“The Wisdom of Crowds”

by James Surowiecki

Potential Application to DTAM Research

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December 2020

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The Key Idea

Francis Galton's visit to the West England Fat Stock and Poultry Exhibition

- A scientist obsessed with two things: measurement of physical and mental qualities, and breeding
- Little faith in the intelligence of the average person, "the stupidity and wrong-headedness of many men and women being so great as to be scarcely credible."
- The ox weight competition
  - Statistical analysis of 787 guesses
  - The mean of the group's guesses = 1,197 pounds
  - The actual weight = 1,198 pounds
  - "The result seems more creditable to the trustworthiness of a democratic judgment than might have been expected."

"The simple, but powerful, truth … at the heart of the book"

Under the right circumstances, groups are remarkably intelligent, and are often smarter than the smartest people in them

- Groups do not need to be dominated by exceptionally intelligent people in order to be smart
- Even if most of the people within a group are not especially well-informed or rational, it can still reach a collectively wise decision
- "Who Wants to Be a Millionaire?"
  - 50%
  - 65%
  - 91%

Focus On Three Kinds of Problems

Cognition

Problems that have or will have definitive solutions

- Who will win the game?
- How many widgets will I sell next quarter?
- Will the court rule in favor of company xyz?
- What is the best place to locate my design center?

Coordination

Requires members of a group (market, subway riders, college students looking for a party) to figure out how to coordinate their behavior with each other knowing that everyone else is trying to do the same

- How do buyers & sellers find each other and trade at a fair price?
- How do companies organize their operations?
- How can you drive safely in heavy traffic?

Cooperation

The challenge of getting self-interested, distrustful people to work together, even when narrow self-interest would seem to dictate that no individual should take part

- Paying taxes
- Dealing with pollution

Keys for Group/Crowd Success

Groups generally need rules to maintain order and coherence

Key to good group decisions

- Diversity
- Independence
- Decentralization

Keys for Group/Crowd Success

Diversity

- Generating a set of diverse solutions is not enough. Crowd also has ability to distinguish good solutions from bad
- Adds perspectives that would otherwise be absent
- Weakens destructive characteristics of group decision making
- Adding in a few people who know less, but have different skills, actually improves group performance
- A diverse group with varying degrees of knowledge better at major decisions then leaving in the hands of one or two people, no matter how smart those people are
  - Between 1984 & 1990 90% of mutual fund managers underperformed the Wilshire 500 index; 95% of bond managers underperformed mkt in recent 5 years
  - Experts bad at “calibrating” their judgment – don’t even know how wrong they are!
  - Even if “experts” exist how do you identify them? Past success no guarantee of future
- Especially important in small groups (avoiding groupthink)
  - Makes it easier for individuals to say what they really think
- Aggregation – not consensus
  - Search for consensus encourages tepid, lowest-common denominator solutions
- Helps preserve independence

Keys for Group/Crowd Success

Independence

- The best collective decisions are the product of disagreement and contest, not consensus and compromise
- Keeps mistakes people make from becoming correlated. Errors don't wreck collective group judgment as long as they don't systematically point in the same direction
- Independent individuals are more likely to have new information rather than the same old data everyone is familiar with
- The more influence group members have on each other, the more likely it is that they will believe the same things and make the same mistakes
  - Possibly individually smarter but collectively dumber
- Danger of "Information Cascades"
  - The Internet Bubble – "Growing at 1,000%!" (… until 1996)

Keys for Group/Crowd Success

Decentralization

- Definition – Power does not fully reside in one central location, and many of the important decisions are made by individuals based on their own local and specific knowledge rather than by an omniscient or farseeing planner
- It fosters and is fed by specialization - of labor, interest, attention, etc.
- Crucial to tacit knowledge – knowledge that can't be easily summarized or conveyed to others because it is specific to a particular job, place, or experience. But tremendously valuable
- Strength- encourages independence & specialization with coordination
- Weakness – risk that valuable information uncovered in one part of the system will not find its way through the rest of the system
- Need to find right balance between two imperatives
  - Making individual knowledge globally and collectively useful
  - Allowing it to remain resolutely specific and local
- Example - Linux

“The Wisdom of Crowds” in Market Research?

Semiconductor Forecast Effort for Q1 2008

- Consensus “Expert” Forecast = -9.0%
- Aggregate Group Forecast = -7.2%
- Actual Calculated Growth = -6.1%

Semiconductor Forecast Effort for 2008

- Consensus “Expert” Forecast = 4.0% -> 4.1%
- Aggregate Group Forecast = 4.3%
- Actual = -5.1%

“The Wisdom of Crowds” – Recent Example

2020 Presidential Election Polling Question

- Question – “What percentage of your social contacts will vote for each candidate?”
- Question to Some - “What percentage of people in your state will vote for each candidate?”

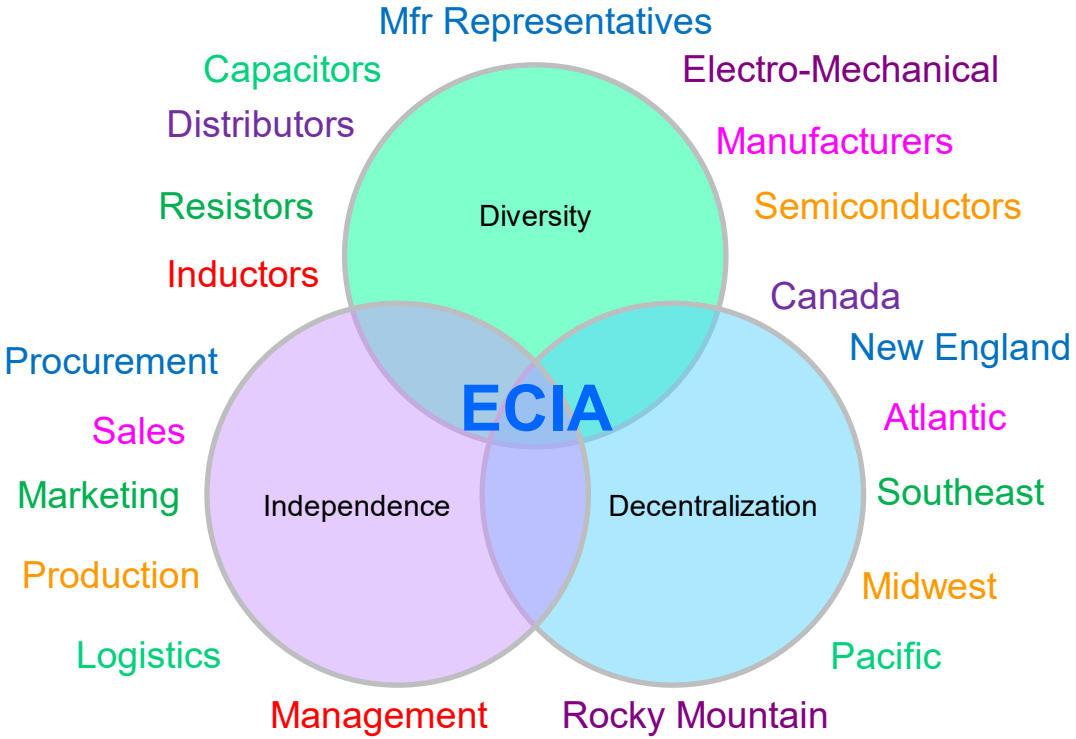
2020 Election Accuracy

- National popular vote average of polls = Biden +8.4%
- The traditional question that asked about voters’ own intentions = Biden +9.3%
- Question about social contacts = Biden +3.4%
- Current Results = Biden +3.7%

More Accurate than traditional polls in:

- 2016 U.S. presidential election = Trump win
- 2017 French presidential election
- 2017 Dutch parliamentary election
- 2018 Swedish parliamentary election
- 2018 U.S. election for House of Representatives

ECIA – All the Ingredients for Success!



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Proposal: Annual DTAM by Region

Location	State/Country	Passives	Interconnect/ Connector	Electro-Mechanical	Semicon ductors	Total DTAM
HUNTSVILLE	ALABAMA					
PHOENIX	ARIZONA					
IRVINE	CALIFORNIA					
LOS ANGELES	CALIFORNIA					
SAN DIEGO	CALIFORNIA					
SAN JOSE / SACRAMENTO	CALIFORNIA					
DENVER	COLORADO					
CONNECTICUT	CONNECTICUT					
FLORIDA	FLORIDA					
ATLANTA	GEORGIA					
CHICAGO	ILLINOIS					
INDIANAPOLIS	INDIANA					
BALTIMORE	MARYLAND					
BOSTON	MASSACHUSETTS					
DETROIT	MICHIGAN					
MINNEAPOLIS	MINNESOTA					
ST. LOUIS / KANSAS CITY	MISSOURI					
NORTH JERSEY	NEW JERSEY					
SOUTH JERSEY	NEW JERSEY					
LONG ISLAND	NEW YORK					

Location	State/Country	Passives	Interconnect/ Connector	Electro-Mechanical	Semicon ductors	Total DTAM
ROCHESTER	NEW YORK					
RALEIGH	NORTH CAROLINA					
CLEVELAND	OHIO					
DAYTON	OHIO					
PORTLAND	OREGON					
PITTSBURG	PENNSYLVANIA					
PUERTO RICO	PUERTO RICO					
AUSTIN	TEXAS					
HOUSTON	TEXAS					
DALLAS / TULSA	TEXAS/OKLAHOMA					
SALT LAKE CITY	UTAH					
SEATTLE	WASHINGTON					
MILWAUKEE	WISCONSIN					
BRAZIL	BRAZIL					
MONTREAL	CANADA					
OTTAWA	CANADA					
TORONTO	CANADA					
VANCOUVER / CALGARY	CANADA					
MEXICO	MEXICO					
TOTAL						

Proposal: Quarterly DTAM by Component Category

Category	Component	Q1 2020	Q2 2020	Q3 2020	Q4 2020	2020
Passive						
	Capacitors					
	Resistors					
	Inductors					
	Other (Freq Control, Filters, etc.)					
	TOTAL					
Semiconductor						
	Memory IC					
	Processor IC (MPU, MCU, DSP)					
	Logic IC (General Purpose & Special)					
	Analog IC (General Purpose & App Specific)					
	Discretes (Diode, Xstor, Rectifier, Thyristor)					
	Optical (LED, Image Sensor, etc)					
	Sensors (Solid State)					
	TOTAL					
Interconnect (Military & Commercial)						
	TOTAL					
Electro-Mechanical						
	Power Supplies					
	Relays					
	Switches					
	Other (Battery, Motor, Fan, Heatsink, Sensor)					
	TOTAL					
Displays						
	TOTAL					
TOTAL						

How Does Accuracy Compare to Previous DTAM Survey?

Even a traditional survey requires some level of estimation

- Estimates for “Non-Participating” Companies
- Typical estimates range between 5% to 40% depending on category

Variations are also introduced by different survey respondents

- Different understandings of definitions
- Different methods of measurement
- Inaccuracies in internal measurements
- Differences within and between companies

PROPOSAL – Begin with Annual and Quarterly Estimates for 2020

REQUIREMENT – **Strong** survey participation

Ten is not a crowd

SUPPORT?

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