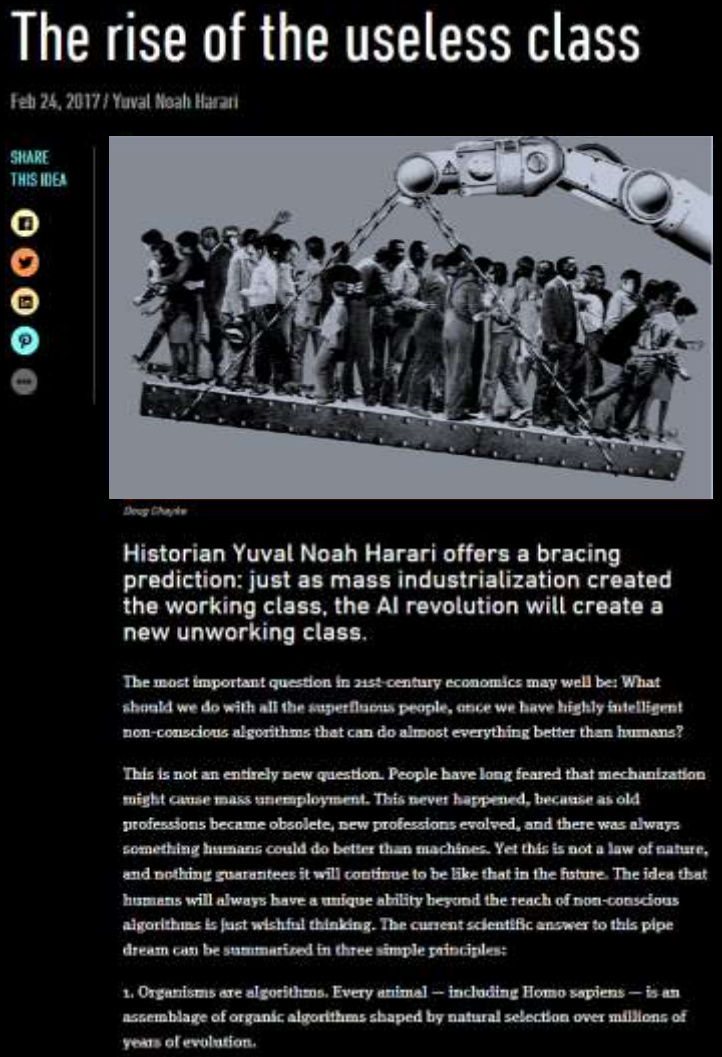
- Cities struggle to keep up with the market and rapid change. Out-of-date governance structures, regulation and financing do not help
- Adaptive long range visions and ideas are hard to implement because it is hard to imagine uncertain futures and do what might be unfamiliar
- Its easier for cities to leave innovation to the market, but in doing so they are forced to catch up with retroactive regulation and controls

Self Driving Uber

https://riorealblog.files.wordpress.com/2014/01/dsc3422.jpg

Airbnb Protest

https://www.vastgoedactueel.nl/sites/default/files/Airbnb-Toerismeprotest.jpg



The rise of the useless class

Feb 24, 2017 / Yuval Noah Harari

SHARE THIS IDEA

Historian Yuval Noah Harari offers a bracing prediction: just as mass industrialization created the working class, the AI revolution will create a new unworking class.

The most important question in 21st-century economics may well be: What should we do with all the superfluous people, once we have highly intelligent non-conscious algorithms that can do almost everything better than humans?

This is not an entirely new question. People have long feared that mechanization might cause mass unemployment. This never happened, because as old professions became obsolete, new professions evolved, and there was always something humans could do better than machines. Yet this is not a law of nature, and nothing guarantees it will continue to be like that in the future. The idea that humans will always have a unique ability beyond the reach of non-conscious algorithms is just wishful thinking. The current scientific answer to this pipe dream can be summarized in three simple principles:

1. Organisms are algorithms. Every animal — including Homo sapiens — is an assemblage of organic algorithms shaped by natural selection over millions of years of evolution.

http://ideas.ted.com/the-rise-of-the-useless-class/

Technology (public vs. private)

- Private development tries to leverage what cities ask for, but they are not usually able to address the bigger issues
- Its hard for the private sector to achieve system level reliability and scale on its own (infrastructure, cost carrying capacity).
- Tech services tend to scale better in favor of diagnostics and monitoring
- Old governance does not work well with new technology

ICC Control Room Rio (military)

https://riorealblog.files.wordpress.com/2014/01/dsc3422.jpg

IBM ROC Rio (civilian)

http://www.museumofthecity.org/project/rio-de-janeiro-and-ibms-smarter-cities-project/

Urban Observatory

http://www.esri.com/~/media/Images/Content/news/arcwatch/0114/urban1-lg.jpg

Promises & pitfalls

Technology trade-offs

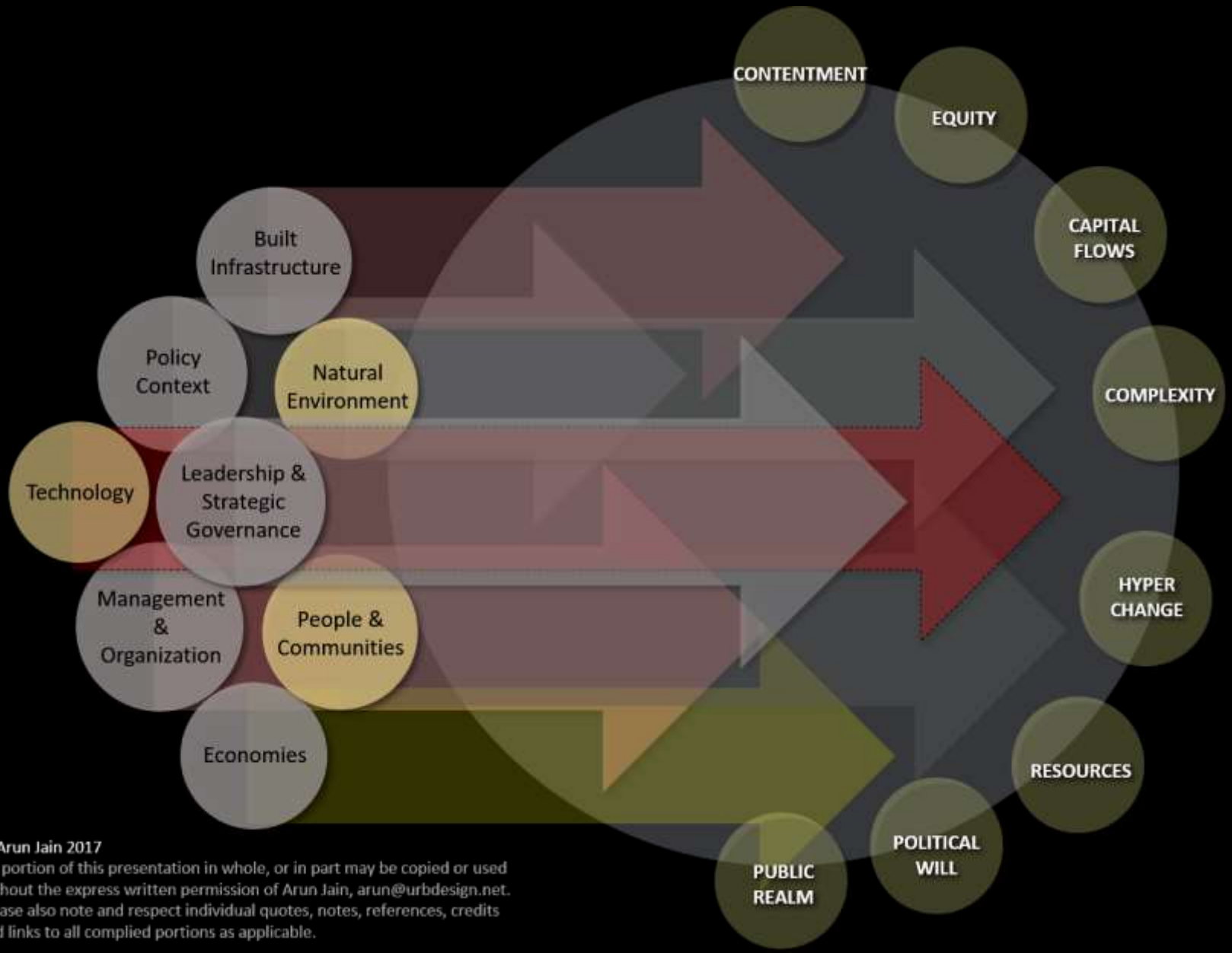
Future Potential

- Better access (services, infrastructure, information)
- Better choices (a range of service options)
- Customization (tailor made products & services)
- Enhanced experience (augmented reality)
- Comfort, efficiency & safety (productivity)
- Comprehension (better decision making)
- More with less? (a more sustainable life?)
- Reliability (assured quality, services)

Challenges

- Selective access (affordability, controlled access)
- Information overload (choice paralysis)
- Obsolescence (jobs, accelerated waste production)
- Privacy (profiling, prejudice, regulated behavior)
- Uncertainty & risk (catastrophic collapses, abuse)
- Missed opportunities (bias, misrepresentation)
- Increased consumption? (Jevon's Paradox)
- Dependence (on things we cannot control)

Can tech lead from behind?

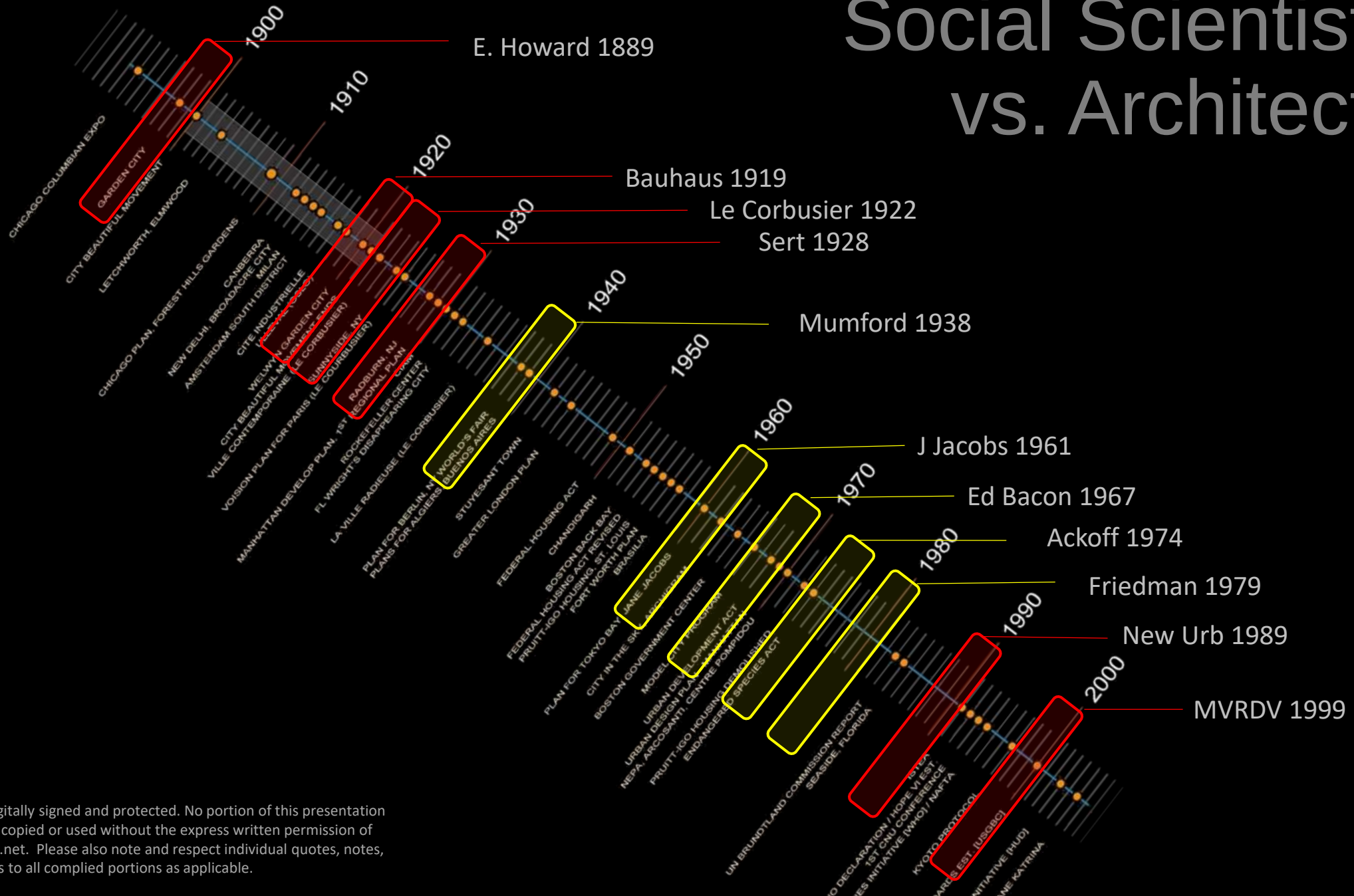


Barriers to citizen centric tech

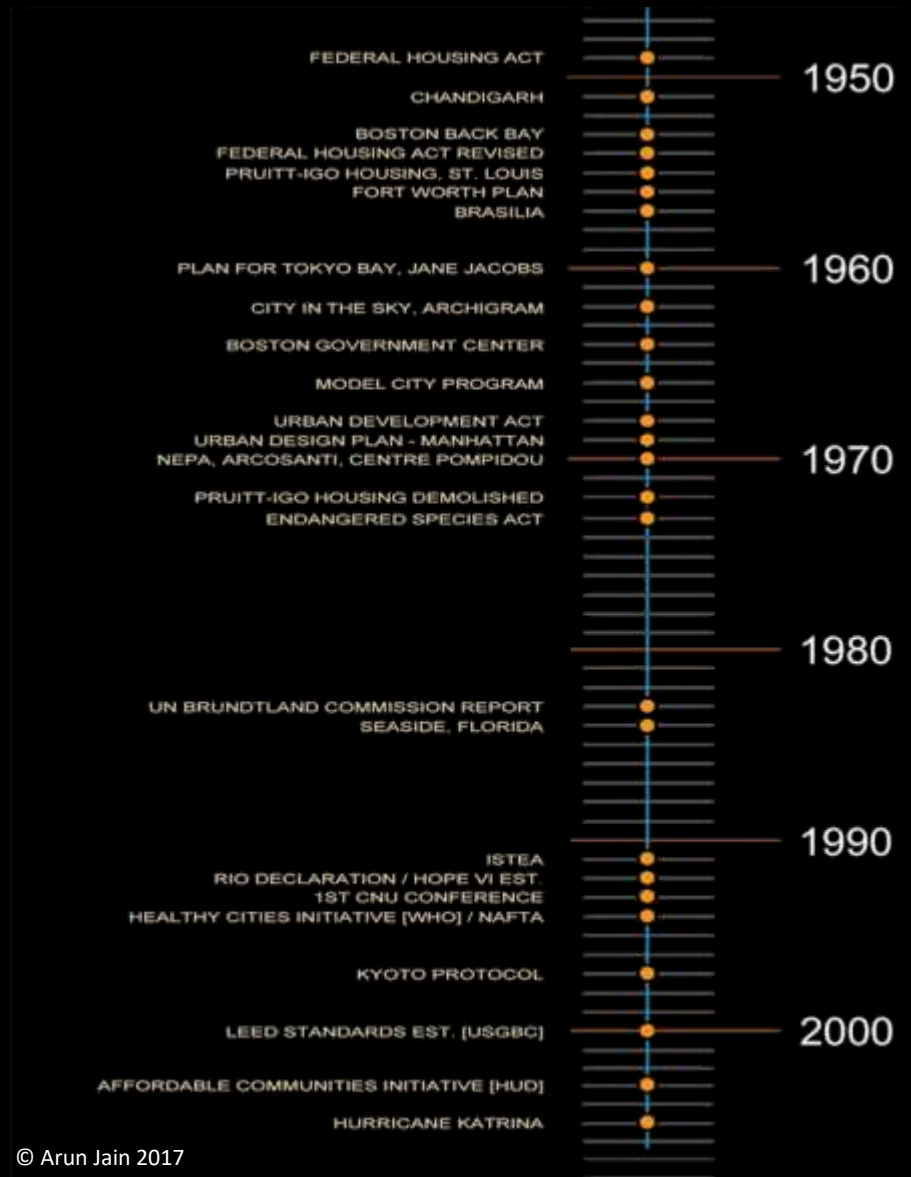
- Uneven citizen awareness and interest
- Legacy systems that protect information for control
- Lack of regional and interdisciplinary collaboration
- Freedom from manipulation
- Trust and credibility
- Fairness
- Equity
- Reliability

3 Misconceptions

Social Scientists vs. Architects



Theory is *not* practice



- Planning as an "apolitical" act designed to protect public interest
- Introduction of social sciences & evaluation of the role of planning
- Planning as process
- Decision theory
- "Satisficing" (Herbert Simon '45-'69)
- Limits of individual & social rationality
- Advocacy Planning (Paul Davidoff '69)
- Citizen Participation (Arnstein '69)
- Planning as a social & political act that is *not* value neutral (Altshuler '65, Rabinovitz '69)

- "Dilemmas in a General Theory of Planning" (Horst Rittel '73)
- Transactive or inclusive planning (Friedman '73)
- Synoptic or Systems Thinking (model based ends & means)
- Incrementalism (Charles Lindblom '84-)
- "The Production of Space", (Henri Lefebvre '74, '91)
- "Theory of Communicative Action" (Jurgen Habermas '81)
- "Disabling Professions", "Tools for Conviviality" (Ivan Illych '73)
- "Beyond the Stable State" (D. Schon '73)
- "The Reflective Practitioner" (D. Schon '83)
- "Rise of the Network Society" (Manuel Castells '96)
- "Global City" (Saskia Sassen '91, '01)

?

Advocacy Planning

+

Participatory Planning

+

Models

Declining relationship between theory & practice

Planning Practice

vs.

Planning Theory

Simulations are *not* predictions!

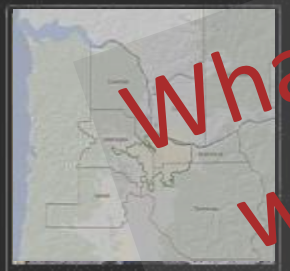
Portland area population projected to hit 3.85 million by 2060

Published: Saturday, June 07, 2008, 12:01 PM Updated: Monday, June 09, 2008, 8:13 AM

By James Holman
Follow

If you're worried about our collective carbon footprint, wait for this shoe to drop: By 2060, the seven-county Portland metro area could have 3.85 million people.

That's about the size of Dallas-Fort Worth, Texas, now, and double the region's current population.



The Portland-Beaverton-Vancouver Primary Metropolitan Statistical Area includes Multnomah, Clackamas, Washington, Columbia and Yamhill counties in Oregon, and Clark and Skamania counties in Washington

The population forecast sent a shudder through nearly 200 planners, economists, administrators and elected officials gathered at a Metro forum May 30 to hear it. The consensus: Oy.

"What went through my mind is that there are a lot of people coming here," said Multnomah County Commissioner Jeff Cogen, "and I'm frankly really glad that we're trying to plan for it."

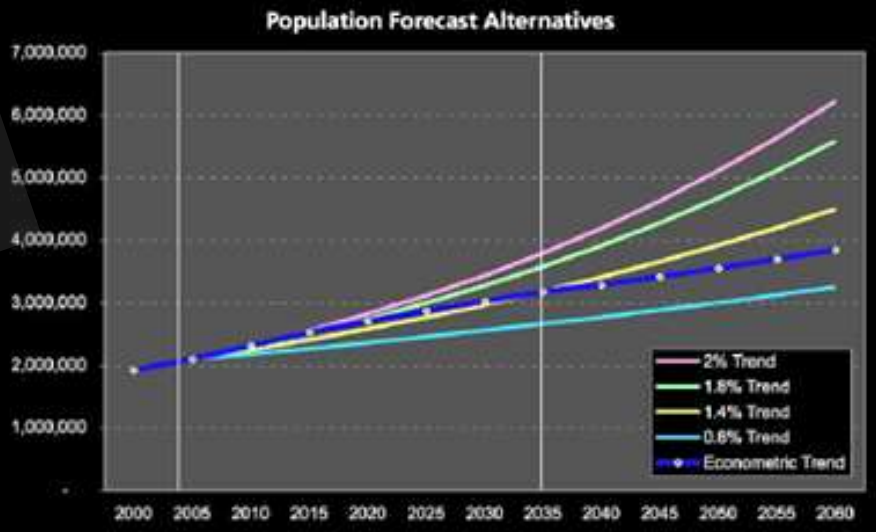
The region's response may start with the designation of urban and rural reserves. Metro, in partnership with Multnomah, Clackamas and Washington counties, will decide which areas sprout houses, stores and factories, and which will grow crops for the next 40 to 50 years.

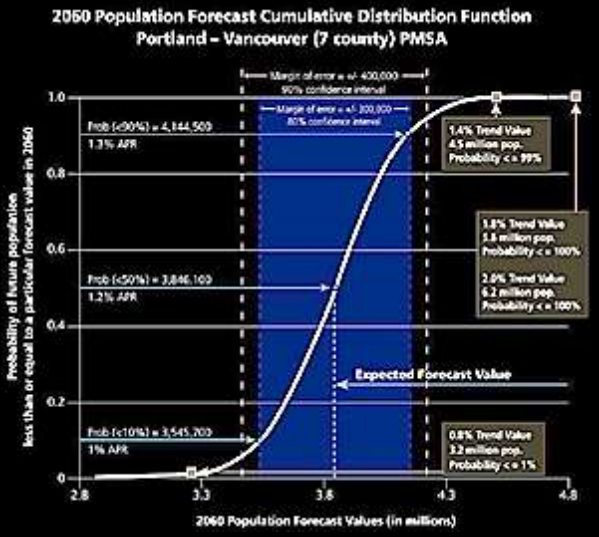
Planners, builders and farmers say those designations could provide long-term stability and remove some of the contentiousness from land-use decisions — especially expansion of the urban growth boundary and preservation of farmland.

By design, the 2060 population forecast sets the starting point for discussion, because all those people will need homes, food, water, ways to get around and jobs. Not to mention schools, parks and stores.

Something may have to give to accommodate that growth. Farm groups in particular hope it isn't agricultural land.

What conditions are we planning for?





WEDNESDAY, NOVEMBER 18, 2009

City of Portland population growth rate drops to 1.08%

New population estimates for Oregon and its cities and counties have been released by the head-counting gurus at Portland State. They say that the City of Portland's population as of July 1, 2009 was 582,130 -- just 1.08% higher than the 575,930 PSU estimate for the same date a year before.

Over a three-year period, population growth within the city limits has slowed to a compound annual rate of under 1.28%, down slightly from the more than 1.29% three-year rate computed a year ago. Over the last five years, the city's population (as estimated by PSU) has grown at a compound annual rate of only 1.12%. At that rate, the city's population will double in 63 years -- in the year 2072 -- not at the much earlier time that the city's planning cabal will tell you whenever it suits the pushers of the latest real estate swindles.

As we have noted here before, the U.S. Census Bureau does not necessarily buy the Portland State numbers. Census estimates of the city's population are lower. For example, the Census' July 1, 2008 number for Portland was 557,706 -- 18,224 fewer people, or 3.16% lower, than PSU's figure on the same date.

We've tweaked our City of Portland debt-o-meter, in our left sidebar, according to the new PSU number and the latest resulting three-year compound annual growth rate. *[Via the O.]*

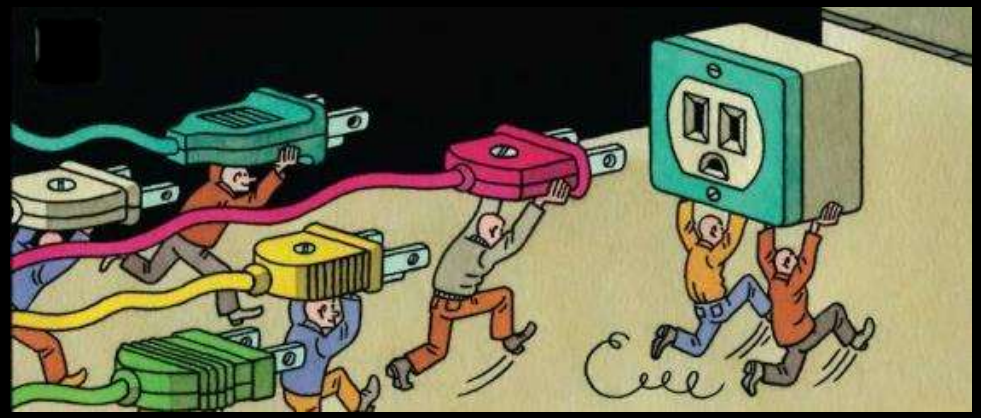
Portland Metro vs. Oregon State

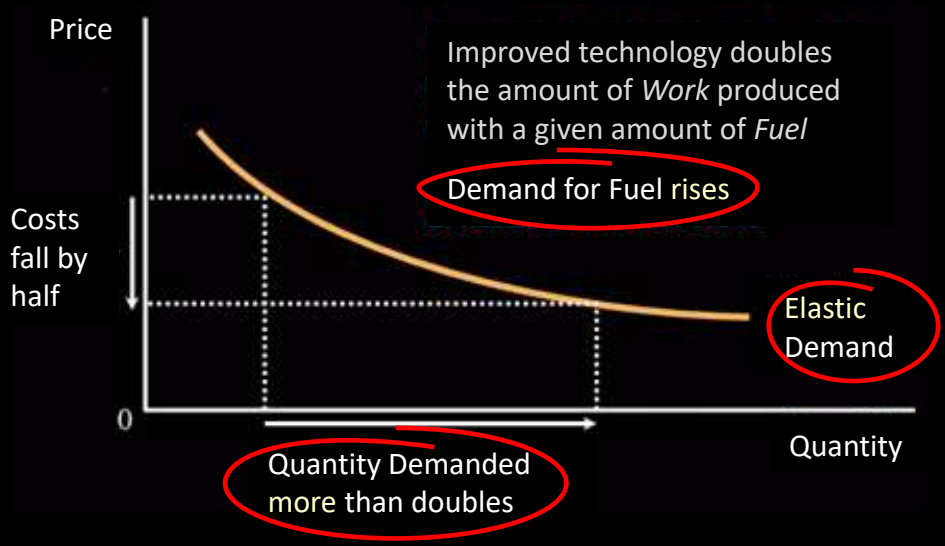
Slowing a rate of increase is *not* reduction

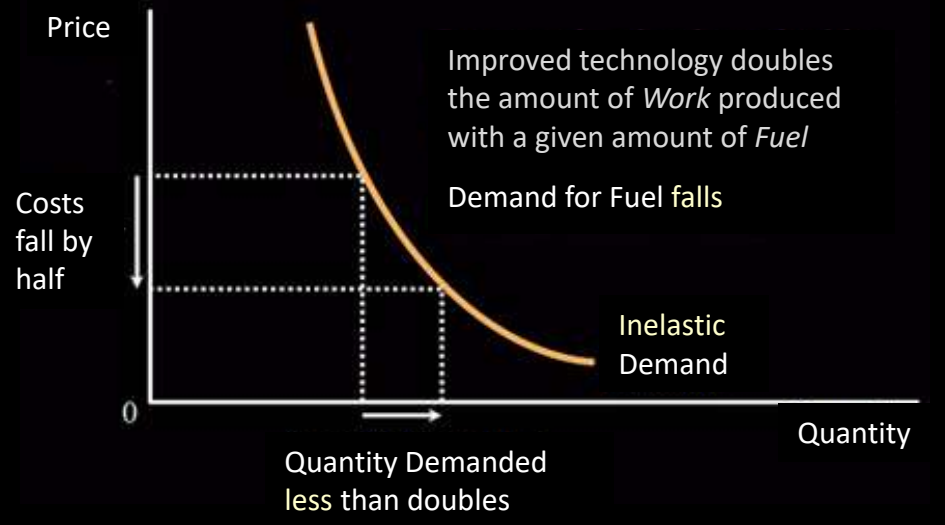
Jevon's Paradox

As technology progresses, the increase in efficiency with which a resource is used tends to increase (rather than decrease) the rate of consumption of that resource.

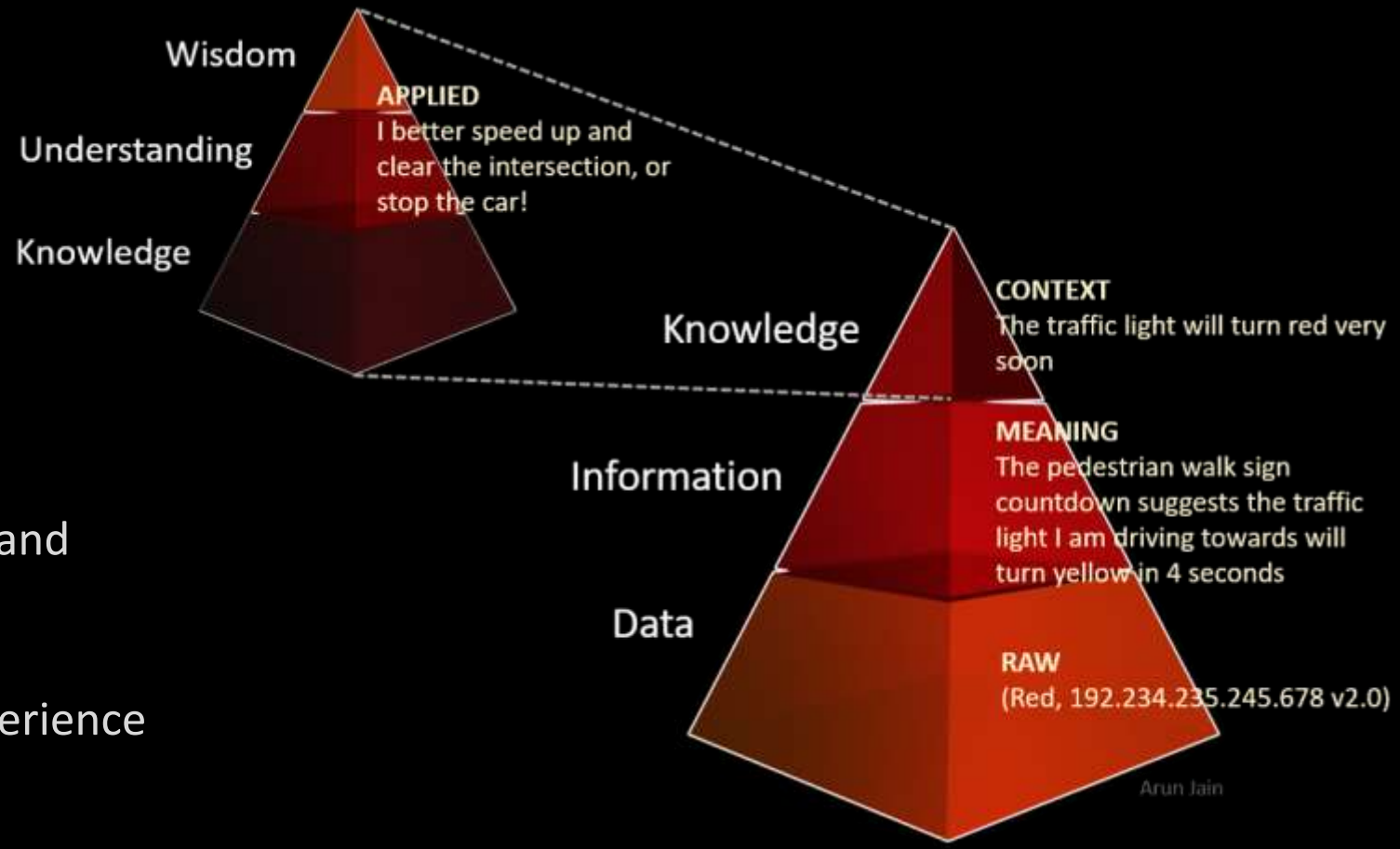
William Stanley Jevons, 1865





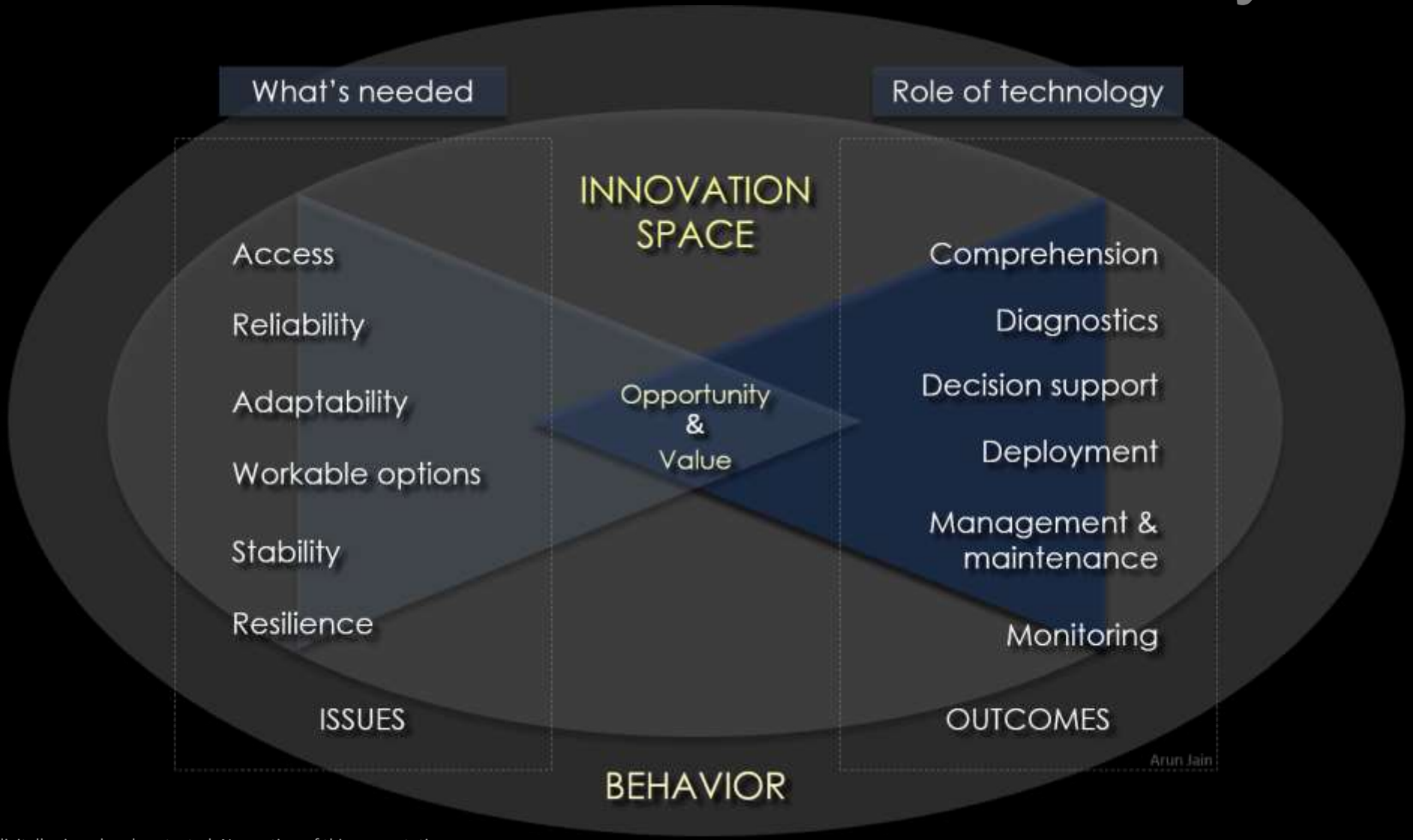


Information & data is *not* knowledge



- Too much emphasis on data and information
- Wisdom requires time & experience

Tech is only a tool…



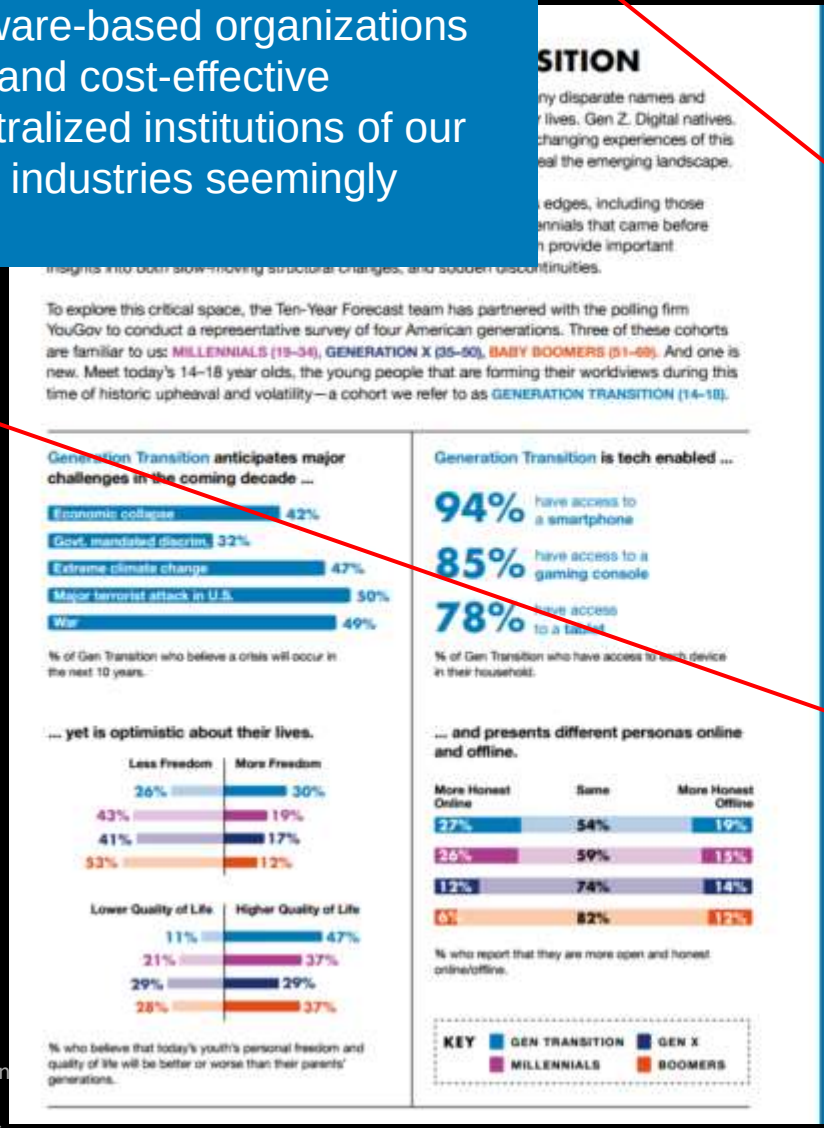
Is technology filling a gap, or creating a need?

Turbulent Change

INSTITUTIONAL ASSUMPTIONS are changing as distributed and software-based organizations produce more resilient and cost-effective outcomes than the centralized institutions of our past, overturning entire industries seemingly overnight.

Our traditional institutions are in flux and will experience dramatic change (for better or worse)

http://www.iftf.org/fileadmin/user_upload/downloads/tyf/2016_IFTF_TYF_Map-of-the-Decade.pdf



SITION

ny disparate names and
lives. Gen Z. Digital natives.
changing experiences of this
eal the emerging landscape.

edges, including those
nnials that came before
provide important

To explore this critical space, the Ten-Year Forecast team has partnered with the polling firm YouGov to conduct a representative survey of four American generations. Three of these cohorts are familiar to us: MILLENNIALS (19–34), GENERATION X (35–50), BABY BOOMERS (51–69). And one is new. Meet today's 14–18 year olds, the young people that are forming their worldviews during this time of historic upheaval and volatility—a cohort we refer to as GENERATION TRANSITION (14–18).

Generation Transition anticipates major challenges in the coming decade ...

Economic collapse 42%
Govt.-mandated discrim. 32%
Extreme climate change 47%
Major terrorist attack in U.S. 50%
War 49%

% of Gen Transition who believe a crisis will occur in the next 10 years.

... yet is optimistic about their lives.

Less Freedom / More Freedom
26% 30%
43% 19%
41% 17%
53% 12%

Lower Quality of Life / Higher Quality of Life
11% 47%
21% 37%
29% 29%
28% 37%

% who believe that today's youth's personal freedom and quality of life will be better or worse than their parents' generations.

Generation Transition is tech enabled ...

94% have access to a smartphone
85% have access to a gaming console
78% have access to a tablet

% of Gen Transition who have access to each device in their household.

... and presents different personas online and offline.

More Honest Online	Same	More Honest Offline
22%	54%	19%
26%	59%	15%
12%	74%	14%
6%	82%	12%

% who report that they are more open and honest online/offline.

KEY: GEN TRANSITION, GEN X, MILLENNIALS, BOOMERS

A WORLD IN FLUX

At some level, every adolescent can personally relate to the volatility and uncertainty that has come to define the current moment in human history. Like teenagers navigating the fraught path to adulthood, the technological and social disruptions of recent decades have thrown our traditional assumptions and norms into near-existential crisis. As unfamiliar new hormones course through our global system, we lack the experience and perspective to manage our growing needs and powerful new capabilities. Our organizational structures are changing faster than we can keep up, causing our geopolitical complexion to break out in constant irritation, and our authoritative voices to falter where they were recently so confident.

TECHNOLOGY is changing the way we communicate information and coordinate human activity at every scale. Cheap and fast computing devices are diffusing across the world on the backbone of advanced high-speed networks, promising to link every person, institution, and object together regardless of hierarchical orientation or geographical location.

BUSINESS is changing as the marketplaces for goods and services adapt to these new affordances, allowing supercharged individuals and geographically remote manufacturers to advertise and sell products directly to consumers, eliminating many of the traditional advantages enjoyed by multinational incumbents.

WORK is changing as hyper-networked platforms accelerate the outsourcing of information-based jobs and as self-improving algorithms join self-driving robotics in facilitating the automation of many others.

is changing as a generation of young people from all over the world grow up with smartphones and reliable internet access, leapfrogging traditional infrastructures and threatening the primacy of national governments.

THE PLANET is changing as the climate reacts to the turbulent urbanization of seven billion people, spawning record-breaking heatwaves and endangering our planetary reserves of fuel, food, and clean water.

LEARNING is changing as the skills required to compete in the rapidly shifting workforce outpace the curricula and priorities of schools. Academic institutions struggle to develop new frameworks that will accommodate the unprecedented influx of high-resolution data.

INSTITUTIONAL ASSUMPTIONS are changing as distributed and software-based organizations produce more resilient and cost-effective outcomes than the centralized institutions of our past, overturning entire industries seemingly overnight.

THE GEOPOLITICAL LANDSCAPE

Like teenagers in the throes of puberty, we have few guarantees that we will successfully navigate this transition, or that we will adapt to the realities of the stage that comes next. We shudder at the massive coordination that will be required to survive and thrive in a fully-connected hyper-networked world, just as teenagers envision dark scenarios surrounding the foreboding responsibilities of adulthood.

But we cannot let that fear be our guide. Like every rite of passage throughout every human life, these transitions are defined both by their uncertainty and by the personal transformations they facilitate. No butterfly emerges from the chrysalis wishing it could return to its days as a caterpillar.

The future is uncertain

- Path 1 - Growth
  One step ahead of disaster
- Path 2 - Constraint
  Sustainable paths in a low-capital world
- Path 3 - Collapse
  Local disasters, regional conflicts
- Path 4 - Transformation
  Super-structured systems

* 2010 Map of the decade, Institute of the Future

4

Disruptive forces

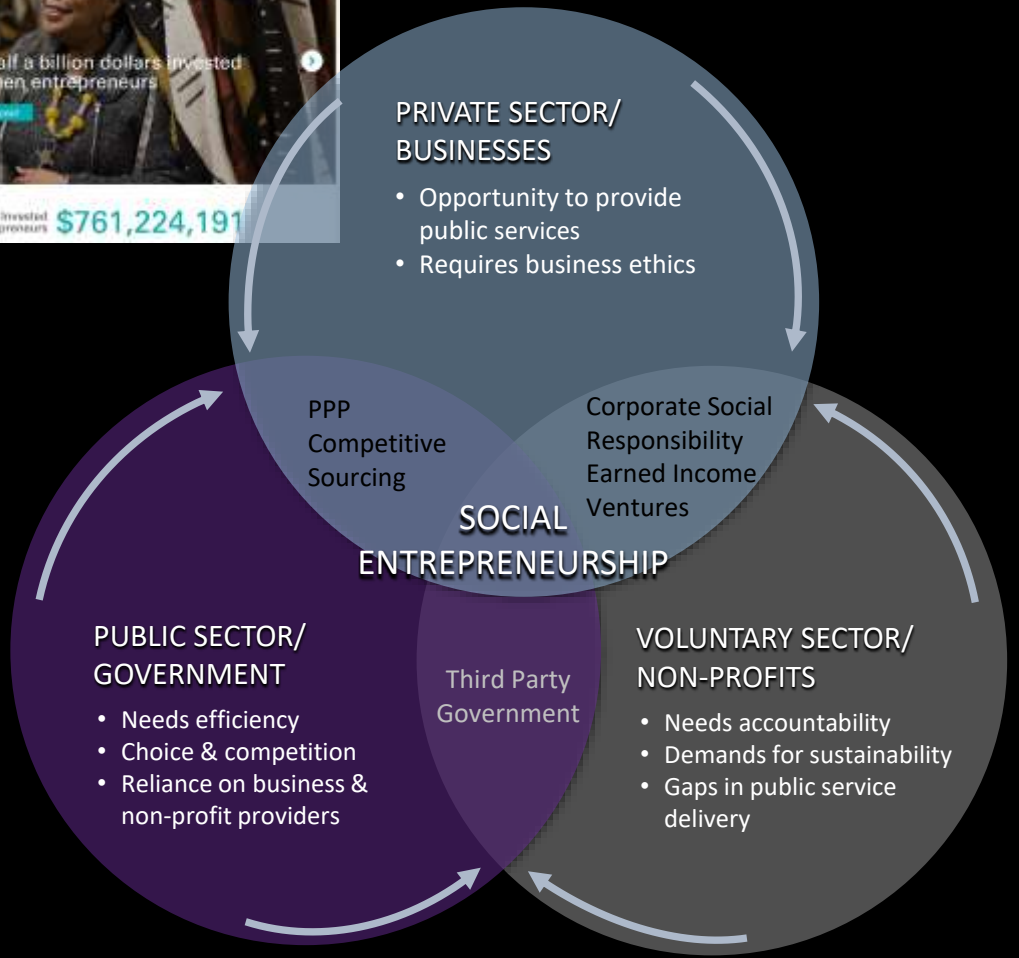
(What cities need to embrace)

Social entrepreneurship

Social impact investing

Leveraging local capital, innovation & impact

- A vetted community based substitute for government efforts that are otherwise seen as a public “service”
  (marginalizes the “appeasement” aspect of public participation)
- Short-term social entrepreneurs and community change agents have a greater skin in the game
- Mid-term successes can create confidence for more complicated long range adaptive planning
- Each effort and impact investment realm has its own critical mass of involvement, and capture space that is necessary for success



Social entrepreneurship

Social impact investing

Leveraging local capital, innovation & impact

LISC
(Ford Foundation)

Our Best Practices section showcases exemplary CDCs from across the country working to affect positive, sustainable change. For instance, one such organization is New Community Corporation in Newark, New Jersey. One of the largest CDCs in the U.S., it employs more than 600 community residents, manages 2,000 housing units, and serves more than 50,000 community residents a year through its comprehensive healthcare, social service, job training, education, and arts programs.

Key Facts & Figures

(based on the last two industry surveys (2006, 2010))

Number	4,600 located across all 50 states (2006)
Average annual housing production	96,000 units (2010)
Average annual commercial space production	7.41 million square feet (2010)
Jobs created by CDC activity per year	75,000 (2006)
CDCs that have equity investments in business operations	17% (2006)
CDCs that operate one or more businesses	21% (2006)

http://www.lisc.org/our-reach/

CDC (mix using Community Block Development Grants)

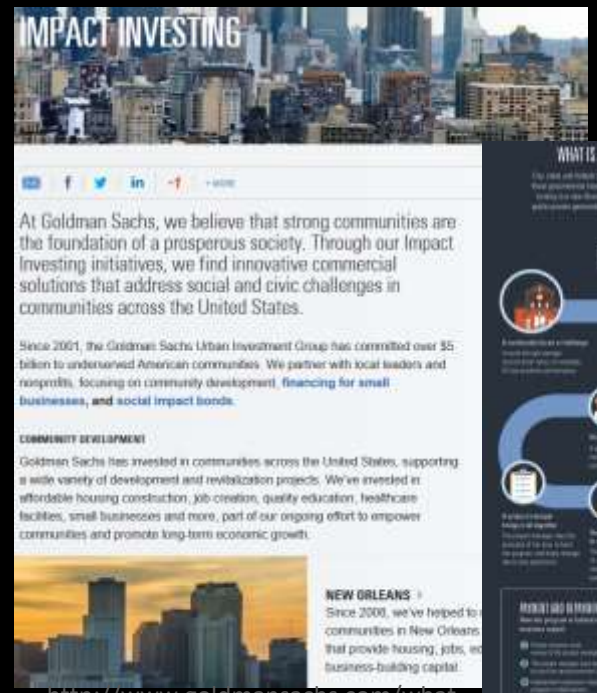
1st Gen - Institution based funding

https://community-wealth.org/strategies/panel/cdcs/index.html

JP Morgan

https://www.jpmorganchase.com/corporate/Corporate-Responsibility/social-finance

Goldman Sachs



http://www.goldmansachs.com/what-we-do/investing-and-lending/impact-investing/?cid=PS_02_47_07_00_00_00_01

http://www.goldmansachs.com/our-thinking/pages/social-impact-bonds.html

2nd Gen – Private social impact bonds

Participatory budgeting

Leveraging local choice

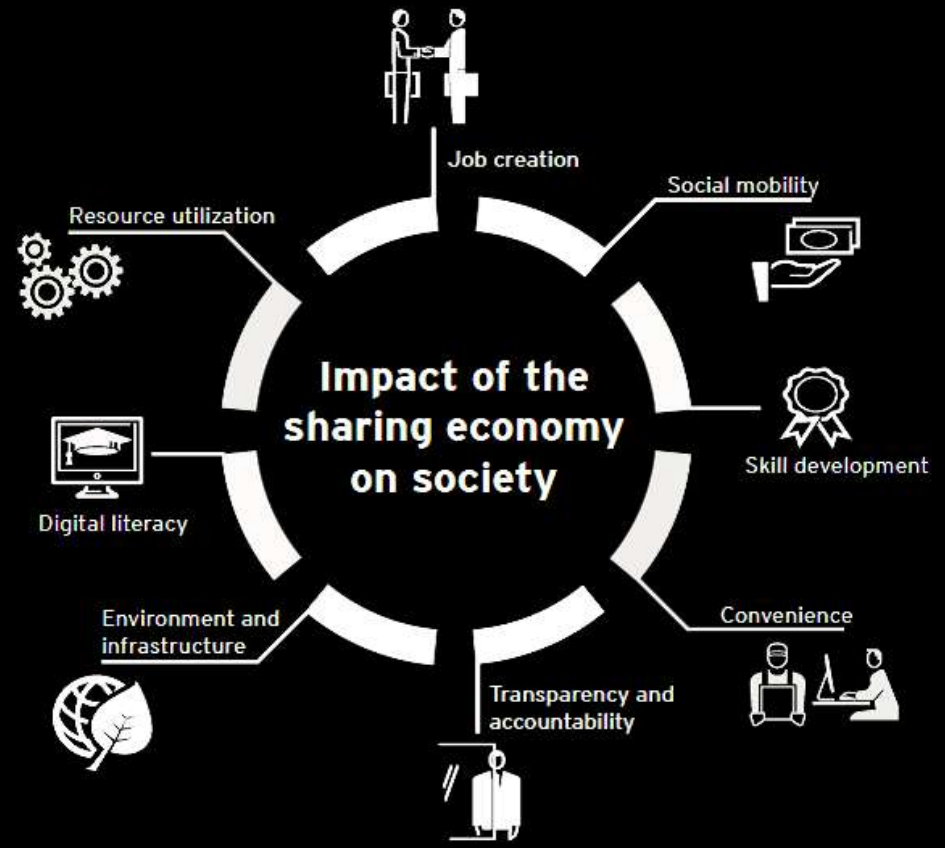
- Local communities get to prioritize their spending capacity
- Potential to extend discretionary budgeting to fund and implement larger systemic change (marginalizes the "appeasement" aspect of public participation)
- Better for short and mid term spending, harder for longer term decisions
- Process must ensure freedom from local political manipulations and coercion.

https://www.participatorybudgeting.org/resources-to-do-pb/videos/

Sharing economies

Hybrid markets

- Local communities get to prioritize their spending capacity
- Potential to extend discretionary budgeting to fund and implement larger systemic change (marginalizes the "appeasement" aspect of public participation)
- Better for short and mid term spending, harder for longer term decisions
- Shared housing?



https://vimeo.com/107121298

https://www.participatorybudgeting.org/resources-to-do-pb/videos/

Crowdsourced policy making

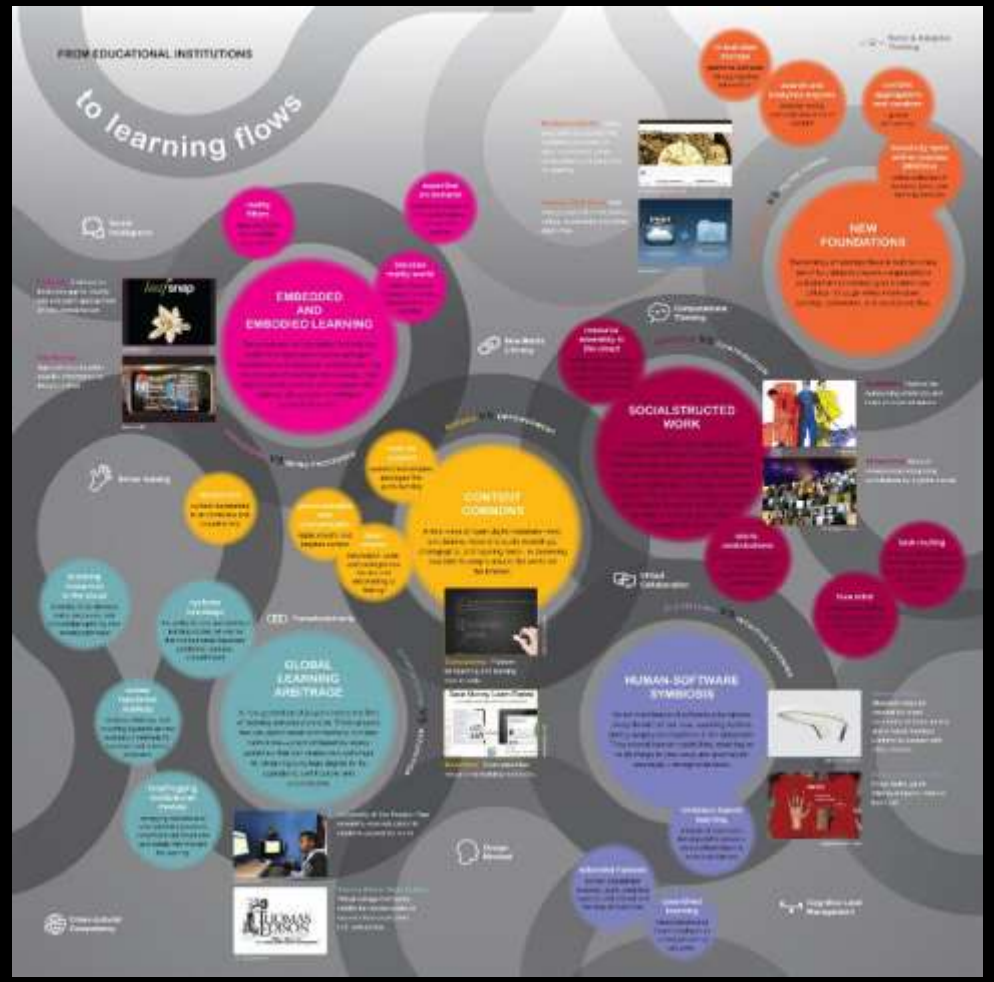
Inclusive governance

Five Design Principles

- **Inclusiveness** (low barriers, diverse participation, enhanced legitimacy)
- **Accountability** (built into process, horizontal & vertical communication, quick feedback)
- **Transparency** (peer to peer communication, equal information to all simultaneously to build legitimacy)
- **Modularity** (structured to enable comprehension, enables ad-hoc and long term participation, meaningful sequences)
- **Synthesis** (summarized outcomes, synthesis during and after process, tracks content duplication and feedback, assessment)

https://vimeo.com/107121298
https://www.participatorybudgeting.org/resources-to-do-pb/videos/
http://www.urbanhello.com/blog-en/wp-content/uploads/2015/01/sharing-economy.jpg

Distributed learning



http://www.iftf.org/fileadmin/user_upload/images/ourwork/learning_2013map_lg.jpg

Education and constantly morphing/adapting skillsets

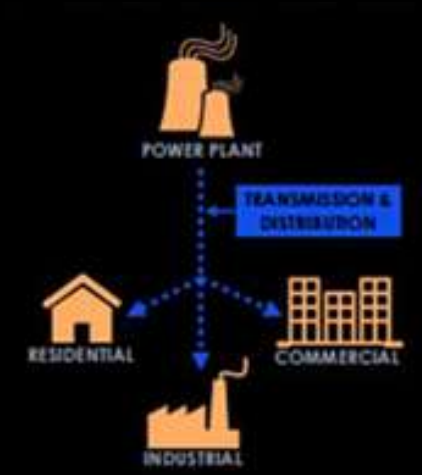
- Lifelong learning
- Remote learning
- Ubiquitous learning

Distributed energy

Micro-grids

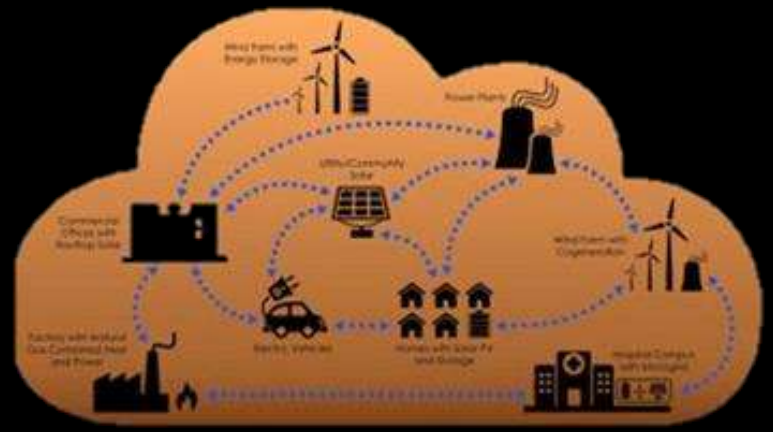
- China and India have committed to going electric
- France and Germany are almost there
- The kWh cost of solar is dropping rapidly
- Major vehicle manufacturers are going electric
- California pledges to be 50% renewable by 2025
- Intermittent energy production is a problem, but is being offset in different ways

TODAY



- Large, centrally located generation facilities
- One way energy flow
- Utility controlled
- Technologically inflexible
- Simple market structure and transactions
- Highly regulated (base rates)

TOMORROW's ENERGY CLOUD



- Distributed energy resources
- Multiple inputs and users, two way energy flows
- Digitalization of electric-mechanical infrastructure: smart grid and behind the meter energy management
- Flexible, dynamic, resilient
- Complex market structures and transactions
- Rapid changes in regulation (solar, micro-grid, storage, net metering etc.)

Navigant Consulting
http://3.bp.blogspot.com/-S_HmIzMoCwk/VkDakw26niI/AAAAAAABLlw/Nbjt6uHlnAY/s1600/11-09-2015a.jpg

Three scales

Renewable Energy Utilities

- Economies of scale
- Unequal taxes/subsidies
- Transmission costs/storage
- Institutional barriers
- High financing costs
- Time to deployment (permitting, installation, operation, maintenance)

http://www.ucsusa.org/clean_energy/smart-energy-solutions/increase-renewables/barriers-to-renewable-energy.html#.WdMSmWhSyHt

Community Energy

- Energy system diversity
- Distribution efficiencies
- Low storage costs
- Institutional barriers
- Resilience and redundancy
- Faster deployment (permitting, installation, operation, maintenance)

http://blogs.dnvgl.com/energy/community-scale-energy-systems-why-they-are-back

Net Zero Buildings

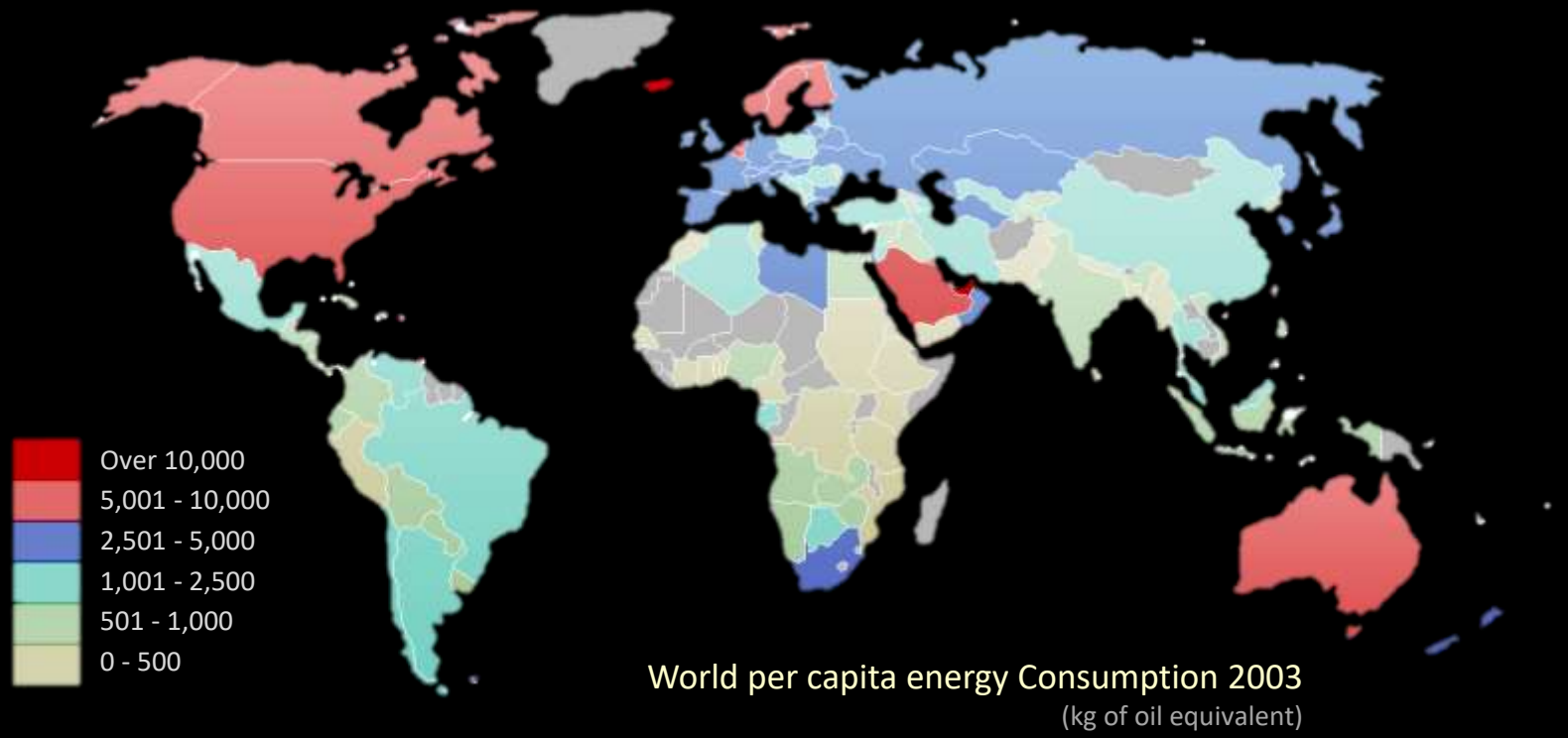
- Manageable system integrations
- Size thresholds/constraints
- Uncertain redundancies/backup
- Client barriers/cost effectiveness
- Higher ownership/ financing costs
- Systems management expertise installation, operation, maintenance)

https://www.buildinggreen.com/feature/problem-net-zero-buildings-and-case-net-zero-neighborhoods

Cheap energy?

Can we (US) reduce our per capita energy consumption, or should/can the rest of the world increase theirs?

- Will abundant energy encourage the consumption of other (scarce) resources?
- We don't know the full impact (good or bad) – environmental
- Will tech make it easier?



World per capita energy Consumption 2003
(kg of oil equivalent)

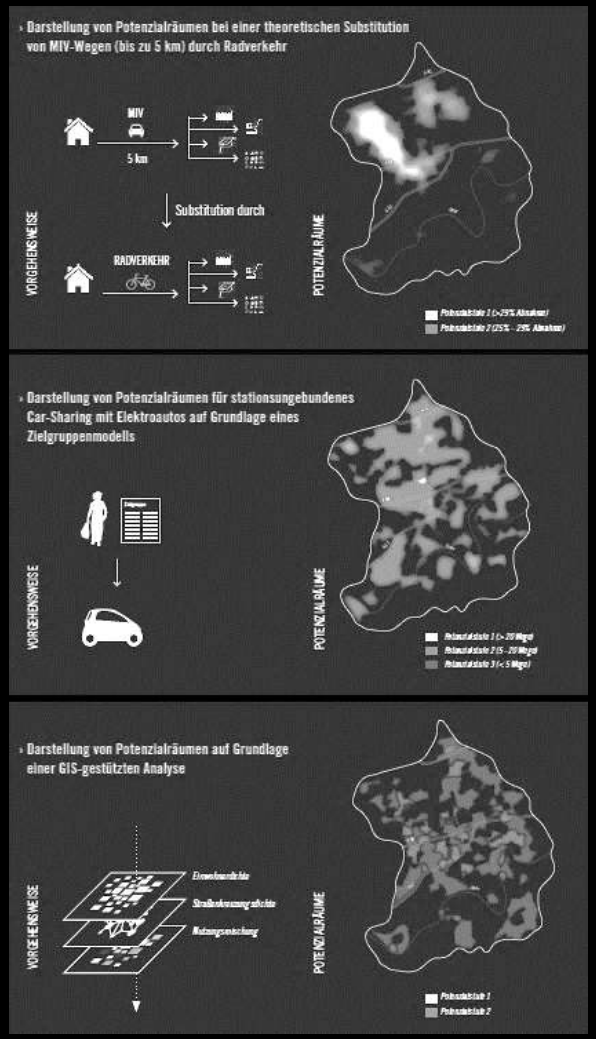
The US uses an 18% share of the world's energy, but is 4.4% of the world's population

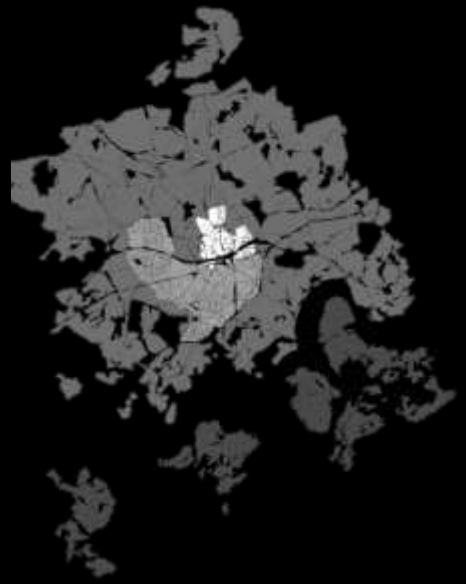
5

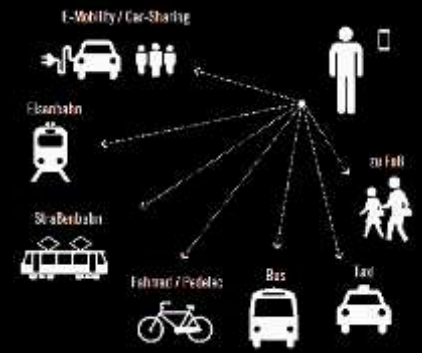
The future?

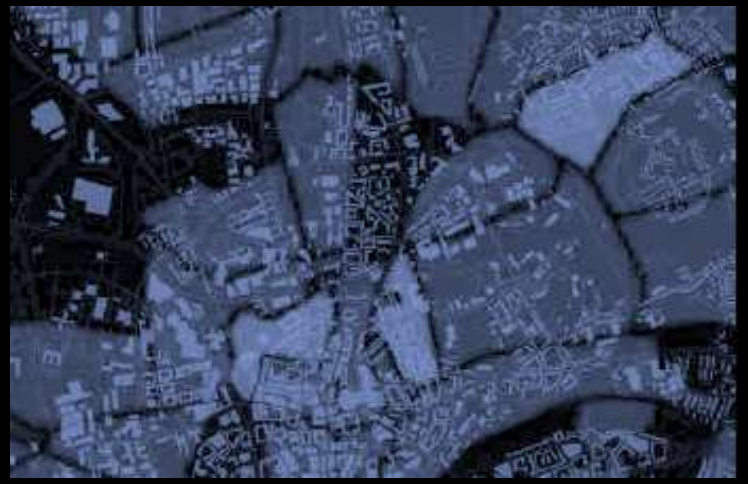
Behavior based decision tools

ARUS research project









Was hard to monetize the application, and build regional consensus at the institutional level

- The infrastructure for choice needs to exist
- Pilot projects need long term sponsors and investors
- The gains from predictive analytics are not always clear

Behavior based mobility study

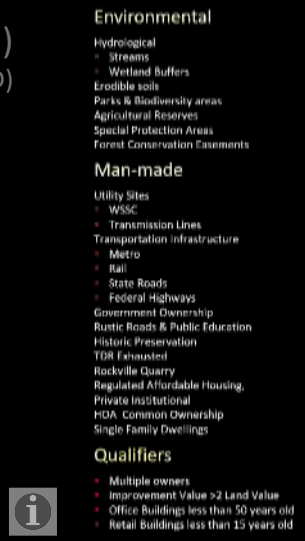
Funded by the Mercator Foundation

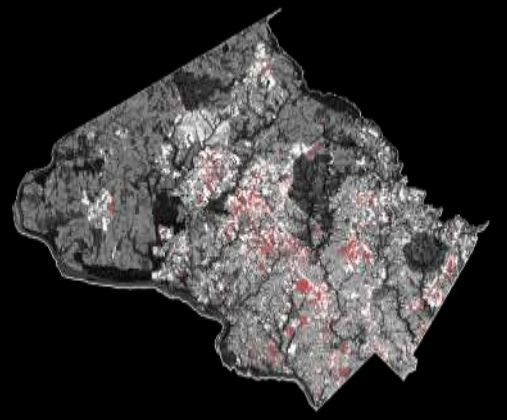
Cope with data

- We take open data for granted
- Who owns it, who controls it?
- How much is too much?
- Granularity
- Simulations are *NOT* predictions
- Ensure open data is usable by the public

Create credible transparency

DMAT (Development Management Assessment Tool)
National Capital Parks & Planning Commission (MD)





Giving up decision making authority is not human nature…

- Create conditions in which no actor (stakeholder) can claim ignorance of the situation and consequences
- Understand the real conditions in which cities must adapt
  (economic, governance structures, social + political culture)

Decision support tools had unintended consequences

- Leadership's authority felt threatened
- Hard to re-work governance (poor institutional capacity)
- Changing priorities and shifting political landscapes

Suitability analysis
PALAU

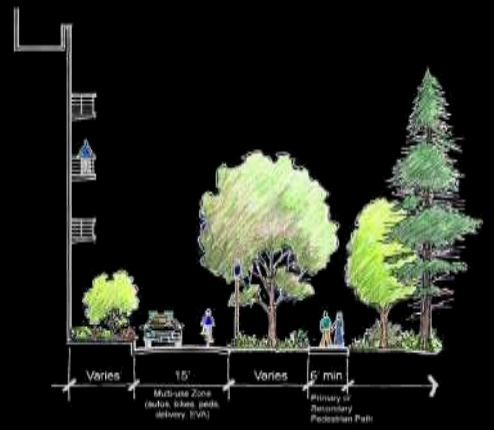
AIRAI STATE

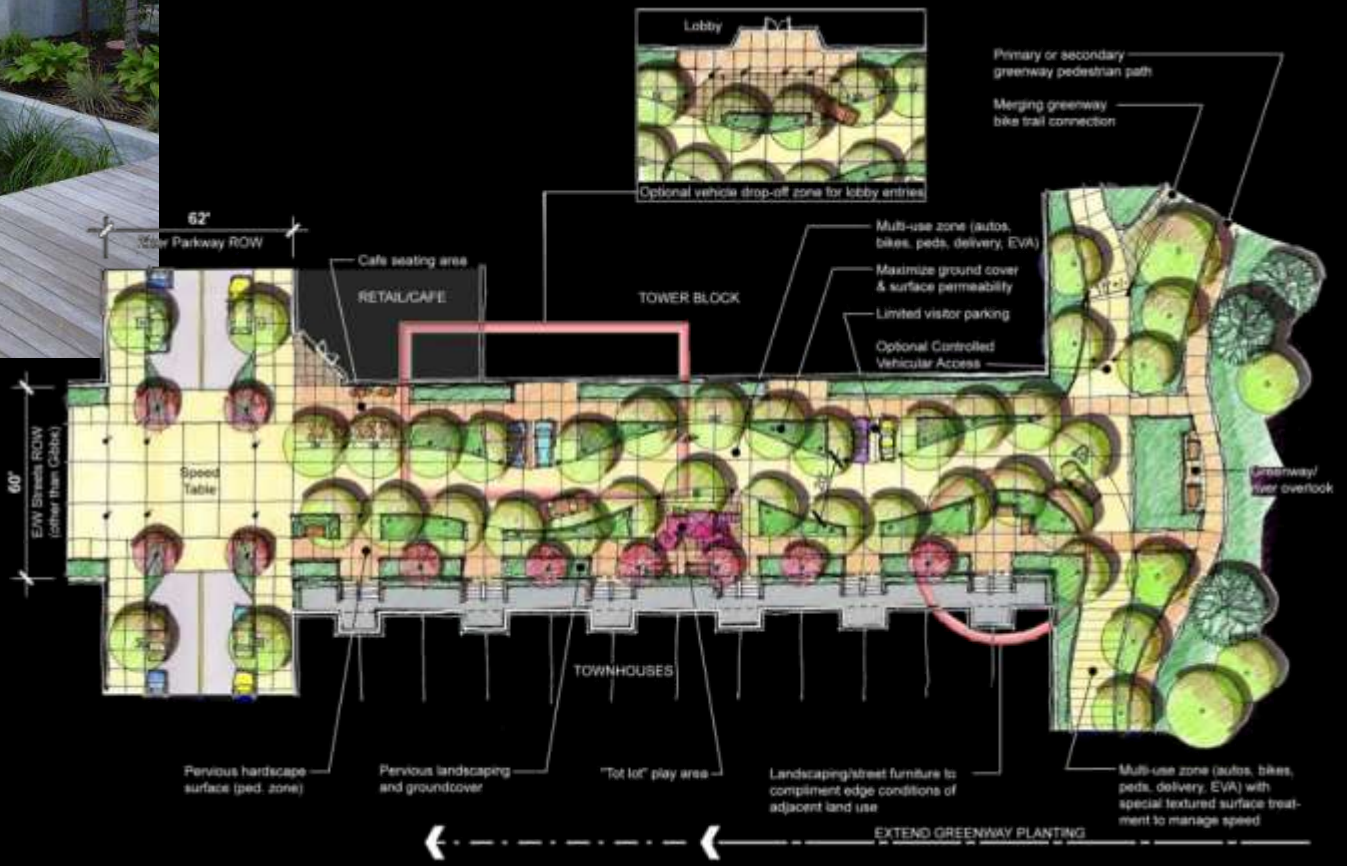
Palau National Sustainable Suitability Development Tool and National Policy

Palau National Government, Republic of Palau, Micronesia

Pursue adaptive uniqueness

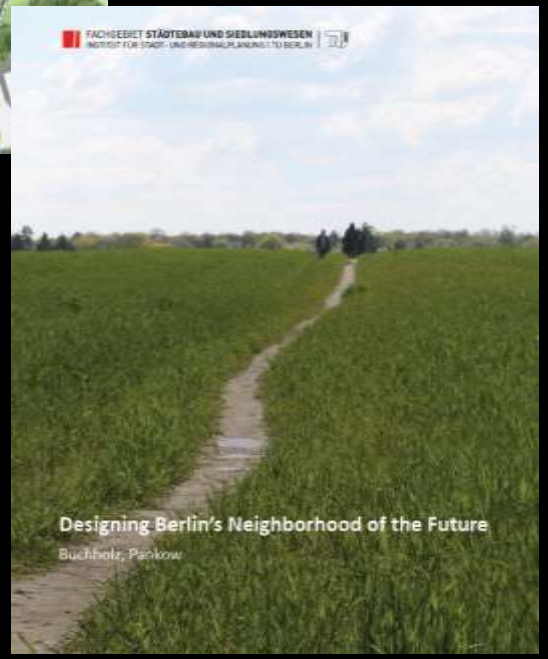
Universal Streets - S Waterfront, Portland

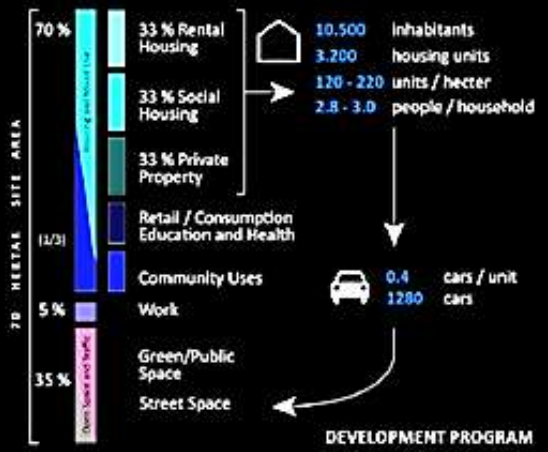


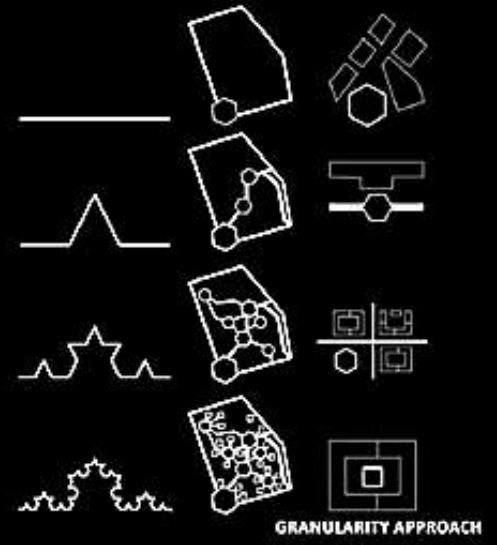


Plan for uncertain futures

Development concepts for the new Buckholz Pankow neighborhood



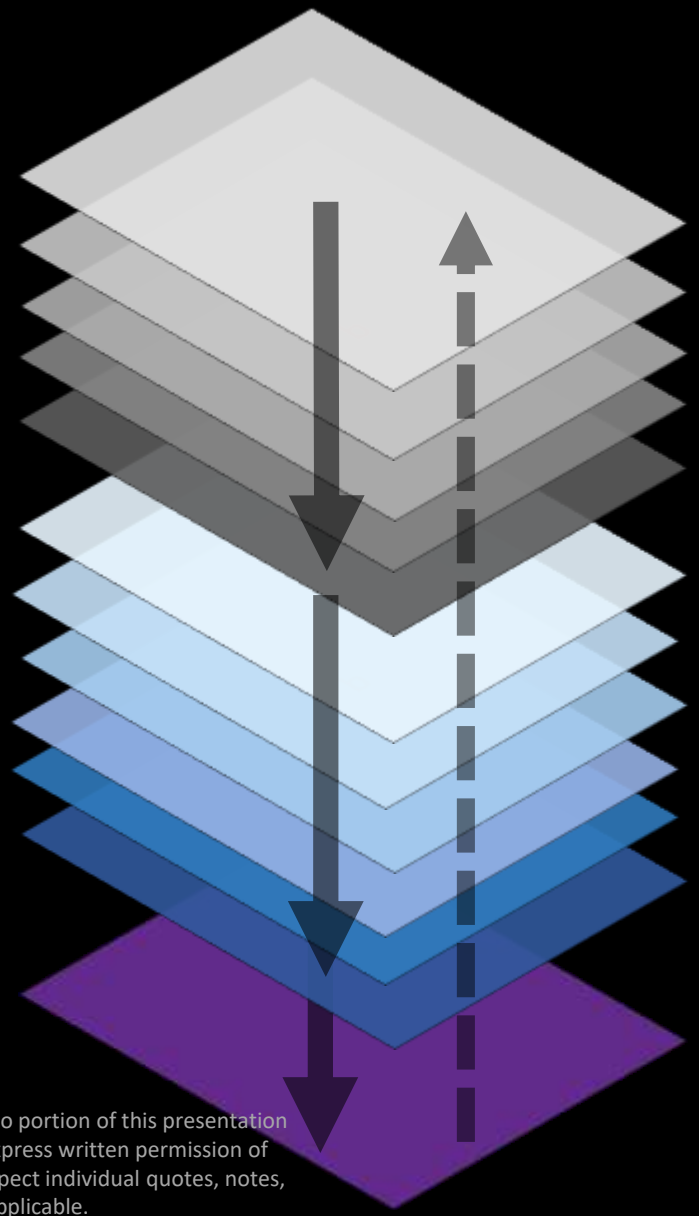




Winning studio entries for the national German Johannes-Goderiz Prize

Vertical integration

Rethink how to meet complex needs



Urban Mobility

- Rail Solutions
- Components & systems
- Metros
- Trams & Light Rail
- Commuter & Intercity Transport

Road Solutions

- Parking Management
- Service
- Tolling systems
- Traffic control & information
- Flow optimization
- Planning

Cross platform Integrated custom solutions

- Cities need advice on how to optimize mobility *across* platforms

Tighter collaborations

- New & integrated sectoral dependencies
- Relatively small cooperation space
- Increased need for strategic approaches

Avoid the “ostrich trap”

What is much more sensible, is to say, *"Well, this is what I think now, but I am going to come back and look at this again and again. If, as the future comes nearer, I find my predictions were wrong, I am going to change what I did.*

Not only that, I am going to design my decision in ways which allow me to change easily."

Guy Burgess

Co-Director, Conflict Research Consortium University of Colorado, Boulder

Embrace complexity

Energy Shed

Micro-grid “Shed”

Micro-grid storage & distribution points

Water Shed

Habitat “Shed”

- We gain more from community scaled systems
  (find ways to carry and absorb the costs)
- Consider the value of decentralized community based “sheds”
  (find ways to carry and absorb the costs)

5

Beyond the hype

Staying ahead

- Pursue distributed learning/living/work clusters
- Pursue adaptive systems and infrastructure at all scales (city, “shed” and building) – Design/plan for uncertain futures
- Design for system transition and/or, plan for obsolescence
- Establish new financial means to carry costs for adaptive change

Staying ahead

- Move beyond what's popular (understand what you embrace completely)
- Work from the problem backwards (if all you have is a hammer…)
- Don't let any preconceived solution drive the problem (don't be lazy)
- Simplify control and management systems (but embrace complexity)
- Don't forget our behavioral and cognitive biases (human nature)
- Embrace complexity and uncertainty (don't oversimplify)

Be brave

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