



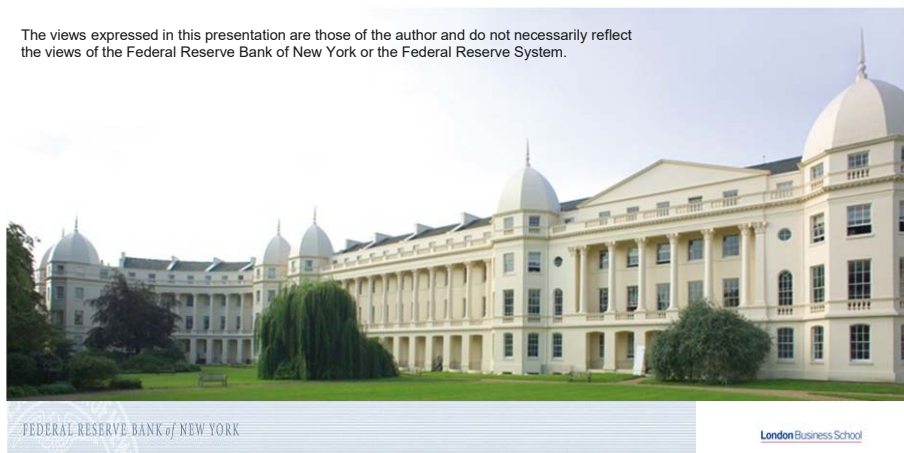
The changing landscape of mobility

Strategic Management Society Extension Session

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Michael G. Jacobides

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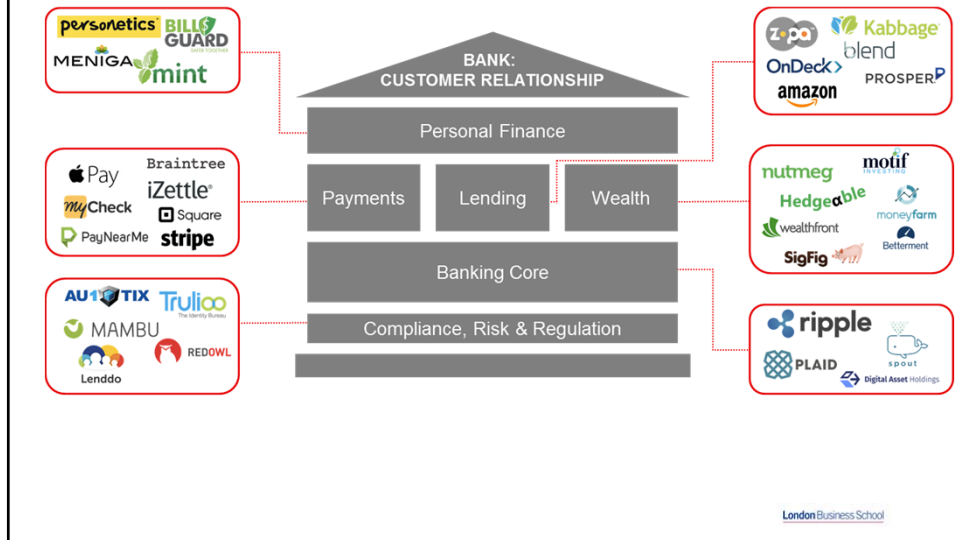
The world today is *structurally different* from what it was- and this changes how firms try to make money and organize

- For a long time, business activities were well delineated
 - From guilds to regulated sectors, business models were clear & static
 - Academe followed practice speaking about sectors and markets
- But technology, regulation & step-up in competition blew this up
 - Stable boundaries and professions are disrupted, margins implode
 - Technology, globalization, challenge Ind. Architecture; ecosystems form
- Exciting research and practice agenda in strategy & innovation
 - With more choices, customer is in the centre; firms cant afford inertia
 - Challenges to how firms operate; how we look at their environment; how strategy gets formed; how we help them be more efficient

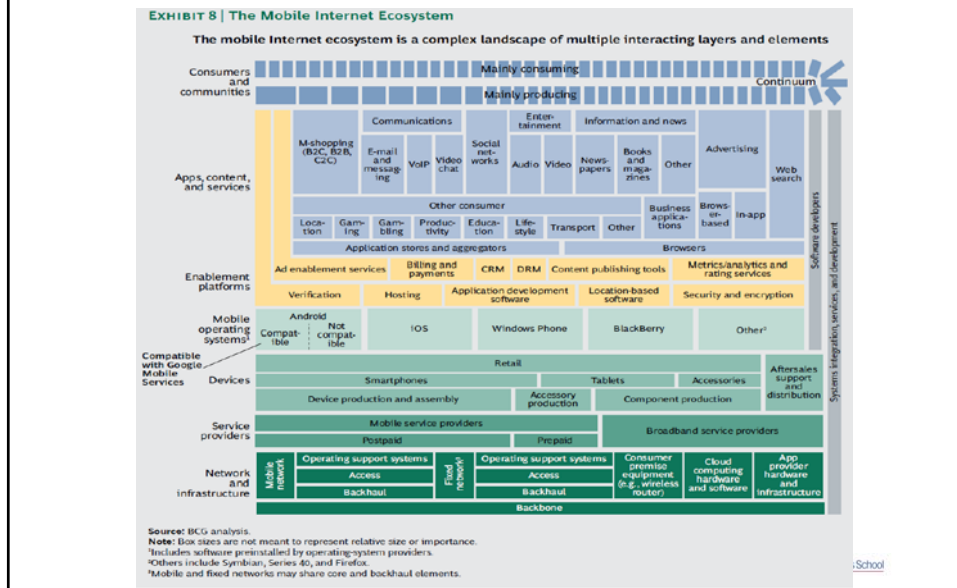
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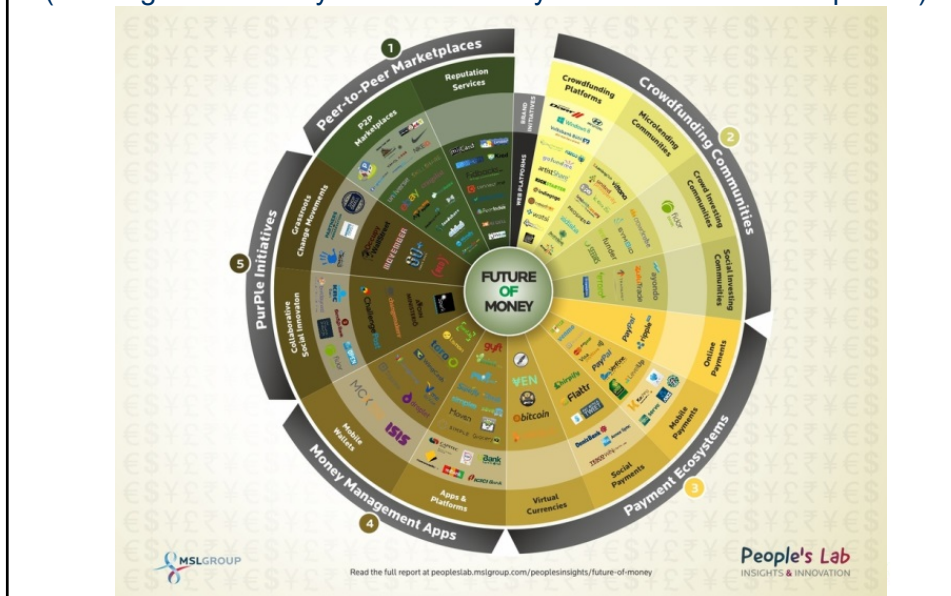
One change is vertical unbundling and re-drawing of boundaries, re-shaping the Industry Architecture
(which includes new types of competitors & links)



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another change is the offering of a new type of products or services
(drawing on the newly available variety and “mix and match” pieces)



...including how to access products, services, and their bundles
(from products to services to personalized bundles)

Telenor develops global software eco-system platforms



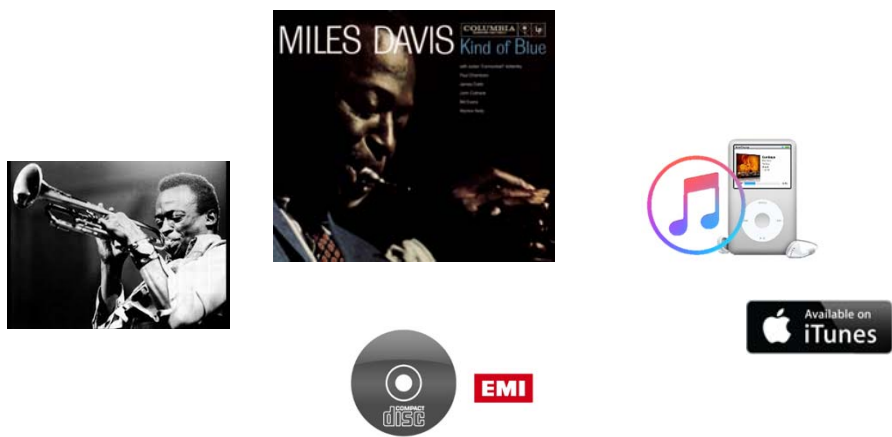
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Courtesy of Frank Elter, Telenor

telenor
group

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...leading to a profusion of ways to make or lose money in a sector
(which leads to models that co-exist and mutually adapt)



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...leading to a profusion of ways to make or lose money in a sector
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Cars are no different: They used to be simple and stable but now are poised for a major disruption

- Automobile sector has been fairly stable for long
 - Despite significant outsourcing increase, Ind Architecture was stable
 - ...despite efforts, *often led by OEMs*, to change it (see JMT, *SMJ*, '16)
- Division of value, for all of the OEMs woes, still with OEMs
 - OEMs managed their architecture, were the differentiable players (*HBR* '13) More on value capture and the role of structure and agency from JP
 - ...but the basis of this stability is now becoming to be questioned...
- Automotive may *despite it all*, and *now* be ready for change
 - Important to see factors unleashing this major natural experiment
 - Interest *both* in understanding mobility (big part of GDP) *and* what it means for *us* as academics who study it

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There is a growing number of academic tools to tackle this

- Exploration of industry architectures and how they change
 - Industries are not given, but they represent a shifting truce, with an allocation of "rules, roles and relationships" that define the division of labour and division of profit (Jacobides, Augier & Knudsen '06)
 - Exploration of structure of sectors (Pisano & Teece '07, Tee & Gawer' 09 Hannah & Eisenhardt '14, '15) and of the division of profit and power (Dedrick, Kraemer & Linden '10; Jacobides & MacDuffie '13; Jacobides & Tae '15, Jacobides MacDuffie & Tae '15, Baldwin '16; Hannah & Eisenhardt '16), with new projects en route
- So let us think about how best to employ them in cars and how best cars can be used to showcase the dynamics in the economy
 - An exciting challenge for our profession and an opportunity to help shape part of the current debate, policy, investments and strategy
 - Beyond electric car (and the role of ecosystems), *mobility* is changing
 - Possibilities for broad sweeps and deep dives- on ecosystems and scope (see summary in Jacobides & Winter '12; Baldwin & Cofler '16)

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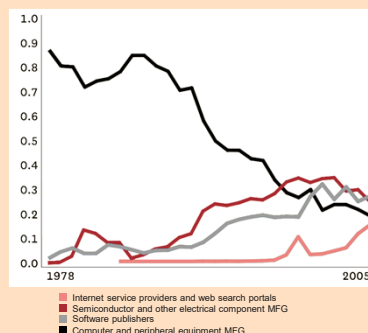
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Some potentially useful background...

PC Industry: PC ecosystem evolution in the 80s onwards

- Computer OEMs outsourced component design and production responsibilities to suppliers
- Outsourcing led to vertical unbundling by creating a set of modular, open-access components
- Vertical unbundling undermined the OEM's system integrator role as suppliers could standardize components across OEMs
- The new roles of suppliers
 - The suppliers became the locus of differentiability, e.g. Intel inside, NVIDIA graphic cards
 - The suppliers became the guarantors of quality for their respective component
 - Suppliers became "bottlenecks" by taking up positions that give them control over scarce resources, allowing them to capture a bigger share of value
- The OEMs could not revert the trend as they lost the expertise within their firm's boundaries, also due to the industry's short product cycles (measured in months)

Computer OEMs have seen their share of the sector's total market cap fall from more than 80% to less than 20%

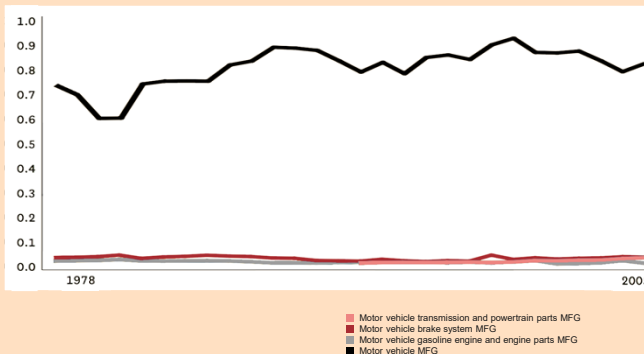


Source: Jacobides and MacDuffie, 2013

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As opposed to the prior examples, the automotive industry managed to retain the lion's share of the sector's value (1/2)

Automotive OEMs retained its share of the sector's total market cap

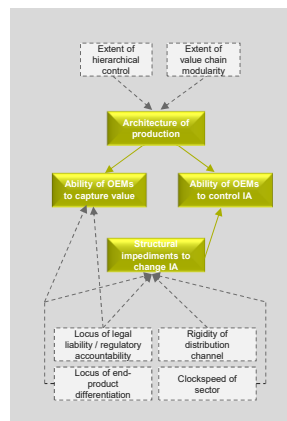


Source: Jacobides and MacDuffie, 2013

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As opposed to the prior examples, the automotive industry managed to retain the lion's share of the sector's value (2/2)

- Automobile sector was clearly hierarchical and non-modular
 - Computer sector: unbundled into independent segments that could be mixed and matched via open standards (e.g. USB ports)
 - Automotive sector: vertical dis-integration based on hierarchical non-modular structures and proprietary (closed) standards (e.g. each brand's own, non-compatible navigation system)
- OEMs kept control of most critical and differentiating assets, i.e. the engine
- OEMs are responsible for achieving end-product differentiation, supported by the brand
- OEMs have responsibility for regulatory compliance and are accountable for product defects/failures (guarantor of quality)
- OEMs' distribution channel
 - OEMs have near-exclusive control over distribution through the franchised dealer model



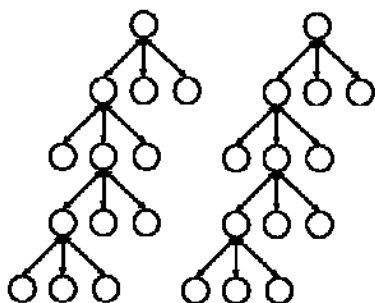
In the next years new big challenges are ahead for the car manufacturers in terms of value migration threats (electrification, "car on a software", shared economy). Let's see how the battle unfolds

Source: Jacobides and MacDuffie, 2013

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Cars vs computers: Industry structure & replaceability

Automobiles: Hierarchical Structure



Computers: A set of verticals

Equipment, Material	Teradyne, Millpore, AM,...
Components	Intel, AMD, Quantum
Product Design	IBM, Compaq, Dell
Assembly	Solectron, Celestica
Operating System	Microsoft
Applications Software	Microsoft, Lotus, Borland
Sales & Distribution	CompUSA, Dell,...
Field Service	Independent Contractors

Source: Adapted from Andy Grove, 1994

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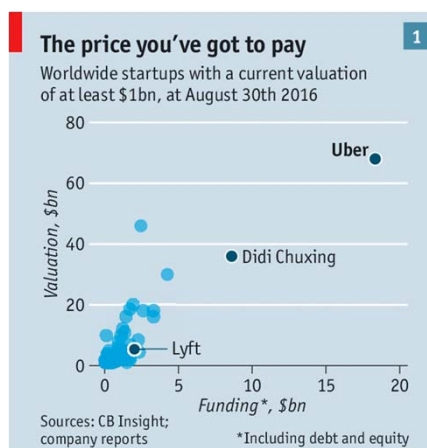
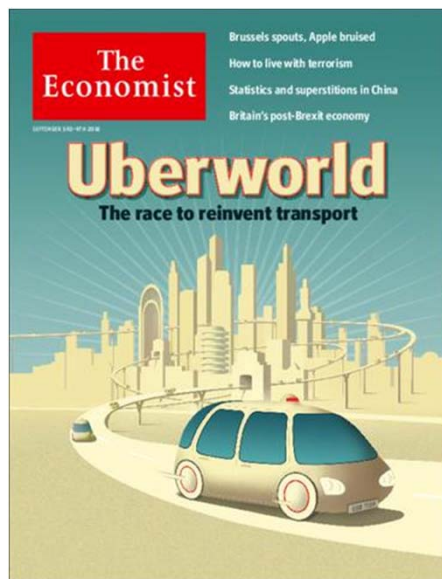
So rather than cars becoming computers, computers are becoming cars. Witness Apple....

Our interviews with a number of Apple's suppliers suggest that Apple 'atomizes' its supply chain to an unprecedented degree, breaking up component processing steps across multiple vendors. This aids in preserving product secrecy – since even the suppliers themselves often do not know how Apple will ultimately use a component – and gives Apple inordinate control over the manufacturing process, as if Apple were vertically integrated and owned the factors of production. (*Sanford Bernstein Research*, March 2012)

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Consider the *Economist*, two weeks ago

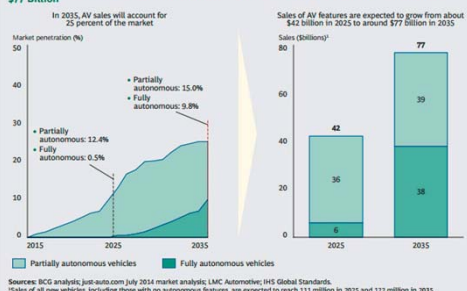


Economist.com

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Many are now predicting dramatic growth in revenues from “reinventing transport”

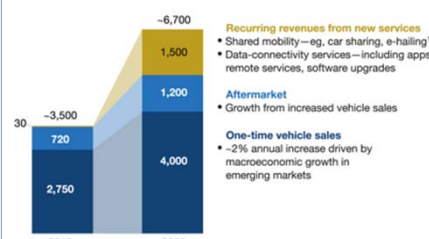
EXHIBIT 10 | The Global Market for Autonomous Vehicles Should Grow from \$42 Billion to \$77 Billion



Sources: BCG analysis; just-auto.com July 2014 market analysis; LMC Automotive; IHS Global Standards.
 *Sales of all new vehicles, including those with no autonomous features, are expected to reach 111 million in 2025 and 127 million in 2031.

The automotive revenue pool will significantly increase and diversify toward on-demand mobility services and data-driven services.

High-disruption scenario, \$ billion



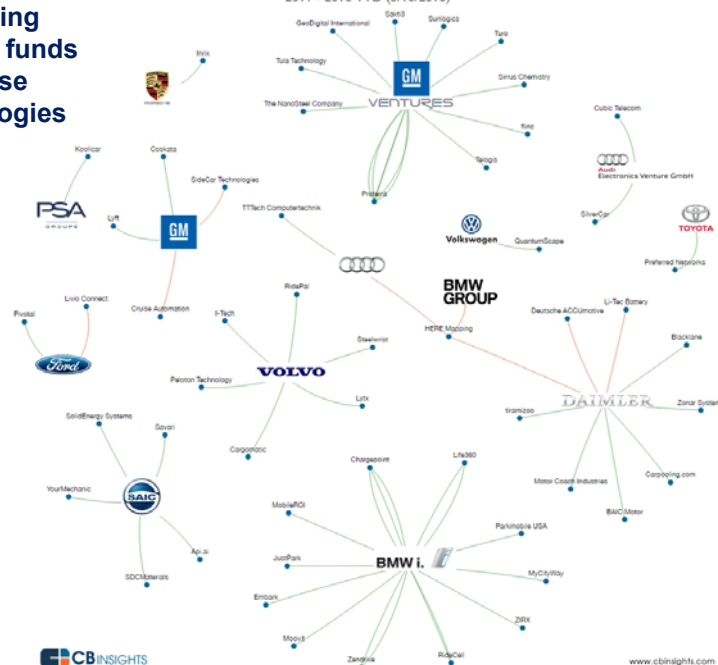
¹Excludes traditional taxis and rentals.

McKinsey & Company

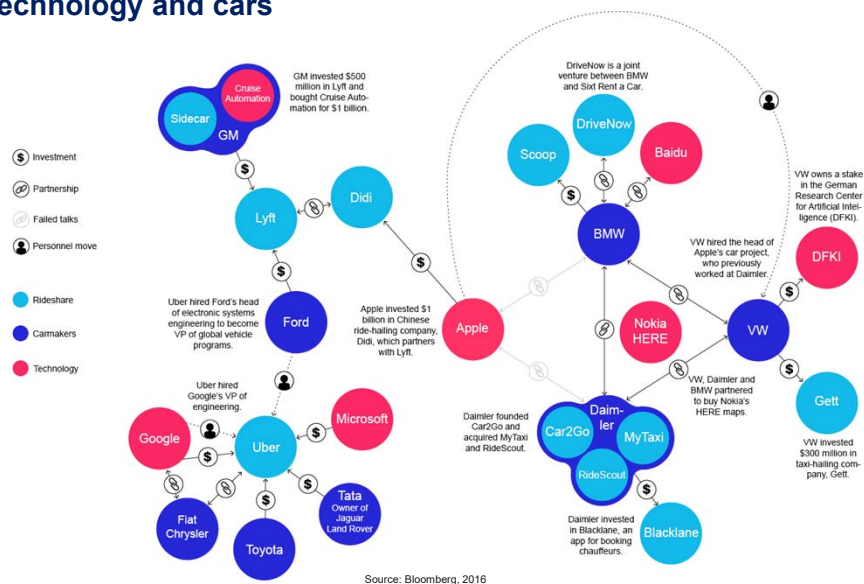
**Many OEMs
are putting
venture funds
into these
technologies**

Where Major Auto Manufacturers Are Making Private Market Bets
2011 - 2016 YTD (5/10/2016)

2011 - 2016 YTD (5/10/2016)



The new mobility landscape is a merging world between technology and cars



What are the things we *can* help with and what can we *not*?

- Good for giving advice market-by-market and autos a key setting
 - Analytical arsenal well suited to either stable markets (with evolving technologies) or scope decisions of make-or-buy
 - From Fisher Body foible to technology life-cycles, Coase to Kenney & Florida to Klepper, Utterback & Abernathy to Langlois, autos key sector
 - Now, some of the power distribution or internal structure and agency stories starting to emerge (MacDuffie et al, Zirpoli/Whitfield, Helfat, etc.)
- Still not well equipped to explain systemic changes/ how to navigate
 - Ind Architectures mutate- but, when? How? how should firms adjust?
 - Excitement in investment community and car OEMs but unclear if this is a fad. What is the role of structure? What drives stasis or agency?
- Opportunity to develop new theory and revisit our research
 - Address the questions firms face *today* and rethink how *we tend to approach the way we look at the world*
 - (Surreptitious ad: Jacobides, Cennamo & Gawer WP on Platforms/ecosystems)

Three tentative conjectures (ongoing work) and a thought

- Transformation speed picks up as monetization options increase
 - Ease of shift from product to service crucial- and we're seeing it now
- Transformation based on unmet needs of customers
 - New models and new architectures emerge when new ways of paying and new business models come up
- Co-existence of models is more likely than dominance of any
 - Domination of new firms like Uber unlikely *but* access to capital leads to network power, thus to the ability to make money without assets
- Take-away: Exciting work ahead, especially if we are bold
 - Significant regulatory and strategic challenges. What works? What doesn't? What are the regularities? What are the pathologies?
 - There's always a risk if we stick to our (academic) knitting. And a risk if we get carried away by the stories we hear, uncritically