Barter, Auction and Technology
Implications for Cash Management

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Future of Cash Management: Technology

We have seen exponential growth in exponential growth of computing!

Growth factors:
• Shorter distance for electrons to travel (transistor die size gets smaller)
• Greater number of transistors
Future of Cash Management: -----Technology

New growth factors:

• “Pipelining” -- Multiple calculations performed at the same time (parallel processing)

• Hence, conservative forecast would be to slow to exponential growth
Future of Cash Management:  
-----Technology

Human brain:

• 100 billion neurons
• 1000 connections between each neuron
• 100 trillion connections, each capable of simultaneous calculation
Future of Cash Management: Technology

Human brain:
Strength:
• Massively parallel
Weakness:
• Very slow, only 200 calculations per second.

Explains why brains does a great job at operations that require massively parallel, such as pattern recognition.
Future of Cash Management:
-----Technology

Human brain:
At 200 calculations per second and 100 trillion connections, implies 20 million billion calculations per second.
Future of Cash Management:
-----Technology

Currently, we can do 2 billion calculation per second for about $1000.
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-----Technology

August 15, 2001
Accelerated Strategic Computing Initiative (ASCI) revealed a supercomputer capable of 12.8 trillion calculations per second with plan for 100 trillion by 2005
At this rate, 28,000 trillion by 2016
Computing and the Human Brain

Source: Ray Kurzweil
Future of Cash Management: Technology

Forecasts:
2016 Achieve capacity of human brain (based on extrapolation of Lawerence Livermore National Laboratories ASCI)
2025 Achieve the same capacity for $1000
2060 Achieve the capacity of 1 trillion humans
Future of Cash Management:
-----Technology

What about memory?
Brain capacity is 100 trillion synapse strengths which is approximate 1 million billion bits

• 1 billion bits (128 megabytes) today costs less than $100.

• Reasonable forecast would be the memory equivalent of the brain by 2020 for $1000
Future of Cash Management:  
-----Organizational Structures  

Impact for the Corporation?
Corporations mainly evolved in the late 19th century as a way to reduce transactions costs (including limited liability)

The forces that created the environment for the corporation to thrive seem to be working against the corporation in the future.
Future of Cash Management: 
-----Organizational Structures

Impact for the Corporation?
Transactions costs are dramatically lower (this includes barriers to entry, cost to reach consumer, etc.)
The logic of centralized control has given way to a decentralized entrepreneurial type of capitalism.
Future of Cash Management:
------Organizational Structures

Impact for the Corporation?
Need to look hard at what are the advantages that a large corporation in this future landscape.

Micro-specialization and growth of outsourcing.
Future of Cash Management: 
-----Organizational Structures

Impact for the Consumer?
More information, more competition, more value.

Evolution from mass marketing, to segments, to individuals.
Future of Cash Management:
-----Impact for Finance

Major driving forces

• AI/Pattern recognition integrated into management
• C2C will greatly reduce role of corporation that are facilitators
• Sharp growth in reverse auction
• Barter
Future of Cash Management:
-----AI

Pattern recognition
We have seen very crude neural net applications fail.

In the future, much more complexity is possible.
Future of Cash Management:
-----AI

Example: Next generation of pattern recognition
Consider a string of numbers
01001010100010101111010110101010101

Could represent graphics, words.
Let’s represent this in a binary tree and use the theory of data compression.
Only 20% probability of drawing a 1
Future of Cash Management: -----C2C

Client to Client?
Cuts the role of the middle person (or redefines role).

• Efficient collection of information
• Growth in validators, new form of insurance
Future of Cash Management: Auction

Auction?
We have seen dramatic growth in consumer auctions.

• Next we will see growth in B2B and C2C auctions
Future of Cash Management:  
-----Barter

Barter?
Logic of currency:
• Unit of account
• Eliminates transactions costs of barter
Future of Cash Management:
-----Barter

What about currency?
Transactions cost of barter have dramatically decreased with Internet
• In the future, money will be a unit of account - and it is not even clear that is necessary (unit of account could be anything)
Future of Cash Management: Barter

Implications for currency

- Large B2B barter market
- Forward barter could reduce much of the need for working capital
- Rethink the need for debt
Future of Cash Management: Global finance

Implications for global finance

• Currency less important
• Shorter term: Three currency zones
• Shortly after: One world unit of account
Future of Cash Management: 
-----Global finance

Implications for finance

• Currency hedging will be less important - if it exists at all

• Implications for interest rate management
  – Debt will not be in traditional currency but goods
Future of Cash Management: 
-----Tomorrow

A look at the changing landscape of FX management

• Competitive landscape
• Specific C2C method
• Implications for cash management