A Few Remarks on History of JDM and Web-Based Studies

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A Personal History of Computing in Psychology

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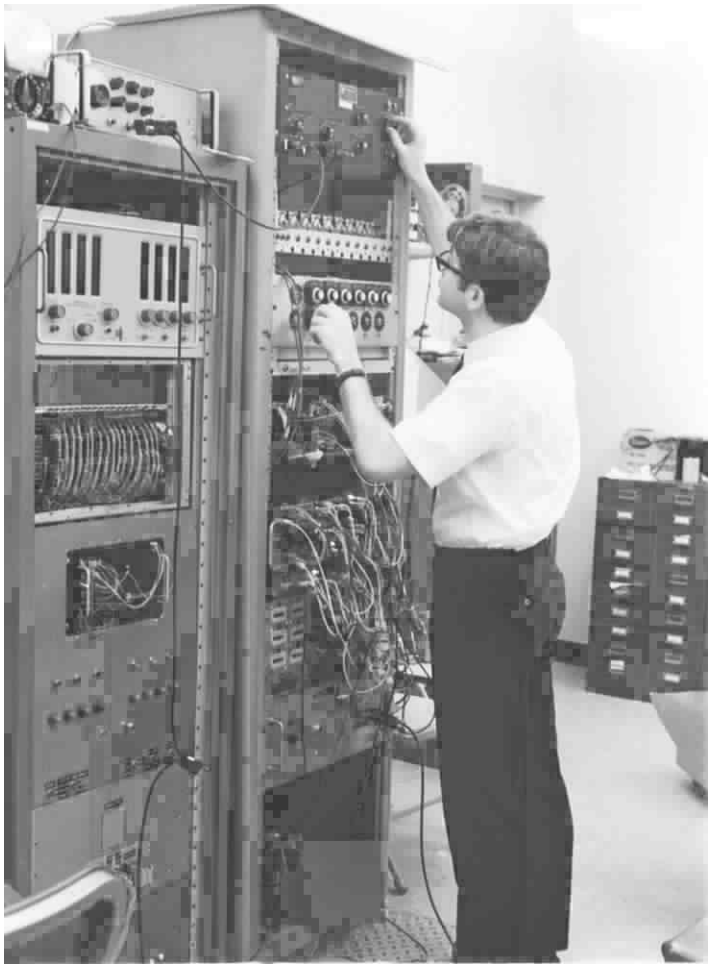
Lab Research in the 1960s

Michael at the Keypunch-- ~ 1965-66 in Parducci Lab in Franz Hall, UCLA

The "monster" in the basement --Parducci Lab



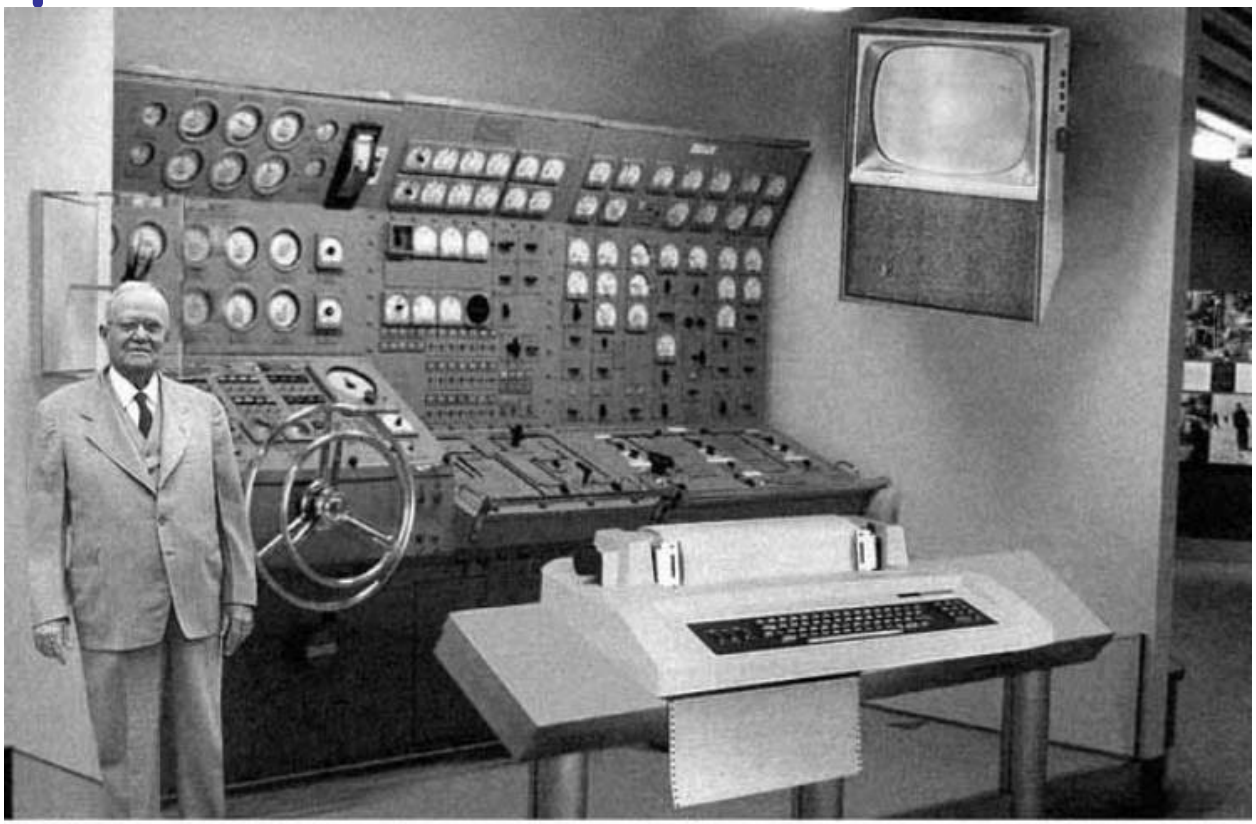
- This machine's relays and rheostats controlled equipment in the next room. Programmed by paper tape reader, knobs and dials, it recorded Ss' responses on computer cards.

We had to use Mainframe Computers to Analyze data-- One Run a Day…

The IBM 360/91

- New computer: one floor in engineering building.
- Had 36 terminals on campus to allow typed entry instead of cards.
- FMS, ICP, PL1, FORTRAN
- 4 MB of RAM! —could see display. One person might get 800 KB all at once!

We all Awaited the Personal Computer…Predicted for 2004



Scientists from the RAND Corporation have created this model to illustrate how a "home computer" could look like in the year 2004. However the needed technology will not be economically feasible for the average home. Also the scientists readily admit that the computer will require not yet invented technology to actually work, but 50 years from now scientific progress is expected to solve these problems. With teletype interface and the Fortran language, the computer will be easy to use.

Difficulties of Lab Research

- Limited "seating" in lab, limited hours
- Reconfigure equipment for each study
- Lab assistant needed who has skill to trouble-shoot problems with equipment
- Experimenter(s) must be present
- Experimenter bias effects...

1970: The Lab Computer -- Programmable in BASIC-- Expensive, But it still lacked real power

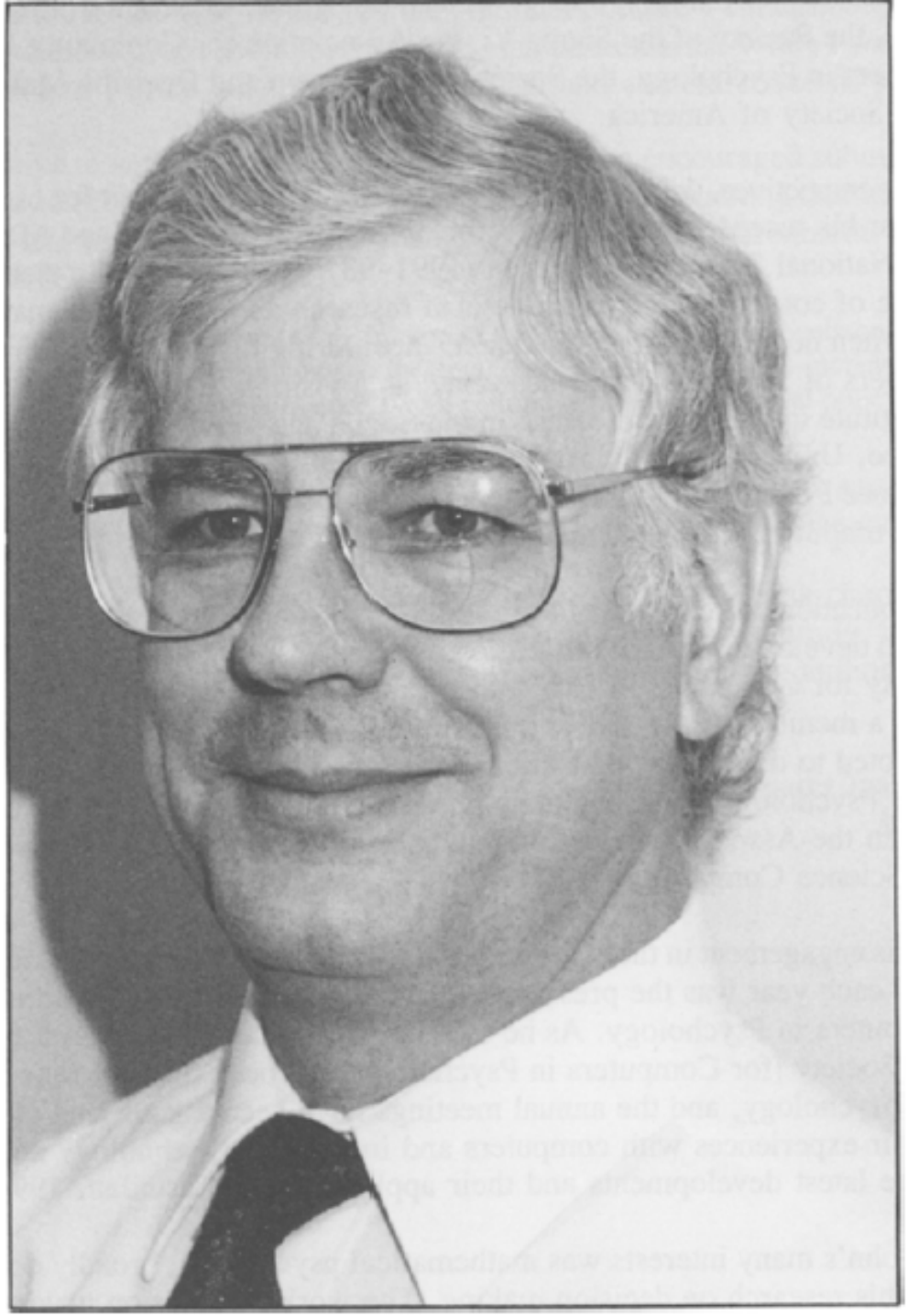
1980s: Then came affordable personal computers

BASIC programming

- Commodore 64 (or 128) computers inexpensive, could be used to collect data, as well as analyze them, or analyze theories.
- Many programs written to do statistics, run experiments on RT, JDM, simulate, analyze models.

SCiP: Society for Computers in Psychology 1970s- present

- http://www.scip.ws/
- N. John Castellan, Jr. Linking Math-Psych, JDM, and SCiP. Died young. His history: cornucopia or Pandora's Box.



One Computer per Participant

- Still limited to facilities in a lab
- Networks made it more efficient to assemble data from different participants and to mediate interactions between participants.

1989-90: The WWW…
1995: Browsers & HTML2

- One could now:
- …Test large numbers of participants
- …Test people at remote locations
- …Recruit people with special characteristics
- …Run the same study in the lab and via the Web for comparison

My First Web Studies

- I wanted to compare Highly Educated Participants with Undergraduates.
- Critical Tests refuted then-popular theories of Decision Making
- Recruit PhDs who are members of SJDM and SMP and studied DM.
- Recruit and Test participants via the WWW

Comments on History of Judgment and Decision Making Research and Contributors to the Field

JDM figures (1930-1970)

- L. Thurstone, L. Humphreys,
- E. Brunswik, JP Guilford
- H. Helson, C. Hovland, F. Heider,S. Asch
- W. Edwards, C. Coombs, N. Cliff
- Guillicksen, W. Torgerson, SS Stevens
- R. Duncan Luce, K. Hammond
- N. H. Anderson, A. Parducci

Rev. Thomas Bayes 1702-61

- Compute probability of hypothesis given data based on revising prior beliefs.

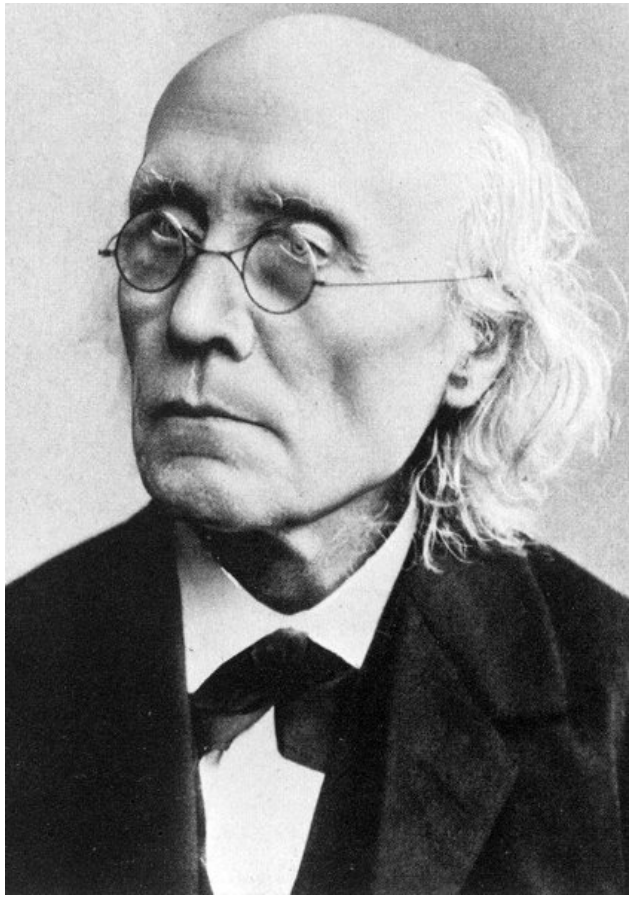
Daniel Bernoulli- 1738

The mathematically rigorous treatment of risk began with Daniel Bernoulli in 1738.

- Bernoulli attempted to explain the St. Petersburg Paradox which involved observed behavior when people were offered the chance to play a game with an infinite expected value.
- It was noted that people would only pay small amounts to play the game, showing that they were not acting on expected values.
- Bernoulli developed "expected utility theory":
  - *"The determination of the value of an item must not be based on the price, but rather on the utility it yields…. There is no doubt that a gain of one thousand ducats is more significant to the pauper than to a rich man though both gain the same amount."*

- Bernoulli referred to mathematical utility functions, even suggesting one, log utility, that would resolve the St. Petersburg Paradox.

Gustav Fechner 1860



- Physicist, created psychophysics. Fechner's Law inspired by Bernoulli, derived from Weber: $\Psi = \log \phi$

L. L. Thurstone

- Psychophysics, scaling, factor analysis, & psychometrics.
- Scaling without physical measures.
- Student: L. Tucker

Von Neumann & Morgernstern

- Economics and Mathematics, Game theory. Axiomatized Expected Utility Theory

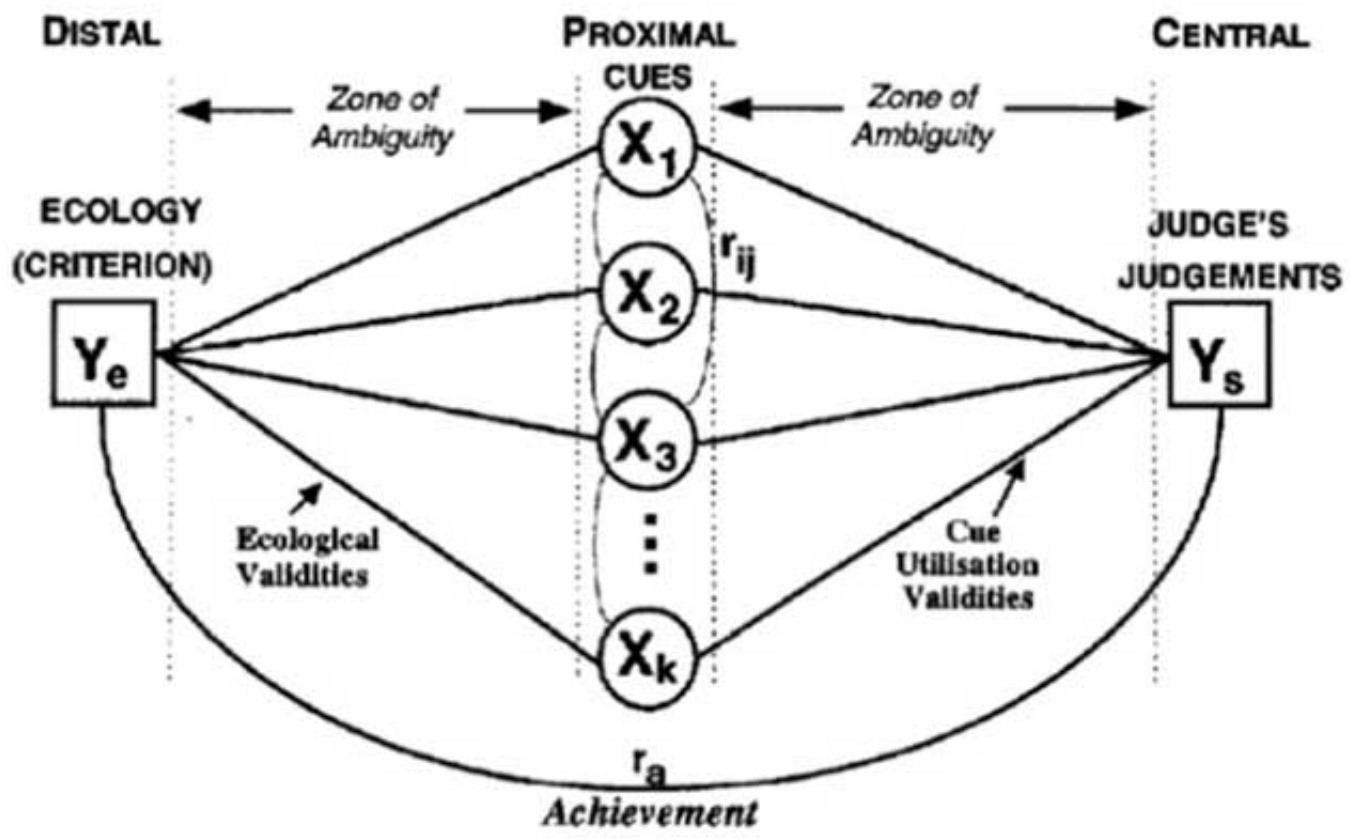
Maurice Allais

- Economist. Proposed Allais paradoxes to refute EU and SEU theories.

Egon Brunswik

- Brunswik worked on the structure of the environment and how people use probabilistic relations to predict (make a best bet) about perception. Ken Hammond.

Lens Model


DISTAL
PROXIMAL
CUES
CENTRAL
Zone of Ambiguity
Zone of Ambiguity
ECOLOGY
(CRITERION)
JUDGE'S
JUDGEMENTS
Y_e
X_1
X_2
X_3
X_k
r_{ij}
Y_s
Ecological Validities
Cue Utilisation Validities
r_a
Achievement

Allen Parducci

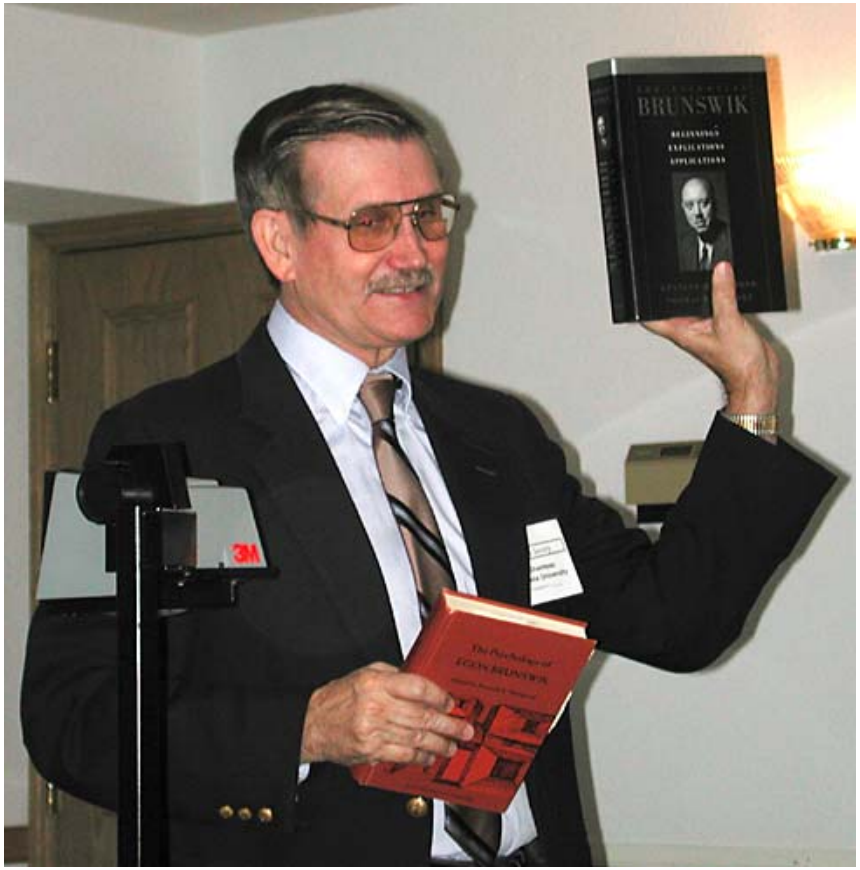
- Contextual Effects in Judgment; Psychophysics and Happiness.

R. Duncan Luce (& Birnbaum)

Norman H. Anderson

- Information integration; functional measurement. Algebraic models
- Students: James Shanteau, Lola Lopes, David Weiss, others.

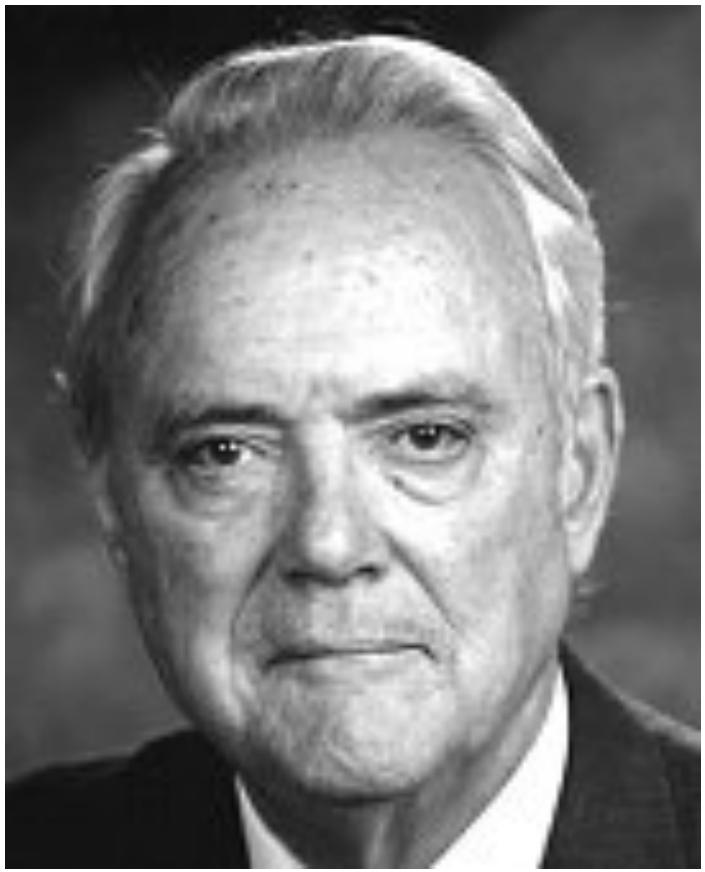
James C. Shanteau

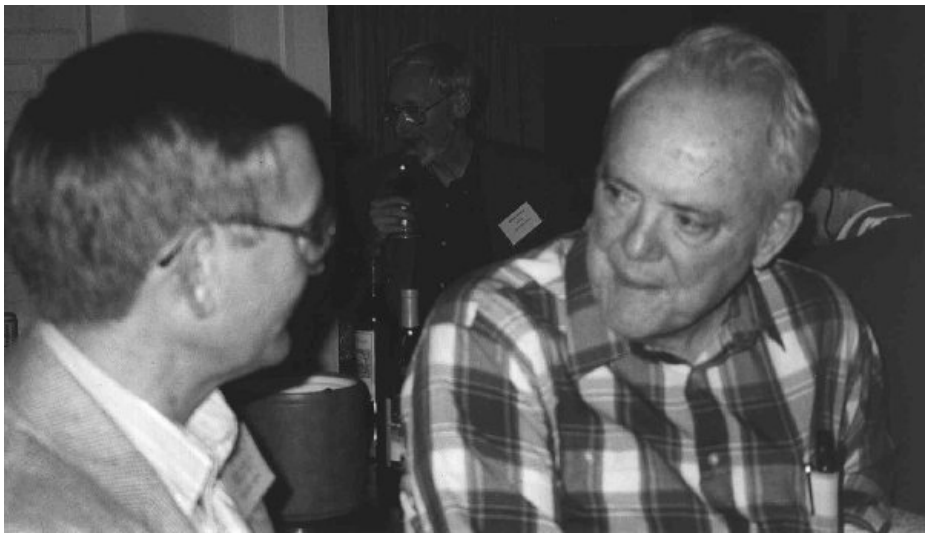


1980 (after Psychonomics), Shanteau & Gettys

- First meeting.
- Brown Grier talk on history of JDM research
- Shanteau, Luce, McClelland, Link, Einhorn, and about 30 others. Students of mine: Barb Mellers, Steve Stegner, Al Schepanski, Mike Hagerty, Colleen (Surber) Moore.

Ward Edwards





Risky Decision Making 1950s, Bayesian inference, A. Tversky.

Edwards Bayesian Research Conferences

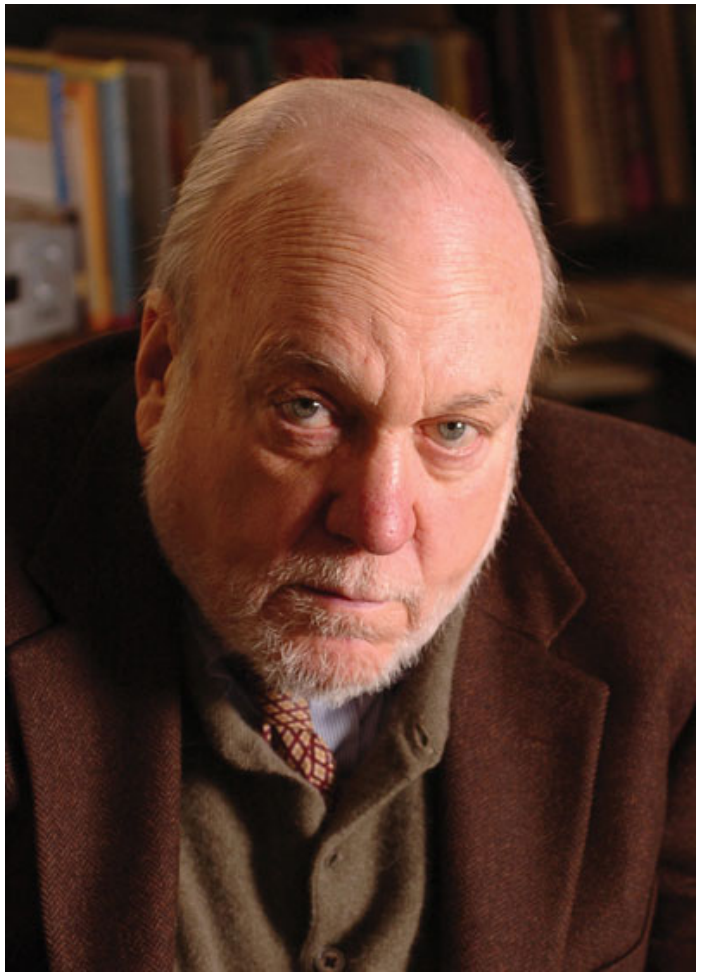
- Held first in Michigan 1960s.
- 1974-2003 at Sportsman's Lodge, Encino, CA
- 2004-2018 at California State University, Fullerton
- Invited to 2020 meetings in Fullerton, schedule TBA. ~ Dan Cavagnaro.

Clyde Coombs

- Coombs worked in mathematical models, -- studied cases where there is an "ideal" point and so preference is not monotonic function of value. Students included Tversky, Dawes, Fischhoff, McClelland.

Tversky & Kahneman-prospect theory, heuristics & biases

Robyn Dawes



- Improper linear models often outperform clinical judgments. Predicting divorce example.

SJDM--39 Years Later

- SJDM large meeting, parallel sessions. Hundreds of participants.
- www.sjdm.org
- Brunswik, Edwards Bayesian, JDM-pre conference at Social Psych, other special groups still meet.

Future JDM

- Undergraduate Survey Course?
- Chapter in Introductory Psychology or Introductory Economics texts?