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# The Logics of Diversity

# Normative Logic

# Historical Logic

# Bigger Pool Logic

# Cleavage Logic

Diversity

**Ability**

# Performance Logic

**Diversity**  
**Ability**



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**THE**  
**DIFFERENCE**

HOW THE POWER OF DIVERSITY  
CREATES BETTER GROUPS, FIRMS,  
SCHOOLS, AND SOCIETIES

# Differences Inside our Heads

interpretations

predictive models

perspectives

heuristics

# Connected to Tasks

interpretations

predictive models

*prediction*

perspectives

heuristics

*problem solving*

PREDICTION







# West Virginia



# Diversity Prediction Theorem

Crowd Error = Average Error - Diversity

$$(c - \theta)^2 = \frac{1}{n} \sum_{i=1}^n (s_i - \theta)^2 - \frac{1}{n} \sum_{i=1}^n (s_i - c)^2$$



# Galton's Steer

Crowd Error = Average Error – Diversity

$$0.6 = 2,956.0 - 2955.4$$

# PROBLEM SOLVING

# A Test

- Create a bunch of agents and rank them by their performance on a problem.
- All of the agents must be “smart”

# Experiment

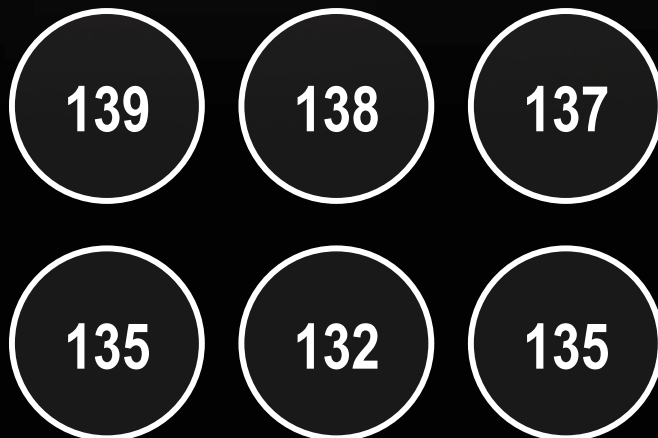
Group 1: Best 20 agents

Group 2: Random 20 agents

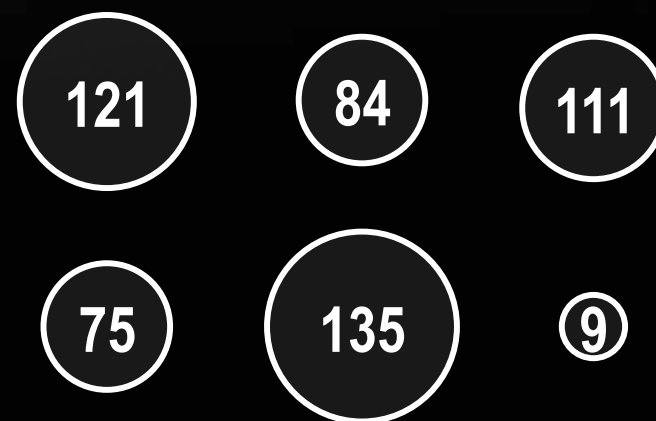
Have each group work collectively - when one agent gets stuck at a point, another agent tries to find a further improvement. Group stops when no one can find a better solution.

# The IQ View

## Alpha Group



## Diverse Group



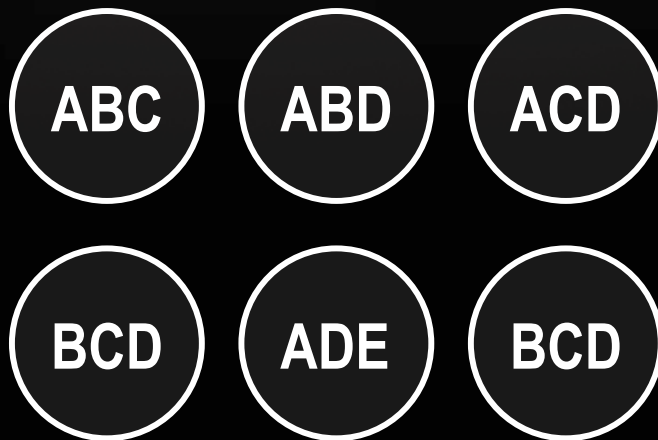
The diverse group almost always outperforms  
the group of the best by a substantial margin.

*See Lu Hong and Scott Page*

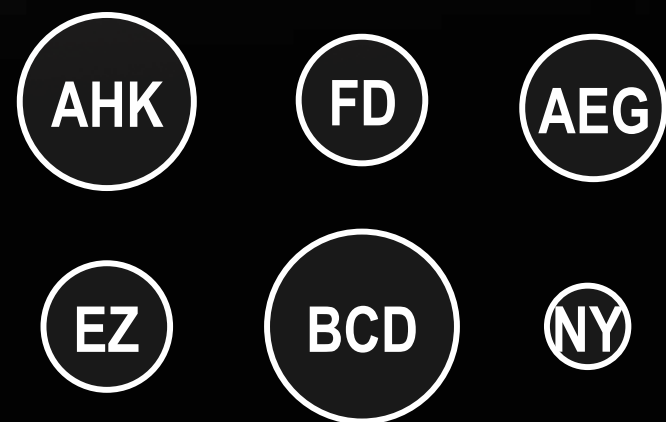
*Proceedings of the National Academy of Sciences (2002)*

# The Toolbox View

## Alpha Group



## Diverse Group



# What Must be True?

**Calculus Condition:** *Problem solvers must all be smart-  
-we must be able to list their local optima*

**Diversity Condition:** *Problem solvers must have  
diverse heuristics and perspectives*

**Hard Problem Condition:** *Problem itself must be difficult*



# Gravity Defying Institutions

*Don't Just Open The Yellow Pages*



# *Preferential Attachment*



# Power Law



A graph on a black background showing a distribution curve. The curve starts at a very high point on the left and tapers off to the right. A vertical line is drawn at the peak of the curve. The area under the curve to the left of this line is shaded in a light green color, while the area to the right is shaded in a yellow color. A white arrow points from the text to the vertical line.

170 Million People  
7 inches tall