

*RTO 2.0:
INCREMENTAL CHANGE OR
STRUCTURAL BREAK?*

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FIRST PRINCIPLES ECONOMICS

1. WE MIGHT AS REASONABLY DISPUTE WHETHER IT IS THE UPPER OR THE UNDER BLADE OF A PAIR OF SCISSORS THAT CUTS A PIECE OF PAPER, AS WHETHER VALUE IS GOVERNED BY UTILITY (DEMAND) OR COST OF PRODUCTION (SUPPLY). IT IS TRUE THAT WHEN ONE BLADE IS HELD STILL, AND THE CUTTING IS EFFECTED BY MOVING THE OTHER, WE MAY SAY WITH CARELESS BREVITY THAT THE CUTTING IS DONE BY THE SECOND; BUT THE STATEMENT IS NOT STRICTLY ACCURATE, AND IS TO BE EXCUSED ONLY SO LONG AS IT CLAIMS TO BE MERELY A POPULAR AND NOT A STRICTLY SCIENTIFIC ACCOUNT OF WHAT HAPPENS. ALFRED MARSHALL
2. THE ECONOMIC PROBLEM OF SOCIETY IS THUS NOT MERELY A PROBLEM OF HOW TO ALLOCATE "GIVEN" RESOURCES...IT IS RATHER A PROBLEM OF HOW TO SECURE THE BEST USE OF RESOURCES KNOWN TO ANY OF THE MEMBERS OF SOCIETY, FOR ENDS WHOSE RELATIVE IMPORTANCE ONLY THESE INDIVIDUALS KNOW. OR, TO PUT IT BRIEFLY, IT IS A PROBLEM OF THE UTILIZATION OF KNOWLEDGE WHICH IS NOT GIVEN TO ANYONE IN ITS TOTALITY. FRIEDRICH HAYEK
3. (PARAPHRASING LIBERALLY AND PERHAPS INCORRECTLY) NO PROBLEM CAN BE SOLVED FROM THE SAME LEVEL OF CONSCIOUSNESS THAT CREATED IT. ALBERT EINSTEIN
4. THE CURIOUS TASK OF ECONOMICS IS TO DEMONSTRATE TO MEN HOW LITTLE THEY REALLY KNOW ABOUT WHAT THEY IMAGINE THEY CAN DESIGN. FRIEDRICH HAYEK
5. WHEN WE TRY TO PICK OUT ANYTHING BY ITSELF, WE FIND IT HITCHED TO EVERYTHING ELSE IN THE UNIVERSE. JOHN MUIR

1. THE QUOTE FROM MARSHALL HIGHLIGHTS THAT WE DO NOT HAVE AN ELECTRICITY MARKET.
2. TO THE EXTENT THAT WE HAVE A SO-CALLED WHOLESALE ELECTRICITY “MARKET”, THE SCARCE RESOURCE BEING ALLOCATED IS SHORT-TERM TRANSMISSION CAPACITY AND NOT ELECTRICITY. (DISPATCH IS TO “LOAD” NOT “DEMAND.”)
3. FURTHERMORE, TO THE EXTENT THAT WE HAVE A RETAIL ELECTRICITY “MARKET” THE SCARCE RESOURCE BEING ALLOCATED IS — *NOTHING*.
4. IN THEIR CURRENT STATE NEITHER THE WHOLESALE OR RETAIL MARKETS ALLOCATE ELECTRICITY.
5. THAT REALITY WASN'T SO HARMFUL UNTIL WE STARTED TAKING SERIOUSLY (AND HONESTLY BELIEVING) THE SIMPLIFYING BUT FALSE NARRATIVE THAT WHAT IS IN PLACE IS ACTUALLY A MARKET FOR ELECTRICITY.

6. AS A CONSEQUENCE WE HAVE STRETCHED, CONTORTED, DISFIGURED, AND BLUDGEONED THE STRUCTURE IN AN ATTEMPT TO IMPOSE A FALSE REALITY.

1. WHAT WE HAVE PUT IN PLACE IS NECESSARY — BUT NOWHERE CLOSE TO BEING SUFFICIENT. THE STRUCTURE WILL NEVER ACCOMPLISH WHAT WE WANT/NEED IT TO, BECAUSE IT CAN NOT ACCOMPLISH IT. NON-DISCRIMINATORY OPEN ACCESS REQUIRES A MECHANISM FOR ALLOCATING TRANSMISSION CAPACITY. THAT WAS THE FIRST STEP.

7. TECHNOLOGICAL INNOVATION COUPLED WITH CULTURAL CHANGE IS DEMANDING THAT WE DEVELOP AN ACTUAL ELECTRICITY MARKET. IN THE END THESE FORCES WILL WIN AND AT THE VERY LEAST THEY WILL REQUIRE US TO RETHINK/CHANGE:

1. THE WAY WE THINK ABOUT, DEFINE AND OPERATIONALIZE RELIABILITY.

2. THE WAY WE USE AND PROCURE ELECTRICITY.

3. THE WAY WE TRANSACT ELECTRICITY.

4. THE MECHANISM FOR ALLOCATING ELECTRICITY.

1. HAYEK’S (FIRST) QUOTE GIVES US THE ESSENCE OF THE PROBLEM — “THE UTILIZATION OF KNOWLEDGE”, I.E., THE “KNOWLEDGE PROBLEM.”
2. THE EXISTING PARADIGM IS FUNDAMENTALLY BASED ON CENTRALIZATION OF KNOWLEDGE AND CENTRALIZATION OF DECISION-MAKING.
3. AS RELEVANT AND NECESSARY KNOWLEDGE BECOMES DECENTRALIZED AND SPREADS THROUGHOUT A MULTITUDE OF ECONOMIC AGENTS, THE JOB OF THE CENTRAL PLANNER, I.E. THE RTO, WILL BECOME (HAS ALREADY BECOME?) INCREASINGLY MORE DIFFICULT, COSTLY, COMPLEX AND PERFORMANCE WILL DECLINE.
 1. EVENTUALLY THE SYSTEM WILL IMplode UNDER ITS OWN WEIGHT.
4. THE INITIAL RESPONSE OF THE OLD PARADIGM HAS BEEN, AND WILL CONTINUE TO BE, TO ENACT BARRIERS TO ENTRY TO NEW TECHNOLOGY UNDER THE BANNER OF “RELIABILITY, EFFICIENCY, AND OPTIMIZATION.”
5. WHERE KNOWLEDGE IS WIDESPREAD AND DECENTRALIZED THE PRICE MECHANISM HAS BEEN FOUND TO BE THE BEST STRUCTURE FOR COORDINATING DECISIONS AND ALLOCATING RESOURCES.

6. THE RISK OF FAILURE AND THE SIGNIFICANCE (COST) OF FAILURE INCREASE THE GREATER THE DEGREE OF CENTRALIZATION.
7. “TECHNOLOGICAL” ADVANCES IN SMART METERS, DG, IOT, BATTERIES, SMART BUILDINGS, BLOCKCHAIN, THE CLOUD, ETC., ARE ALL CONSISTENT WITH DECENTRALIZED DECISION MAKING.
 1. ALLOWS MORE DECISIONS AND MORE EFFICIENT/BETTER DECISIONS TO BE MADE AT THE LEVEL OF THE INDIVIDUAL USER OR PRODUCER RATHER THAN BY THE RTO AS A CENTRAL PLANNER.

1. THE QUOTE/PARAPHRASE FROM EINSTEIN IS PERHAPS THE MOST IMMEDIATELY RELEVANT TO THE CURRENT STATE OF THE MARKET.
2. THE ORGANIZED RTO/ISO “MARKETS” DO NOT REPRESENT ANYTHING TRULY NEW OR DIFFERENT THAN WHAT WAS DONE IN THE PAST.
 1. AS ALREADY NOTED, NEITHER THE WHOLESALE OR RETAIL ELECTRICITY “MARKETS” ALLOCATE ELECTRICITY.
 2. CENTRALIZED DECISION-MAKING AND CENTRALIZED DISPATCH ARE NOT NEW CONCEPTS.
3. AS SHOULD HAVE BEEN EXPECTED, THE RTO ADMINISTERED MARKETS ARE OVER-ENGINEERED AND REFLECT A LACK OF UNDERSTANDING OR APPRECIATION OF HOW THE MARKET MECHANISM ACTUALLY WORKS.
 1. “EFFICIENCY” AND “OPTIMALITY” ARE THEORETICAL OUTCOMES – NOT FORCED RESULTS.
 2. MARKETS ARE BEST UNDERSTOOD AS A DYNAMIC PROCESS, INFORMED/GUIDED BY THE PRICE MECHANISM, OF ACQUIRING, UPDATING AND ACTING ON INFORMATION. WHILE STATIC EQUILIBRIUM ANALYSIS IS USEFUL TO UNDERSTAND SPECIFIC WELFARE PROPERTIES OF THEORETICAL MARKET SOLUTIONS, IT DOES NOT REPRESENT THE APPROPRIATE STARTING POINT FOR AN ACTUAL REAL WORLD MARKET.

4. THE EXISTING UNDERLYING INSTITUTIONAL STRUCTURE REFLECTS THE INCREASINGLY IRRELEVANT, FALSE AND HARMFUL SEPARATION OF “WHOLESALE” AND “RETAIL” ACTIVITIES.
5. AS QUALITY, I.E., RELIABILITY, IS INCREASINGLY COMMODITIZED VIA TECHNOLOGY AND PERSONAL PREFERENCES THE OLD PARADIGM WILL CEASE TO BE USEFUL AND WILL EVENTUALLY BECOME OBSOLETE.

1. THE (SECOND) QUOTE FROM HAYEK REMINDS TO THINK ABOUT THE COMPLEXITY OF MARKETS AND IN PARTICULAR THE DIFFERENCE BETWEEN COMPLICATED AND COMPLEX.
2. “A COMPLICATED ISSUE, IS ONE IN WHICH THE COMPONENTS CAN BE SEPARATED AND DEALT WITH IN A SYSTEMATIC AND LOGICAL WAY THAT RELIES ON A SET OF STATIC RULES OR ALGORITHMS. IT MAY BE HARD TO SEE, BUT THERE'S A FIXED ORDER IN SOMETHING THAT IS MERELY COMPLICATED AND THAT ALLOWS YOU TO DEAL WITH IT IN A REPEATABLE MANNER. ON THE OTHER HAND, A COMPLEX ISSUE IS ONE IN WHICH YOU CAN'T GET A FIRM HANDLE ON THE PARTS AND THERE ARE NO RULES, ALGORITHMS, OR NATURAL LAWS. THINGS THAT ARE COMPLEX HAVE NO SUCH DEGREE OF ORDER, CONTROL, OR PREDICTABILITY. A COMPLEX THING IS MUCH MORE CHALLENGING — AND DIFFERENT THAN — THE SUM OF ITS PARTS, BECAUSE ITS PARTS INTERACT IN UNPREDICTABLE WAYS.”

3. MARKETS ARE COMPLEX — BUT NEED NOT BE COMPLICATED — A FACT THAT WE HAVE INCREASINGLY IGNORED WITH SIGNIFICANT CONSEQUENCES, E.G., *ON DEFAULT CORRELATION: A COPULA FUNCTION APPROACH*. (WHO KNOWS/UNDERSTANDS THE IMPORTANCE OF THIS PAPER?)
4. “TRUST IS FINE, CONTROL IS BETTER.” (ACTUAL QUOTE FROM A PARTICIPANT AT A FERC CONFERENCE) UNDERLYING THIS PHILOSOPHY IS THE NOTION THAT ELECTRICITY MARKETS, WHILE COMPLICATED, CAN BE “...DEALT WITH IN A SYSTEMATIC AND LOGICAL WAY THAT RELIES ON A SET OF STATIC RULES OR ALGORITHMS.”

1. THE PASSAGE FROM JOHN MUIR SUGGESTS THAT WE SHOULD RECOGNIZE THAT (1) WHAT IS REALLY OF CONCERN IS THE OVERALL PERFORMANCE OF THE ENTIRE ELECTRICITY MARKET AND NOT JUST INDIVIDUAL COMPONENTS AND (2) INCREMENTAL CHANGES SHOULD BE EVALUATED IN TERMS OF THE SUM OF THEIR EFFECTS ACROSS THE ENTIRE MARKET.
2. JUST LIKE ANY MARKET, “THE” ELECTRICITY MARKET IS BEST THOUGHT OF AS AN ECOSYSTEM; AN INTERDEPENDENT SYSTEM COMPRISED OF A MYRIAD OF DIFFERENT TRANSACTION MECHANISMS AND ECONOMIC DECISION-MAKING AGENTS.
3. IN THIS CONTEXT, OPTIMAL AND EFFICIENT AS DESIRABLE OUTCOMES – OR METRICS OF SUCCESS – OF ANY SINGLE COMPONENT – ARE FAR LESS IMPORTANT THAN THE STABILITY, SUSTAINABILITY AND RESILIENCY OF THE ENTIRE SYSTEM.
 1. CONSIDER THE RAMIFICATIONS OF SIGNIFICANTLY HIGH SPOT PRICES ON CREDIT REQUIREMENTS, OVERALL LIQUIDITY AND ULTIMATELY PRICE FORMATION/DISCOVERY. THIS IS NOT TO SAY THAT HIGH PRICES ARE “BAD” BUT UNDERSTANDING ALL OF THE RAMIFICATIONS IS VERY IMPORTANT.
 2. THE KEY IS HOW WELL THE LINKAGES BETWEEN THE VARIOUS COMPONENTS “WORK” TOGETHER TO PRODUCE A STABLE, SUSTAINABLE, AND RESILIENT SYSTEM.

4. DATA IS NOT THE SAME THING AS INFORMATION AND INFORMATION IS NOT THE SAME THING AS KNOWLEDGE. I WOULD ARGUE: DATA IS A NECESSARY (BUT NOT SUFFICIENT) INPUT TO INFORMATION AND SIMILARLY INFORMATION IS A NECESSARY (BUT NOT SUFFICIENT) INPUT TO KNOWLEDGE AND KNOWLEDGE IS A NECESSARY (BUT NOT SUFFICIENT) INPUT TO UNDERSTANDING...ALL OF WHICH TAKES US BACK TO HAYEK.



- THANK YOU FOR YOUR TIME AND PATIENCE.
- IT HAS BEEN A PRIVILEGE TO SHARE MY THOUGHTS WITH YOU TODAY AND I AM GRATEFUL FOR THE OPPORTUNITY.
- I WILL POST A (MUCH) LONGER VERSION OF THIS PRESENTATION ON MY WEBSITE: WWW.FPECONOMICS.COM IN THE NEXT WEEK OR SO IF YOU ARE INTERESTED.
- IF YOU HAVE ANY THOUGHTS OR QUESTIONS PLEASE EMAIL ME AT: RON@FPECONOMICS.COM