Observations from the Financial World

Types of Real Uncertainty

Complexity and the Nature of Uncertainty

Heterogeneity and QEH

Ambiguity and Heuristics

Observations from the Financial World

Sitting around the table:

"I ran the model, and spreads will widen 62bp with an std of 7bp."

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...they will be selling something north of $2 billion

...their going to take two or three weeks even if they are aggressive

...wants to own this market, and they will make a strong market

...their inventory already has got to be 70 or 80 percent of capacity

...will get back to me with a better sense of how much leverage there is those trades

...what about that big reallocation. Is it still going on? Are they looking bonds?

Is It a Number or a Story?

Chapter 15 of <u>The End of Theory</u>

Three types of extrinsic unpredictability (of unknown unknowns)

a. The enemy might try to break your defenses in one of a number of spots.

b. The enemy attacks using an innovative strategy.

c. The enemy takes a time machine back from 2000 AD and attacks you with helicopter gunships.

Which are the examples in Hendry?

Which is the bomb over Hiroshima?

Does the type of unforeseeable event/unknown unknown matter?

Is one "worse" than another?

Is the QEH different depending on which of these is leading to the ambiguity?

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Types of Real Uncertainty
     Does the type of unknown unknown matter?

Complexity and the Nature of Uncertainty

Complexity Spectrum	⇔	Type of Uncertainty
Mechanistic		None
Stochastic		Intrinsic unpredictability: Unknown known
Nonlinear dynamic		Instance unpredictability: Known unknowns
Strategic		Extrinsic unpredictability: Unknown unknowns

 As society becomes more complex:

- Does Intrinsic unpredictability drop?
- Do Instance and extrinsic unpredictability increase?

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Complexity and the Nature of Uncertainty

    Does the dominant uncertainty change with complexity?

Heterogeneity and QEH

    Ambiguity leads to heterogeneity

    Heterogeneity leads to over-identified systems (e.g. Agent-based models)

    Over-identified systems lead away from unique solutions

    The absence of a unique solution leads to a qualitative approach

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Heterogeneity and QEH
    Stories rather than numbers

Ambiguity and Heuristics
    Move from optimization to heuristics
    With Type c unpredictability, will heuristics throw out information?

    The cockroach, unknown unknowns, and coarse behavior heuristics.
        Bookstaber and Langsam, (1985), Journal of Theoretical Biology

    So, ironically, does imperfect information lead to using even less information?

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