The Human Element…

in Individual and Institutional Investing

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With thanks to Prof. Meir Statman, Santa Clara University,
James Montier, Dresnder Kleinwort Wasserstein, &
Arnie Wood, Martingale Asset Management

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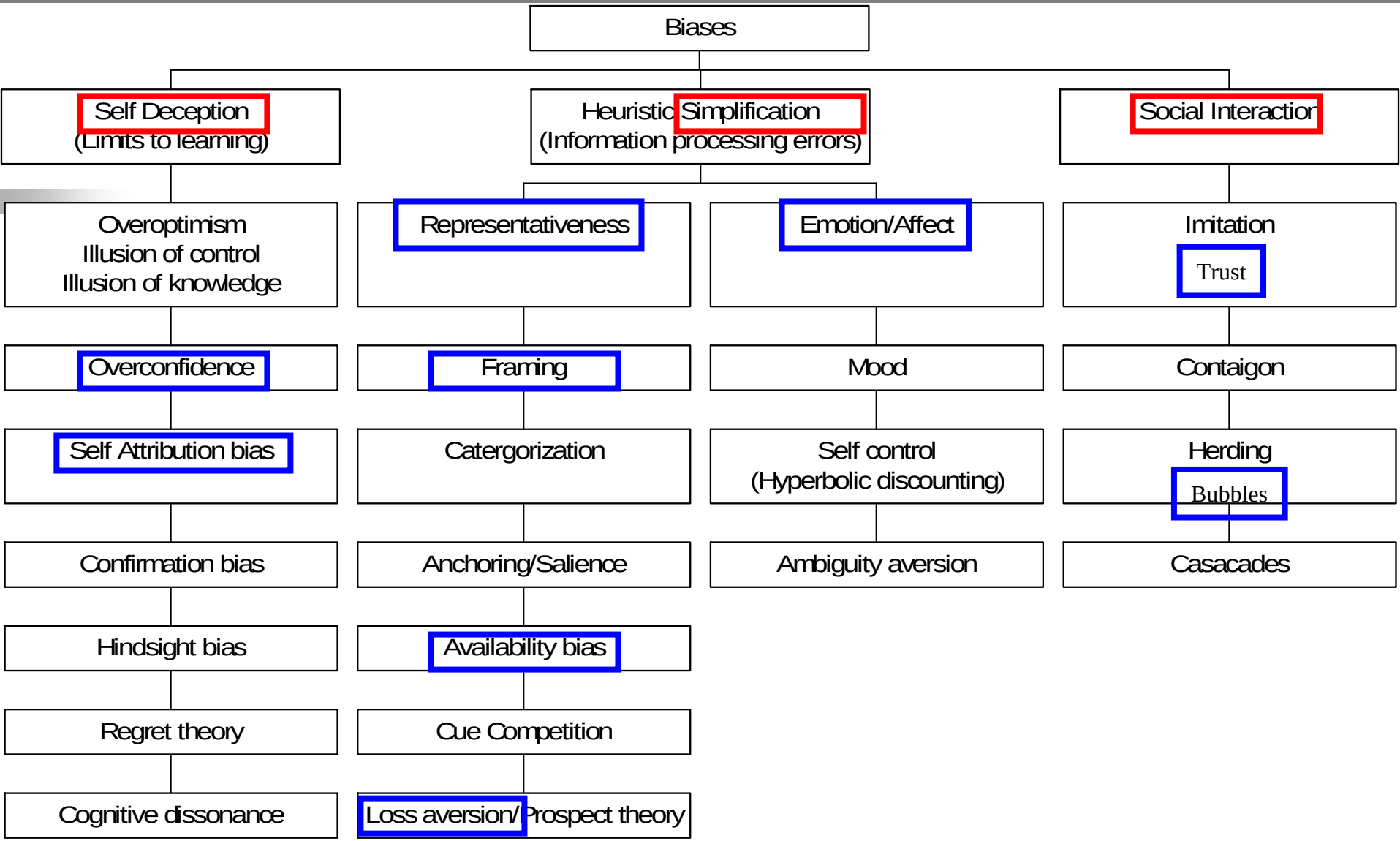
"We have met the enemy… and he is us…" - Pogo

- ***The Human Element* in:**
  - 1) Individual Investors
  - 2) Institutional Investors
  - 3) Investment Committees

Behavioral Finance Framework



Source: James Montier, Dresnder Kleinwort Wasserstein

Behavioral Finance Buzzwords

- **Self-attribution Bias**
  - *Skill/Bad Luck versus Dumb Luck/Poetic Justice*
- **Representativeness Bias**
  - *Law of Small Numbers*
- **Familiarity Bias**
  - *Home Country vs Foreign, Employer Stock*
- **Loss Aversion**
- **Impact Bias**
  - *Over-reaction, under-reaction, anchoring*
  - *Desires & Fears> Reality*
- **Empathy Gap**
  - *Cool Analysis versus Hot Blood*

1) The Human Element in Individual Investors:

The Story of Sharon and Russ

- **Sharon and Russ watch CNBC all the time.**

  They have all their money in the stock market.

- **They trade frequently.**
- **They concentrate their portfolio in a few stocks.**

Sharon and Russ

"Russ works hard, it's almost demeaning that he works this physically hard. It should be more mental."

"We are trying to make some aggressive money very quickly,"

AMYLIN Pharmaceuticals
(Familiarity Bias, Empathy Gap)

The Story of Larry Ellison

Larry Ellison's quest for the perfect yacht began four year ago after a girlfriend slighted his 80-foot sailboat Sayonara.

San Jose Mercury News
July 22, 2000

“That’s a yacht!” she exclaimed, pointing to a larger white luxury craft floating nearby.

(Impact Bias)

“She made me feel terribly inadequate,”

“As a result, I went on a search to reclaim my adequacy.”

The Story of Jim Clark

“I just want to have more money than Larry Ellison. I don’t know why.”

Jim Clark of Silicon Graphics, Netscape and Healtheon in an interview with Michael Lewis, New York Times, October 10, 1999.

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What do investors want?

Investors want everything:

Highest returns

No risk

No taxes

No fees

1) The Human Element in Individual Investors:

- Loss Aversion
- Over-confidence (Self-attribution Bias)
- Regret (Empathy Gap)
- Lottery & Insurance Portfolios

Gamble A

- 1) You Receive $1000
- 2) Now Choose Between
  - a) A sure gain of $500
  - b) A 50% chance to win $1000 and 50% chance of $0

Gamble B

- 1) You Receive $2000
- 2) Now Choose Between
  - a) A sure loss of $500
  - b) A 50% chance of no loss and 50% to lose $1000

a) Loss Aversion… Utility Function

Gamblers' Results:

- **A)** 84% Choose the Sure Thing:
  - $1000 + $500 = $1500, zero variance
- **B)** 69% Choose to Gamble:
  - $2000 less either $0 or $1000 = $2000 or $1000
- **Conclusions:**
  - **People hate losses more than they like gains**
  - **People do not frame portfolios as a whole**

a) Loss Aversion … Utility Function

- **Coin toss: lose $100…. Win ??**
- **Paul Samuelson's wager**:
  - Coin toss: win $200, lose $100
  - Colleague's response: "no" for one toss, "yes" for 100 x
- **Loss Aversion Factor ~ 2.5x**
- 1 toss Utility = 50%*1*200 + 50%*2.5*(-100) = **-25**
- 2 toss Utility =

  25%*win both+50%*split+25%*lose both =

  .25*400 + .5*100 + .25*2.5*(-200) = **+25**

Myopic Loss Aversion and the Equity Premium Puzzle, Shlomo Benartzi and Richard Taylor, Quarterly Journal of Economics 1998

b) Over-confidence – Self-attribution Bias

- **1) Some people will have accidents, but not us…**
- **2) 88% of Drivers in the US "Above Average"***
- **3) Some people will have stupid kids, but ours will be gifted.**

* *Traffic Safety*, Science Serving Society, 2004

b) Over-confidence – Self-attribution Bias

"Stubbornness we depreciate
Firmness we condone

The Former is our neighbor's Trait
The Latter is our Own"

-James Wooden

b) Over-confidence – Self-attribution Bias

"Stubbornness we depreciate
Firmness we condone

The former is our neighbor's trait
The latter is our own"

-James Wooden

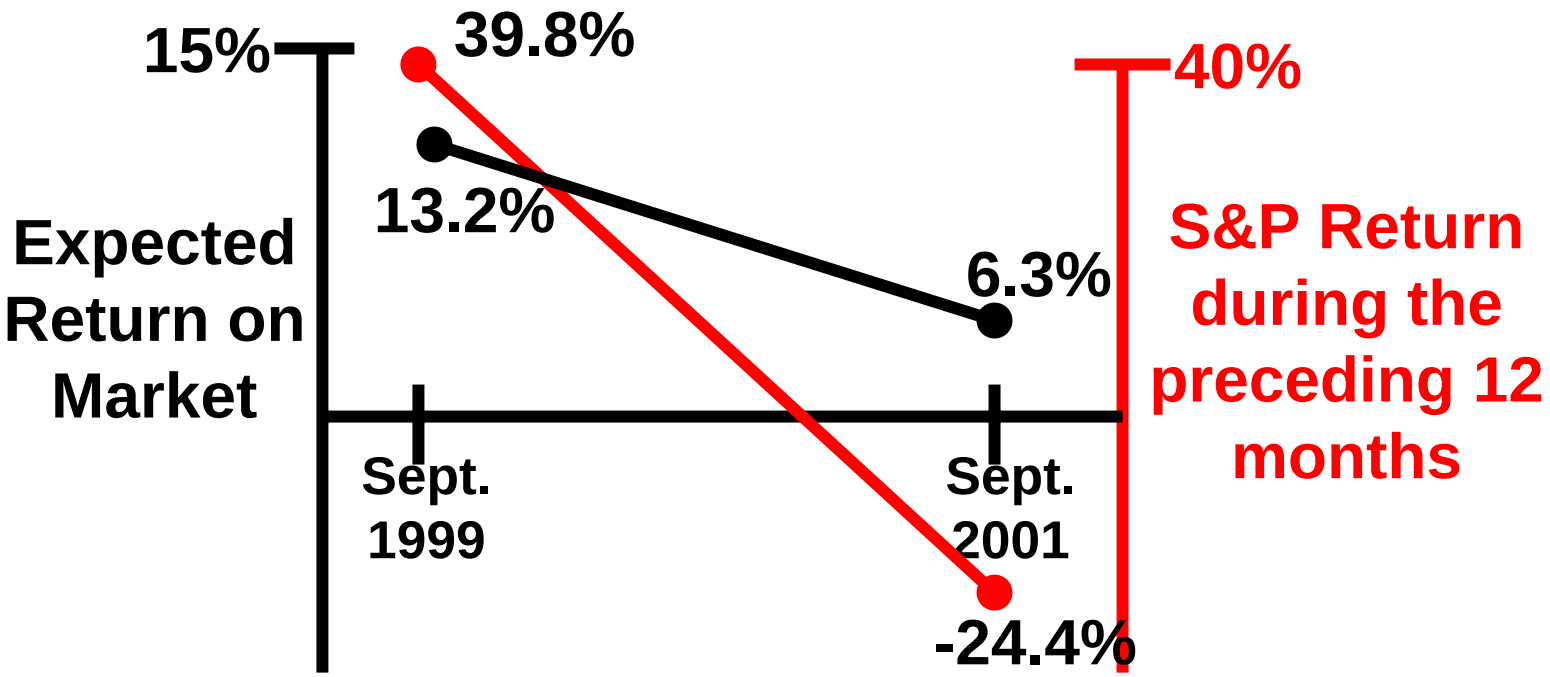
"We must believe in luck. How else can we explain the success of those we don't like."

-Jean Cocturan

b) Over-confidence –*Representativeness Bias*

"What is the Expected Return of Stocks?"

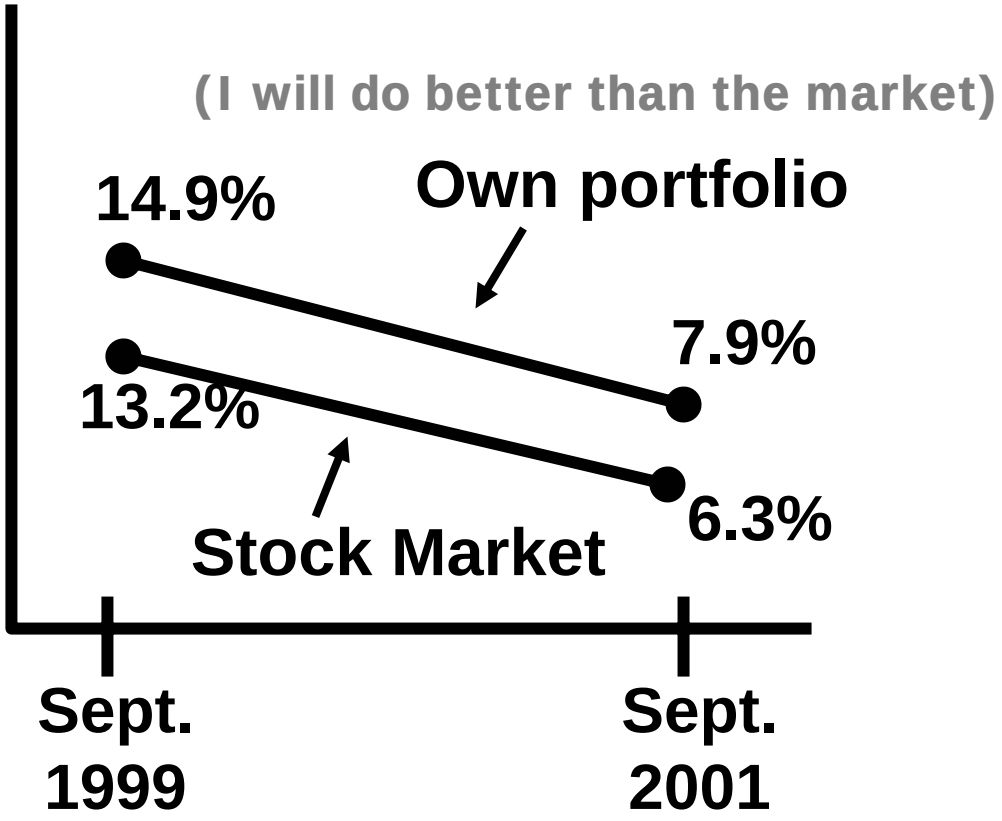
(High expected returns follow high realized returns)



Source: Gallup

b) Over-confidence
(Self-attribution & Familiarity Bias)

"What is the Expected Return of YOUR Stocks?"

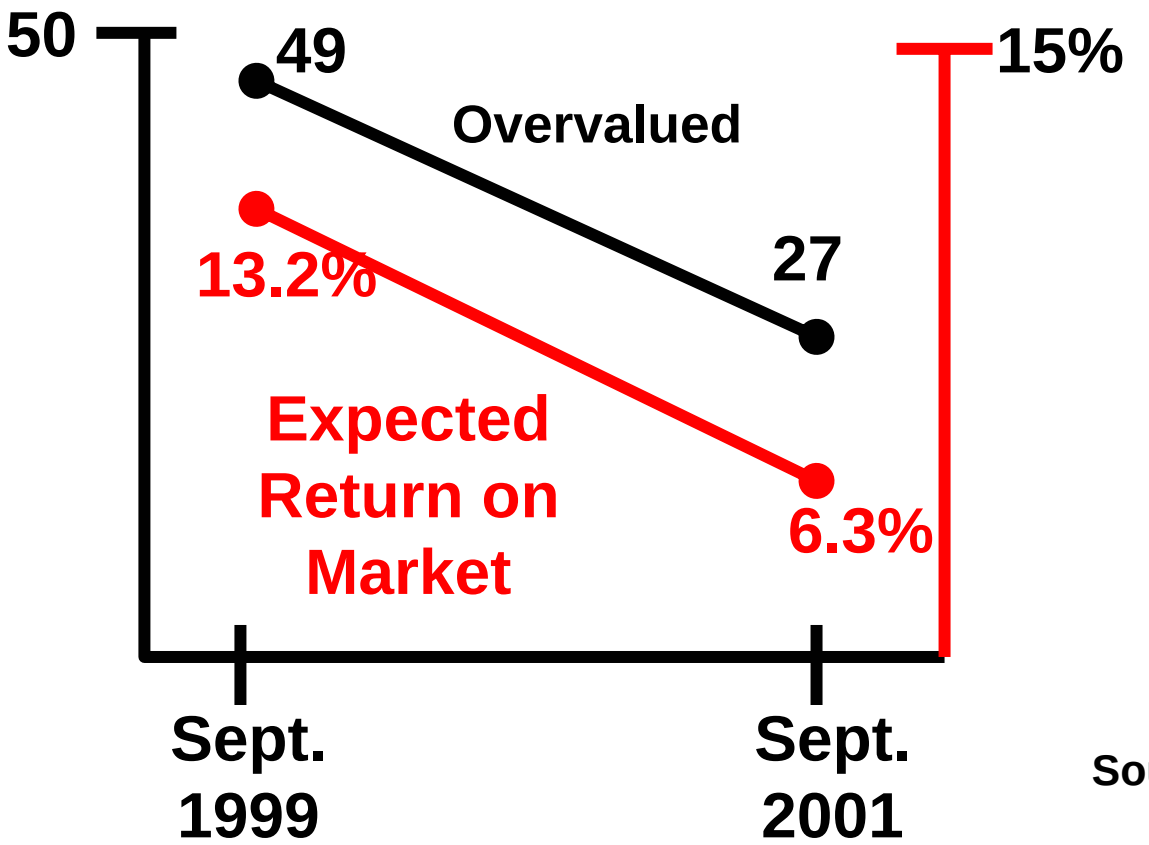


Source: Gallup

b) Over-confidence

"Is the market overvalued?"

(An overvalued market offers higher expected returns....)

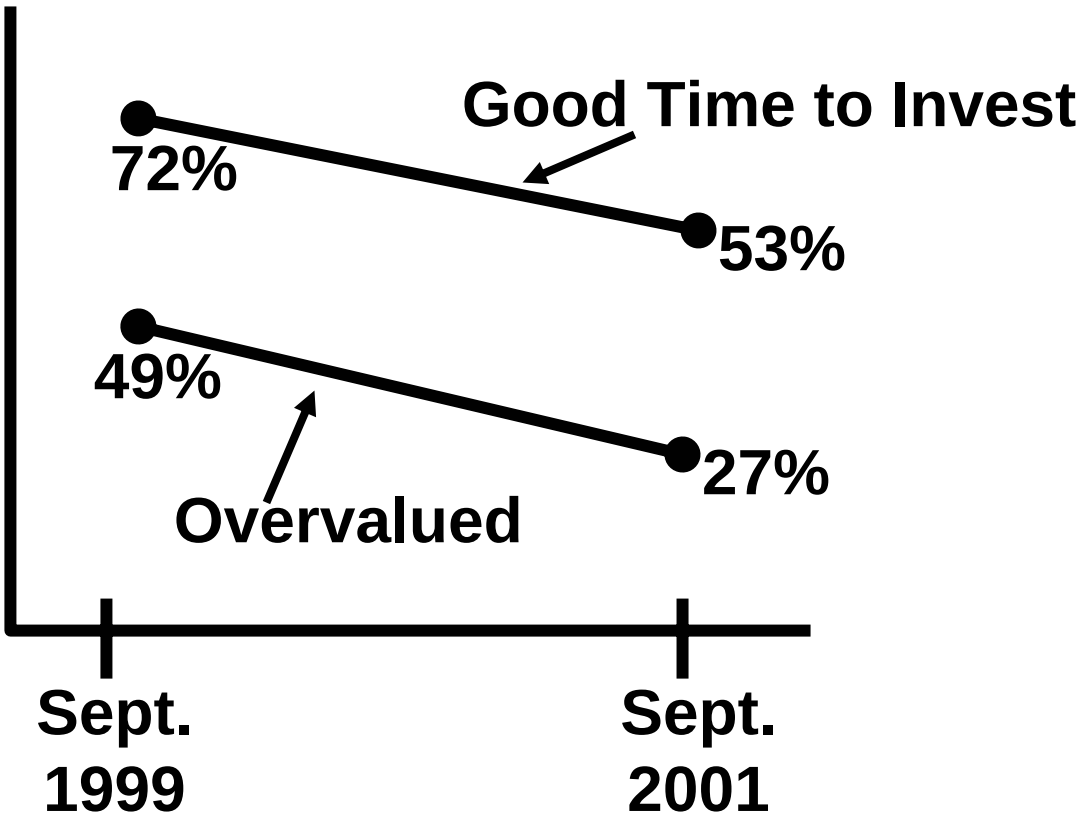


Source: Gallup

b) Over-confidence

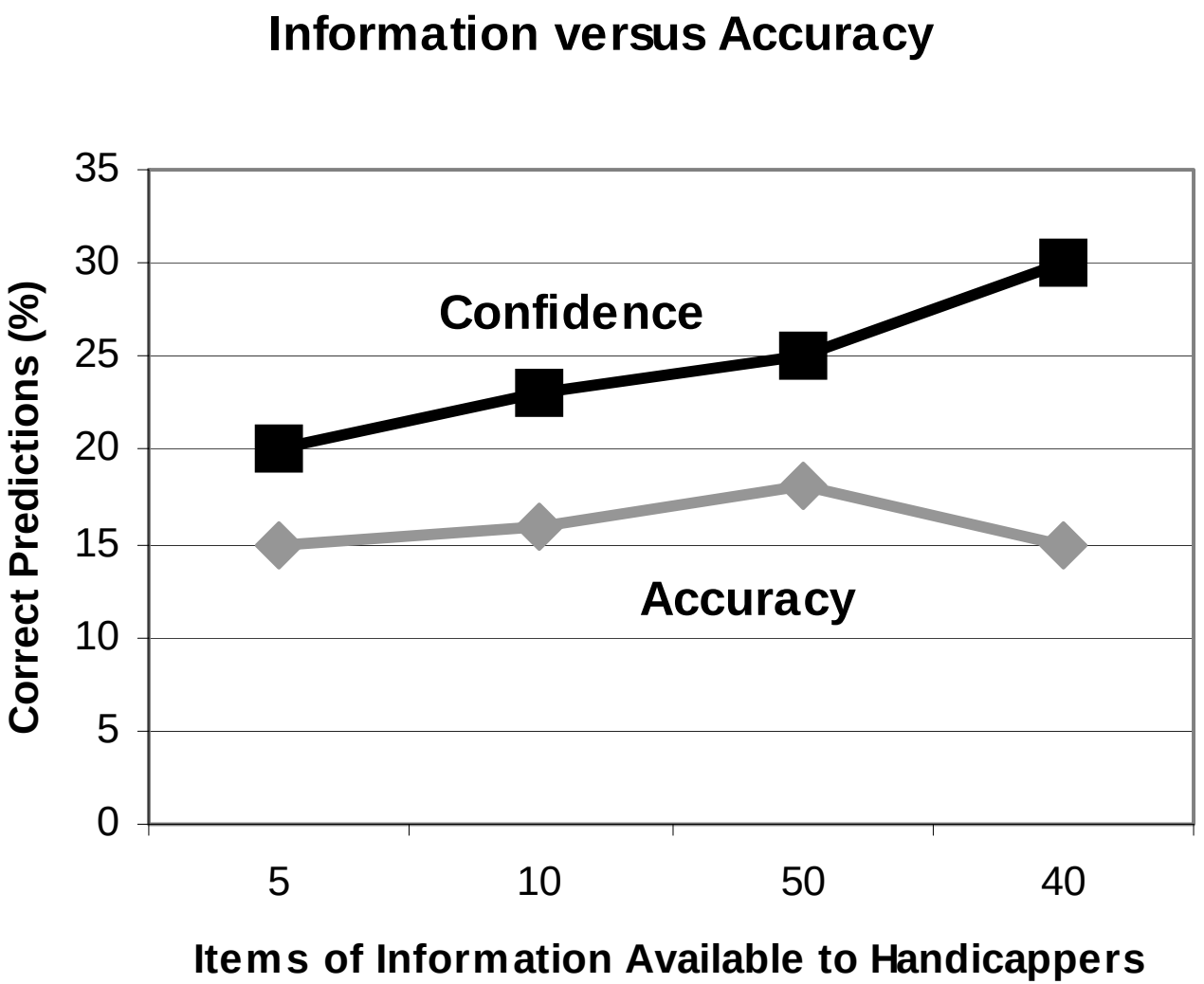
"Is this a good time to invest?"

(Yes ...but the market is overvalued)



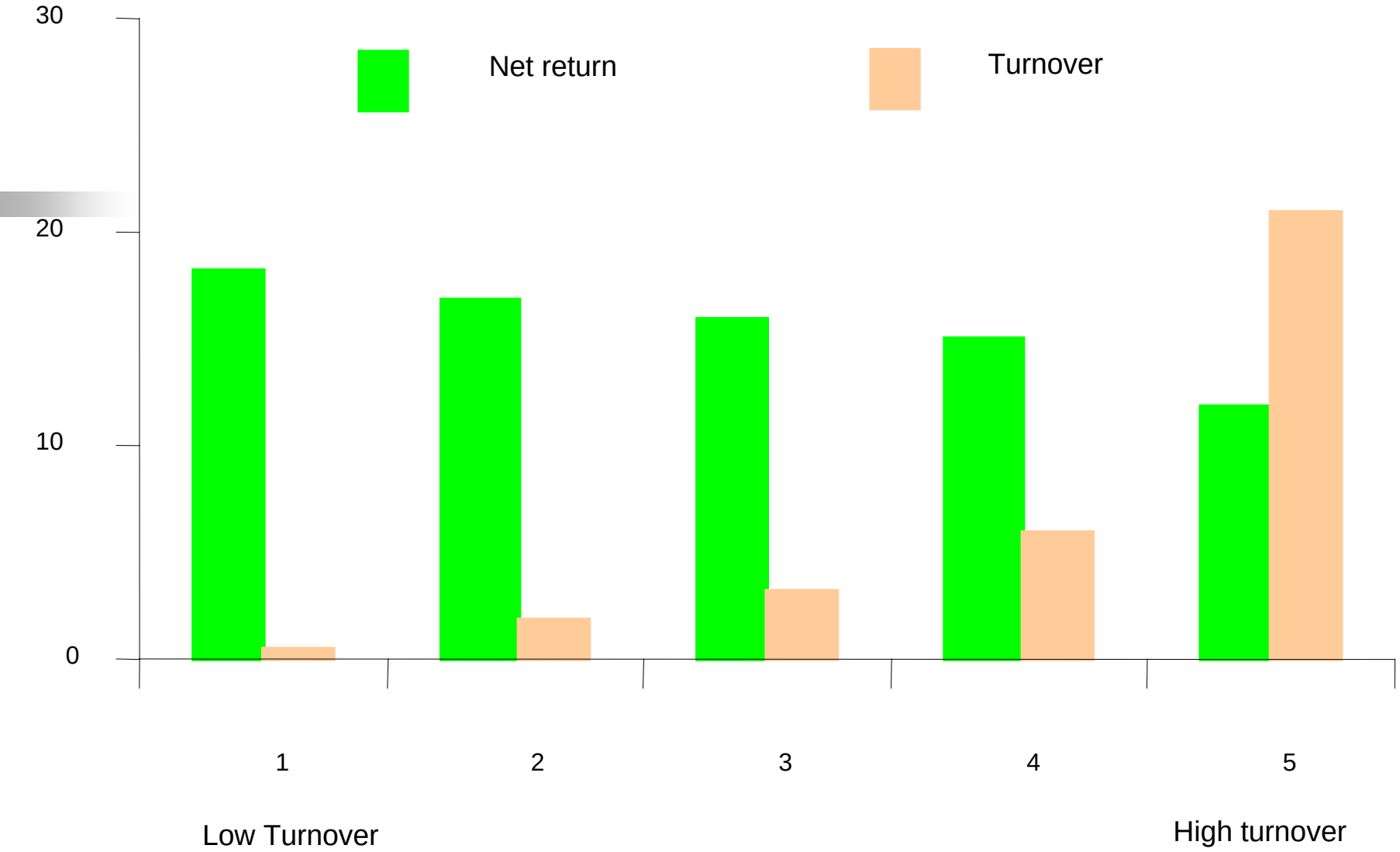
Source: Gallup

Over-confidence – Self-attribution Bias

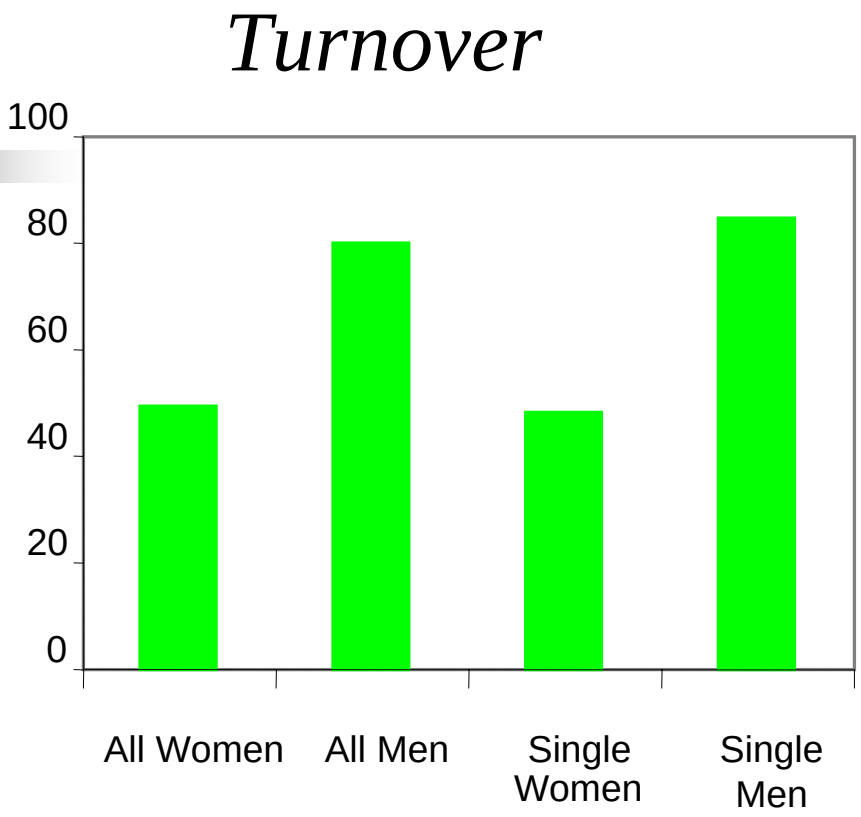


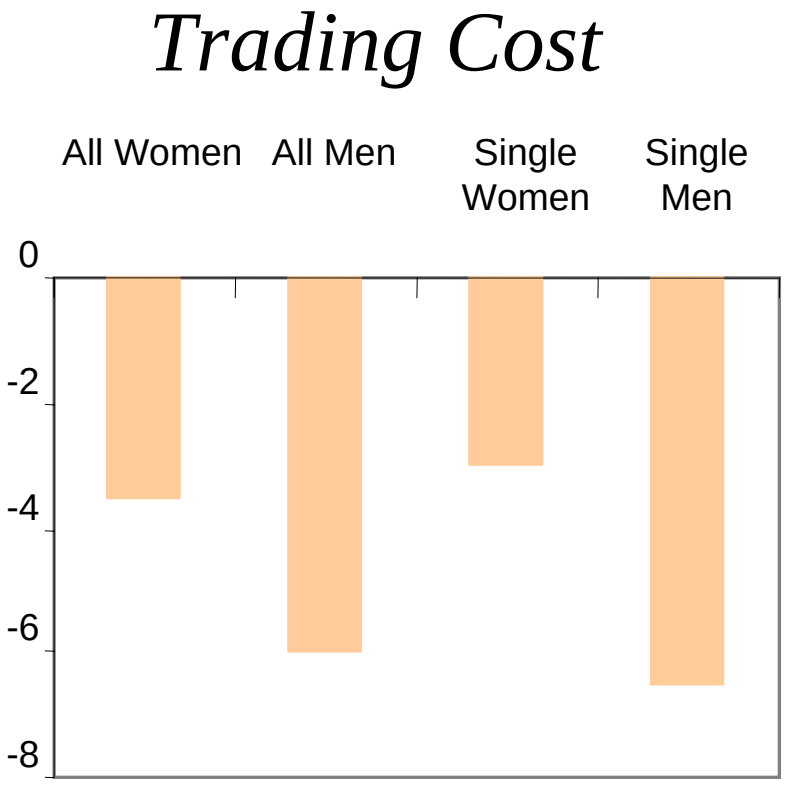
Winning Decisions, Russo & Schoemaker, 1994

Over-Confidence: Trading is hazardous to your wealth



Over-confidence: Should traders be women?





Over-confidence: Availability

Representativeness Bias

- 70% of lottery players in commercials are winners

What funds are at…

The Center of Your Portfolio

THE BLUE CHIP 100 FUND

Average Annual Total Returns

37.00%
1-year as of 3-31-00

36.98%
Since inception (6-30-97) as of 3-31-00

30.37%
1-year as of 4-30-00

THE GROWTH AND INCOME FUND

Average Annual Total Returns

33.68%
1-year as of 3-31-00

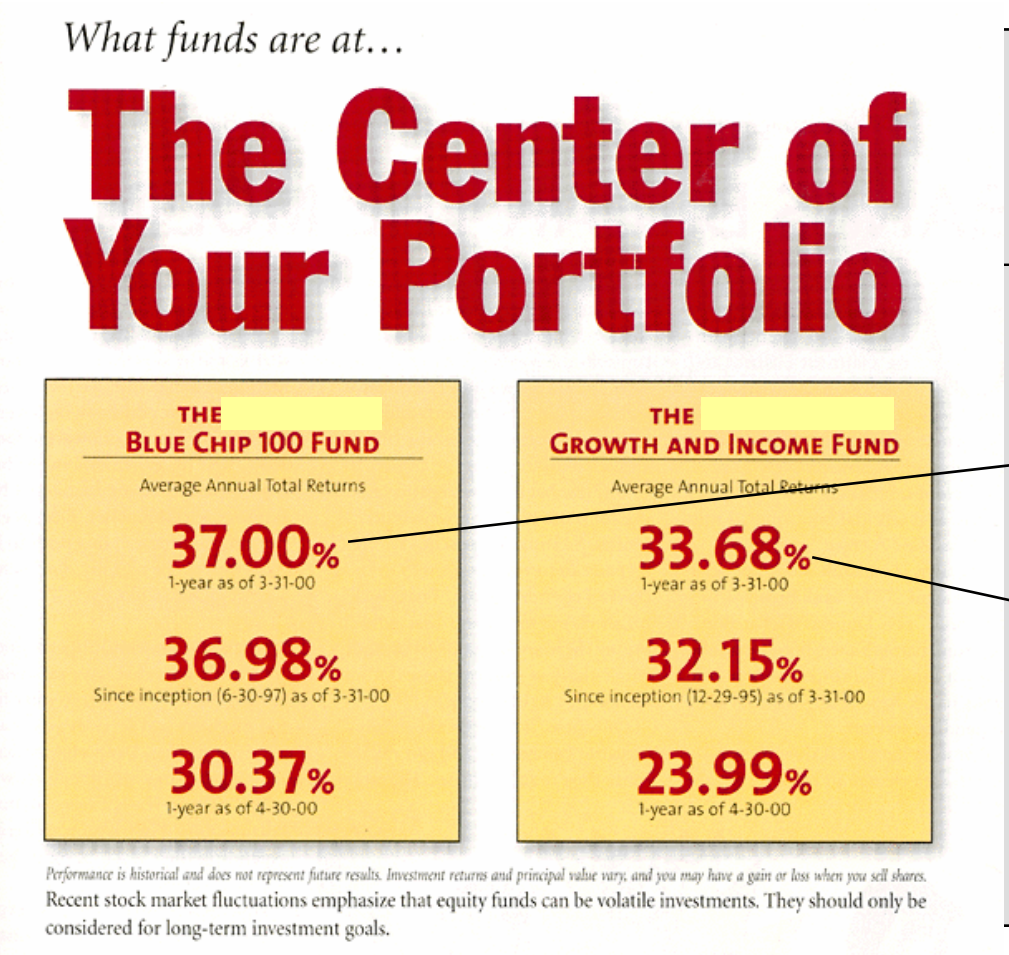
32.15%
Since inception (12-29-95) as of 3-31-00

23.99%
1-year as of 4-30-00

Performance is historical and does not represent future results. Investment returns and principal value vary, and you may have a gain or loss when you sell shares.
Recent stock market fluctuations emphasize that equity funds can be volatile investments. They should only be considered for long-term investment goals.

Over-confidence: Availability

Representativeness Bias



Growth & Income Fund Family

One-year Returns as of 03/31/2000
12.05%
15.01%
37.00%
13.56%
14.51%
33.68%
17.42%
31.10%
1.30%

c) Regret

Stock Price	
Yesterday	Today
$160	$150

- Investor A: Cost $100
- Investor B: Cost $200

- Who is more upset?
  - (Loss Aversion)

What do investors want?

Investors are:

Rational

-risk averse

-maximize wealth

-consider portfolios as a whole

Standard (mean-variance) Portfolio

Investors are:

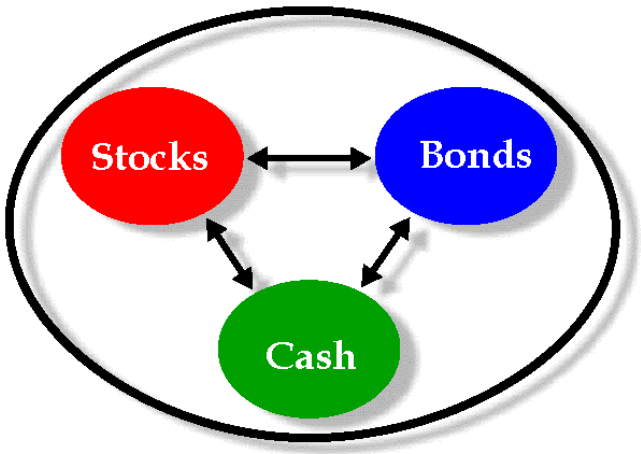
Emotional

- risk-averse AND risk-seeking

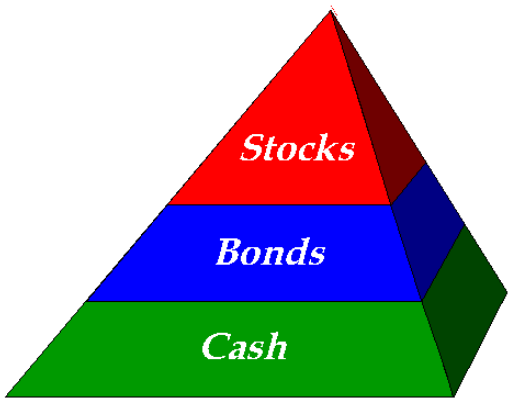
-portfolios as mental accounts:

Behavioral (lottery-insurance) Portfolios

Markowitz Portfolios



Behavioral Portfolios



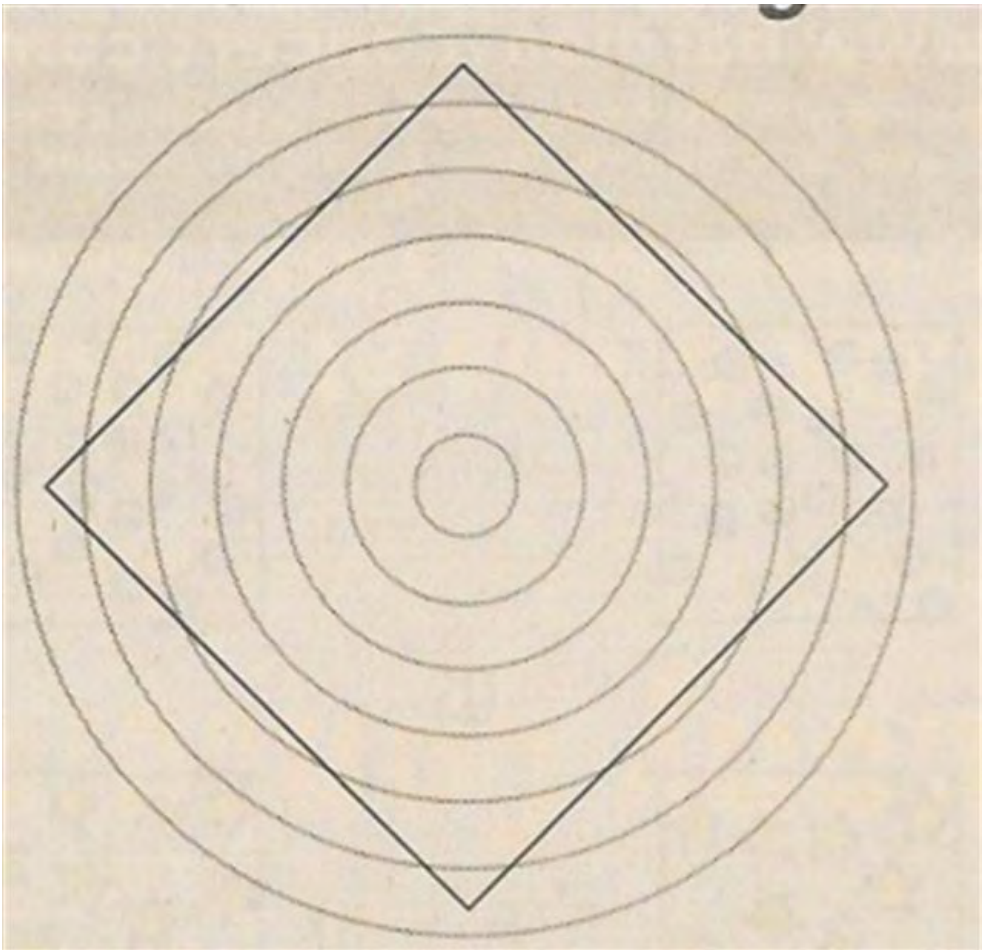
2) The Human Element in

Institutional Investors:

- Over-confidence
  - Pattern Recognition
- Growth & Value Traps
- Earnings Surprises
- Bubbles
- Temptation

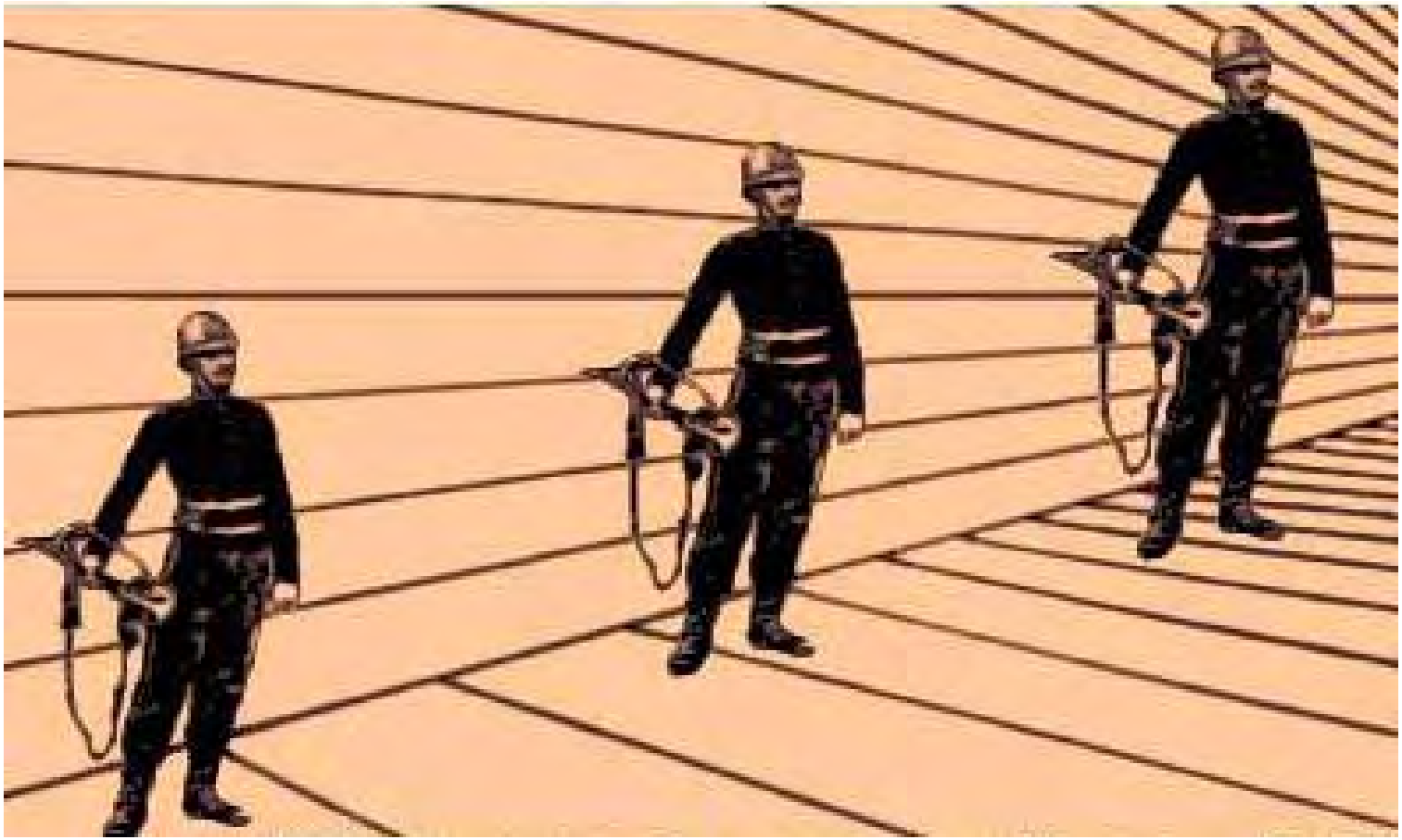
a) Over-confidence: Pattern Recognition

Are the lines straight?



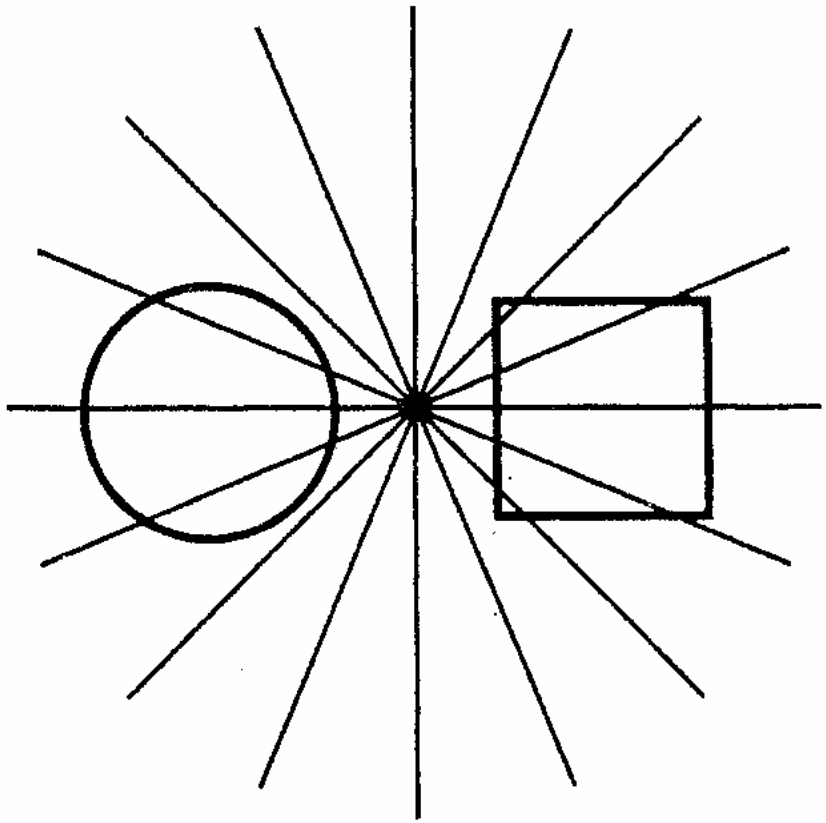
a) Over-confidence: Pattern Recognition

Are they the same height

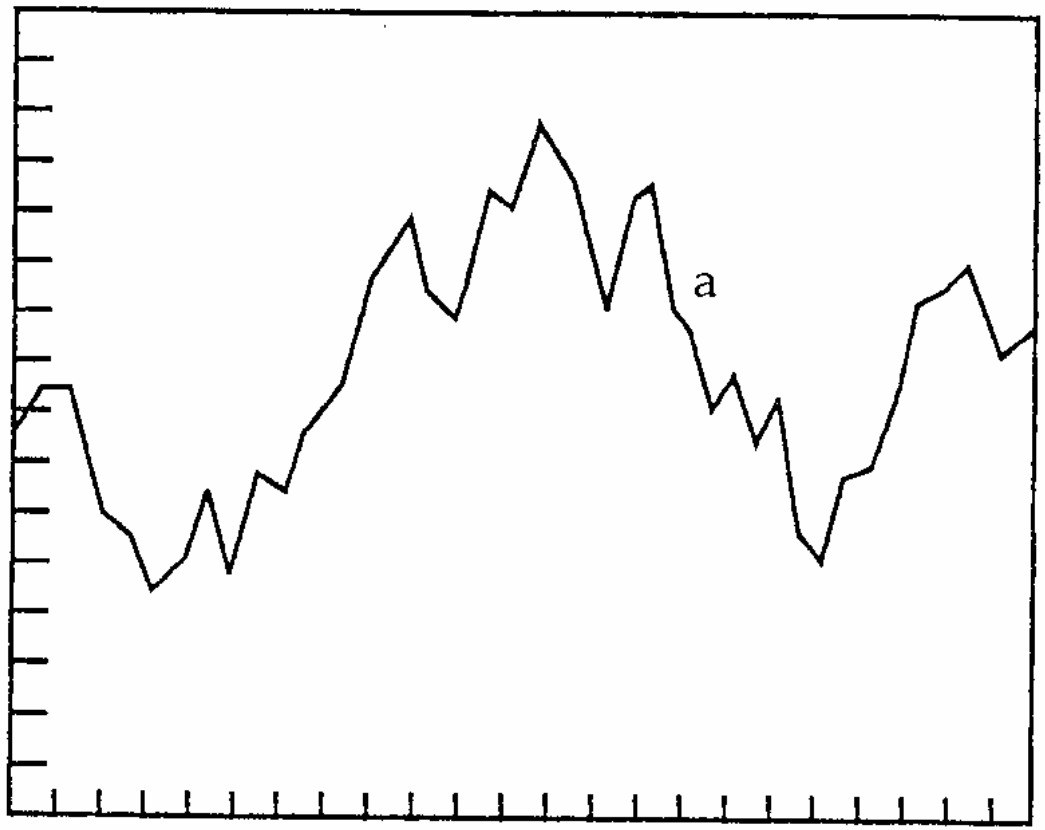


Over-confidence: Pattern Recognition

Are the lines straight…is the circle round?



Over-confidence: Pattern Recognition
Is the "head-and-shoulder meaningful?



The classic head-and-shoulder pattern tells you to sell when the right shoulder touches the neckline (a). The same pattern can be generated at random.

Over-confidence: Pattern Recognition

Human vs Rat Intelligence:

Touch a button, S or B

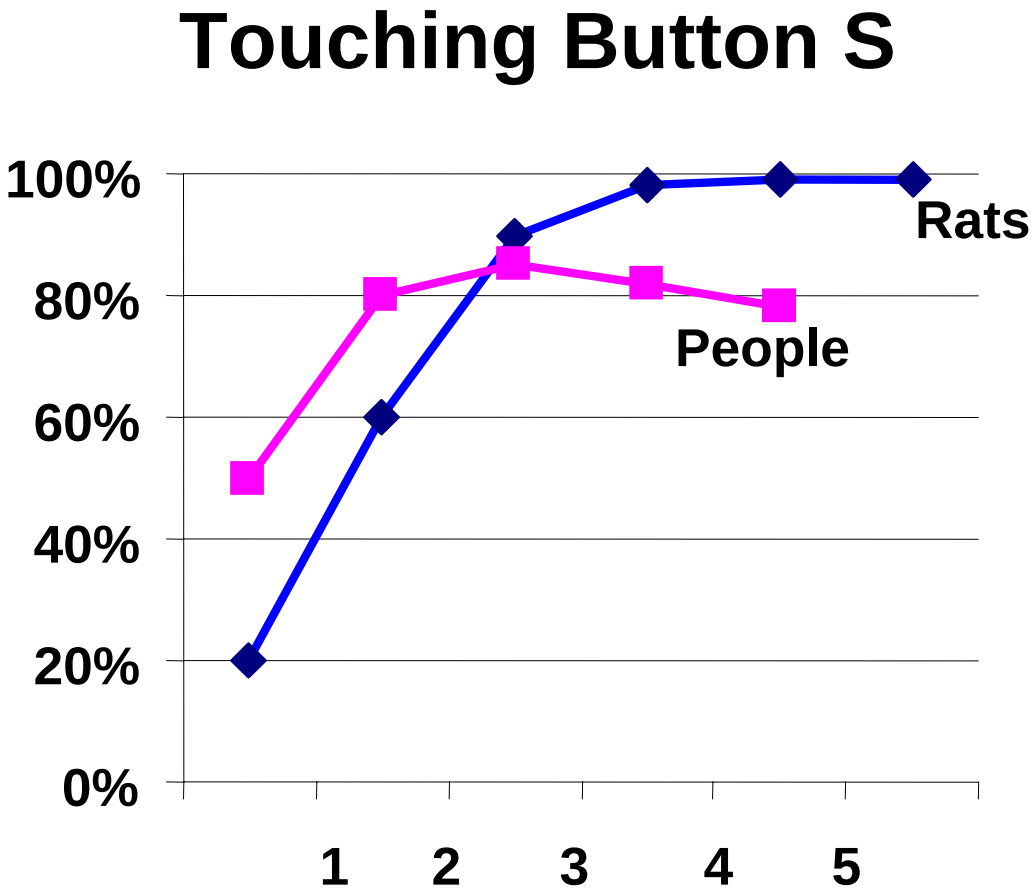
S **B**

Over-confidence:
Pattern Recognition

Always

B — **1/5 chance of winning**

S — **4/5 chance of winning**



Overconfidence

Earnings Estimates: Expectations versus Reality

- For Each Quarter, We Divided The Universe Into Three Groups:
  - Positive surprises
  - Negative surprises
  - In line
- We Then Looked At The Tendency Of These Companies To:
  - Repeat the surprise the next quarter
  - Earn subsequent excess returns
- Neither Should Occur If the Market Is Efficient...

Source: Stacy Nutt, Nicholas-Applegate, FactSet, 2003

Overconfidence

Earnings Estimates

- What Happens To Stocks That Beat Earnings Estimates (Analysts Underestimate) Versus Stocks That Miss Earnings Estimates (Analysts Overestimate)?

Reality vs. Expectations: Last Quarter

Last Quarter Negative Surprise (reality lower than expectations)	**Last Quarter Positive Surprise** (reality higher than expectations)
4 out of 5 Miss Next Quarter	**1 out of 2 Beat Next Quarter**

Source: Stacy Nutt, Nicholas-Applegate, FactSet, 2003

Earnings Estimates

- Do Analysts / Investors Quickly Adapt Their Expectations?

Reality vs. Expectations: Last Quarter

Last Quarter Negative Surprise (reality lower than expectations)	Last Quarter Positive Surprise (reality higher than expectations)
4 out of 5 Miss Next Quarter Return: -0.25 (1 mo)	1 out of 2 Beat Next Quarter Return: +0.34

Source: Stacy Nutt, Nicholas-Applegate, FactSet, 2003

Overconfidence

Earnings Estimates : High Glamour / Low Glamour

Earnings Surprises: Last Quarter

	Negative Surprise (reality lower than expectations)	**Positive Surprise** (reality higher than expectations)
High Glamour	**1**	**3**
Low Glamour	**2**	**4**

Source: Stacy Nutt, Nicholas-Applegate, FactSet, 2003

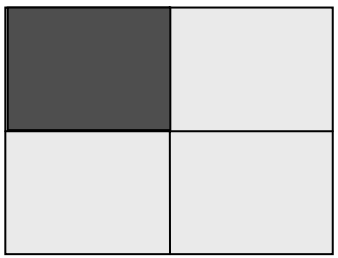
Overconfidence

Earnings Estimates : High Glamour

CheckFree
The Company that Powers Payment on the Web℠

CKFR:US Checkfree Corp.

<u>Quadrant 1</u>
Expectation = Good
Reality = Bad



Source: Stacy Nutt, Nicholas-Applegate, FactSet, 2003

Overconfidence

Earnings Estimates : High Glamour

Earnings Surprises: Last Quarter

	Negative Surprise (reality lower than expectations)	**Positive Surprise** (reality higher than expectations)
High Glamour	**1** **5 out of 6 Miss Next Quarter** **Return: -0.61** **Expectation: Good** **Reality: Bad**	**3**
Low Glamour	**2**	**4**

Source: Stacy Nutt, Nicholas-Applegate, FactSet, 2003

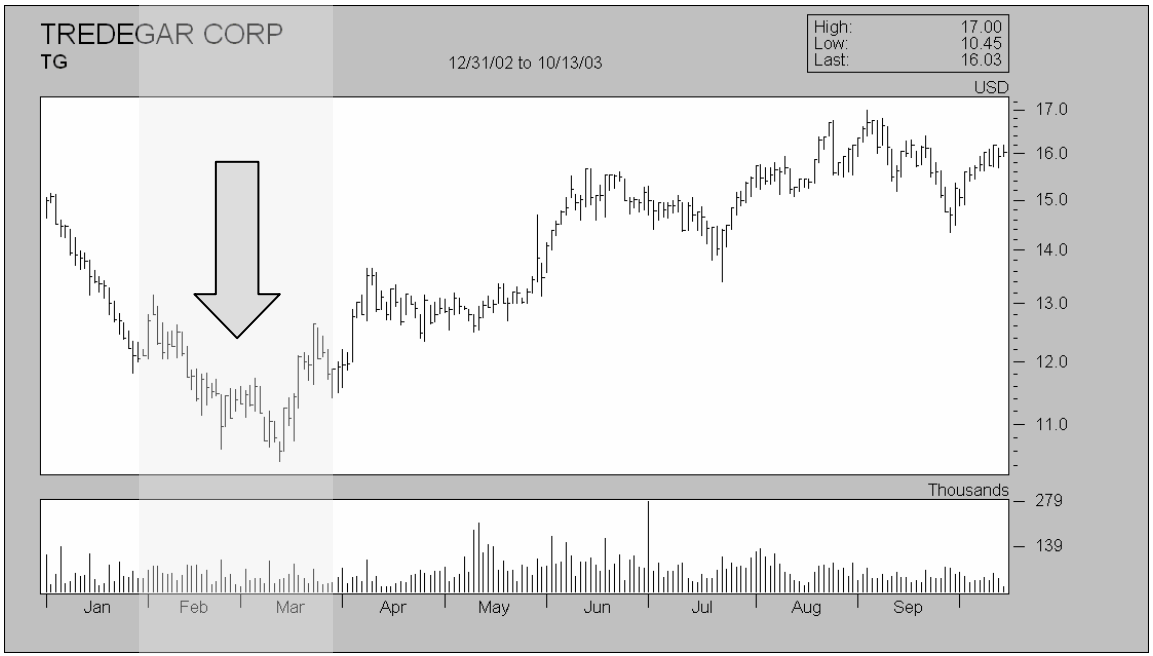
Overconfidence

Earnings Estimates: Low Glamour

TG:US Tredegar Corp

Tredegar Corporation manufactures plastic films and aluminum extrusions. Their customers include the disposables, packaging, agriculture, construction, and transportation, among others.

<u>Quadrant 2</u>
Expectation = Bad
Reality = Bad



Source: Stacy Nutt, Nicholas-Applegate, FactSet, 2003

Overconfidence

Earnings Estimates : Low Glamour

Earnings Surprises: Last Quarter

	Negative Surprise (reality lower than expectations)	**Positive Surprise** (reality higher than expectations)
High Glamour	**1** **5 out of 6 Miss Next Quarter** **Return: -0.61** **Expectation: Good** **Reality: Bad**	**3**
Low Glamour	**2** **3 out of 4 Miss Next Quarter** **Return: +0.12** **Expectation: Bad** **Reality: Bad**	**4**

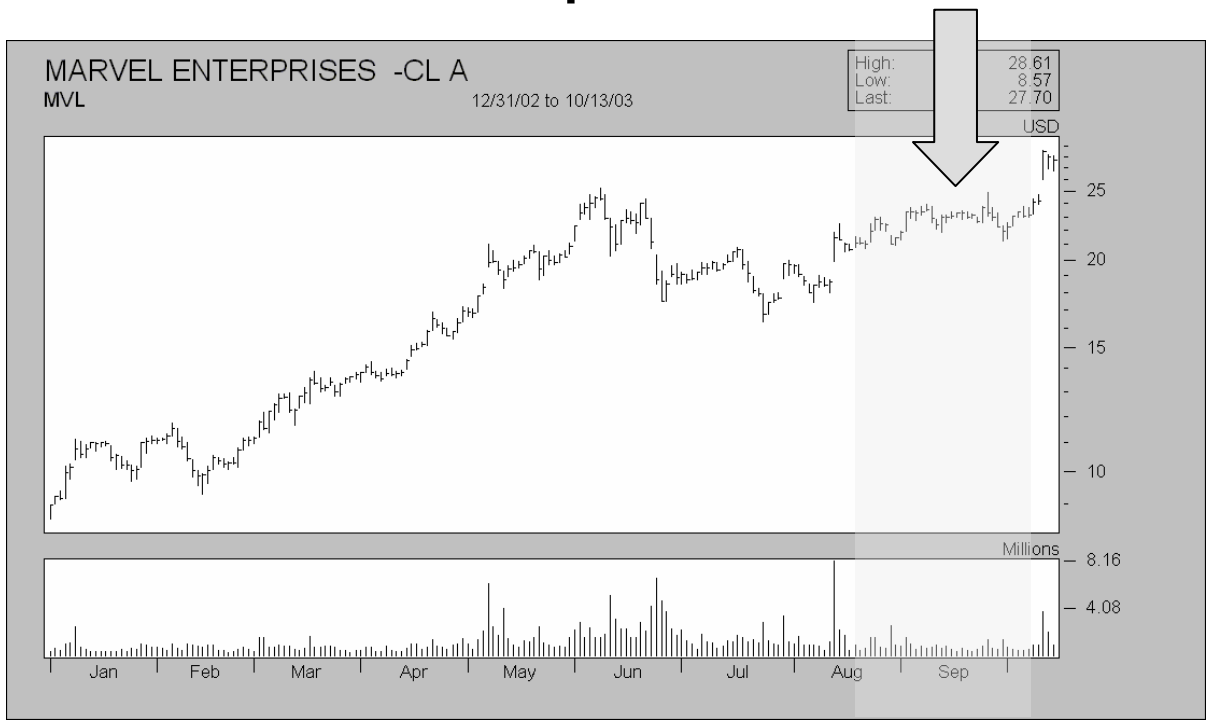
Source: Stacy Nutt, Nicholas-Applegate, FactSet, 2003

Overconfidence

Earnings Estimates: High Glamour

Quadrant 3
Expectation = Good
Reality = Good

MVL:US Marvel Enterprises Inc.



Source: Stacy Nutt, Nicholas-Applegate, FactSet, 2003

Overconfidence

Earnings Estimates: High Glamour

Earnings Surprises: Last Quarter

	Negative Surprise (reality lower than expectations)	**Positive Surprise** (reality higher than expectations)
High Glamour	**1** **5 out of 6 Miss Next Quarter** **Return: -0.61** **Expectation: Good** **Reality: Bad**	**3** **1 out of 2 Beat Next Quarter** **Return: +0.31** **Expectation: Good** **Reality: Good**
Low Glamour	**2** **3 out of 4 Miss Next Quarter** **Return: +0.12** **Expectation: Bad** **Reality: Bad**	**4**

Source: Stacy Nutt, Nicholas-Applegate, FactSet, 2003

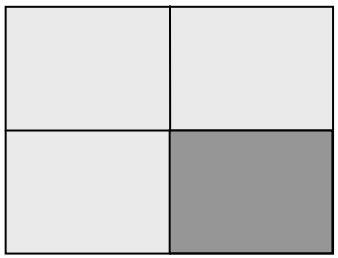
Overconfidence

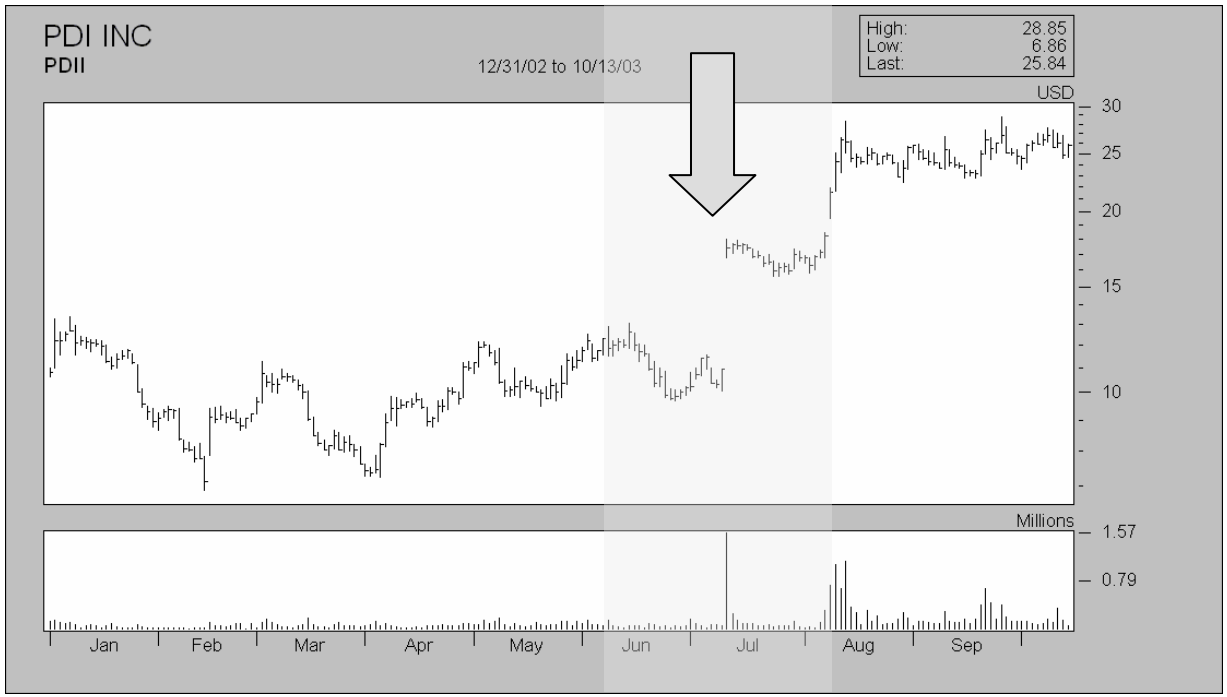
Earnings Estimates: Low Glamour

PDII:US PDI Inc.

PDI, Inc. is a sales and marketing company serving the pharmaceutical, biotechnology and medical devices industries.

<u>Quadrant 4</u>
Expectation = Bad
Reality = Good





Source: Stacy Nutt, Nicholas-Applegate, FactSet, 2003

Overconfidence

Expectations (High & Low) versus Reality (Random)

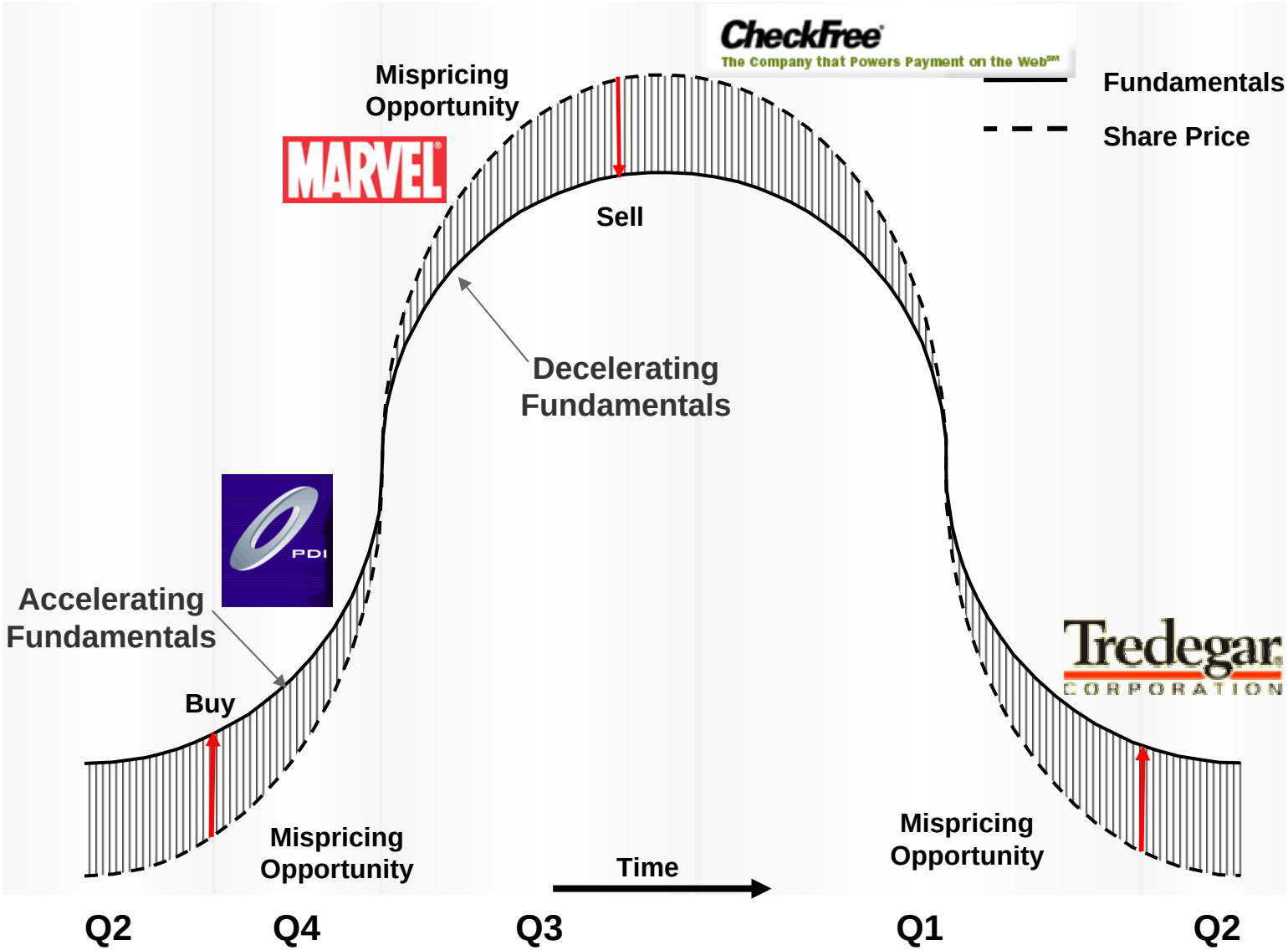
Earnings Surprises: Last Quarter

	Negative Surprise (reality lower than expectations)	**Positive Surprise** (reality higher than expectations)
High Glamour	**1** **5 out of 6 Miss Next Quarter** **Return: -0.61** **Expectation: Good** **Reality: Bad**	**3** **1 out of 2 Beat Next Quarter** **Return: +0.31** **Expectation: Good** **Reality: Good**
Low Glamour	**2** **3 out of 4 Miss Next Quarter** **Return: +0.12** **Expectation: Bad** **Reality: Bad**	**4** **1 out of 2 Beat Next Quarter** **Return: +0.54** **Expectation: Bad** **Reality: Good**

Source: Stacy Nutt, Nicholas-Applegate, FactSet, 2003

Overconfidence

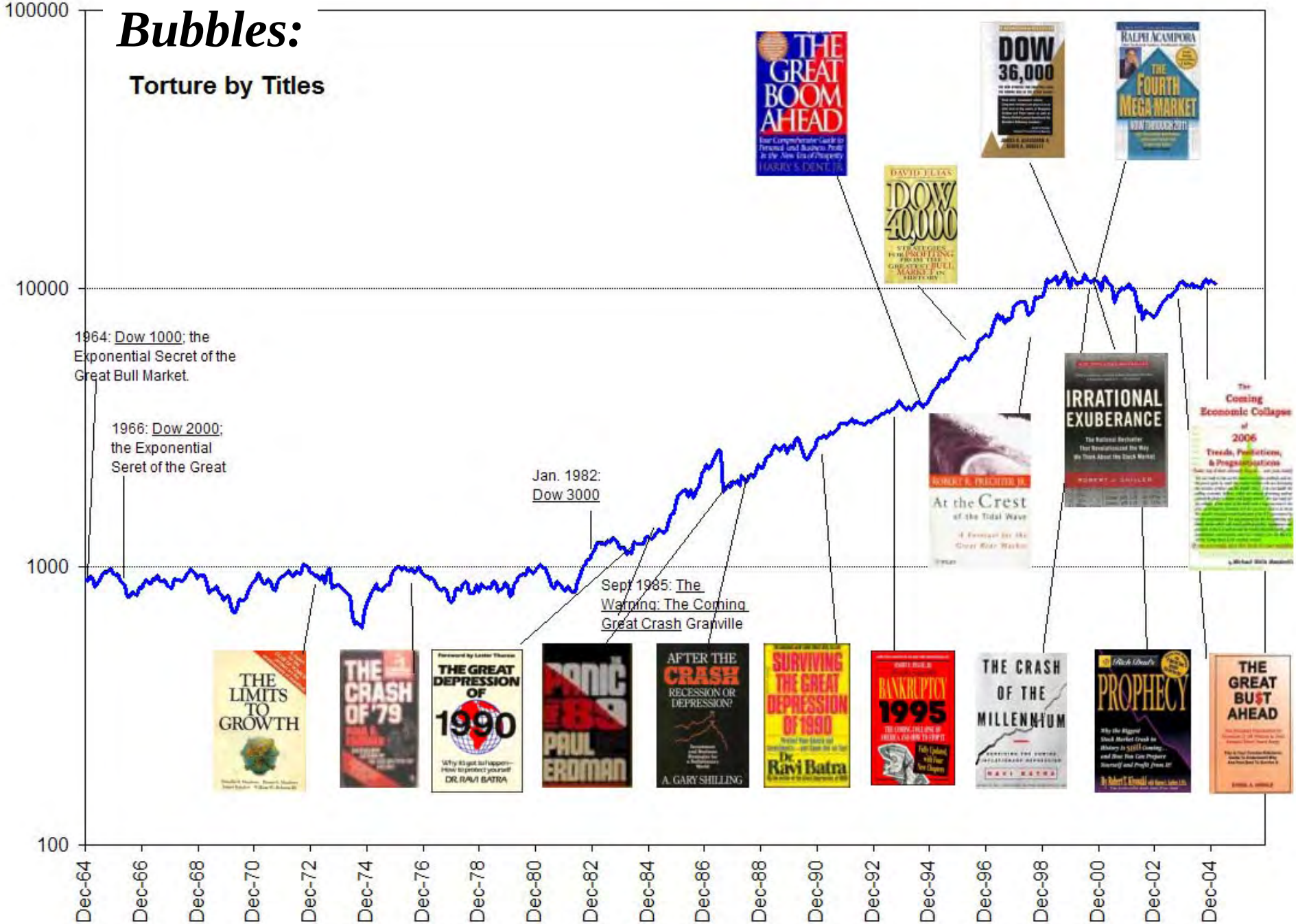
Expectations (High & Low) versus Reality (Random)



Source: Stacy Nutt, Nicholas-Applegate, FactSet, 2003

Bubbles:

Torture by Titles



The Beauty Contest

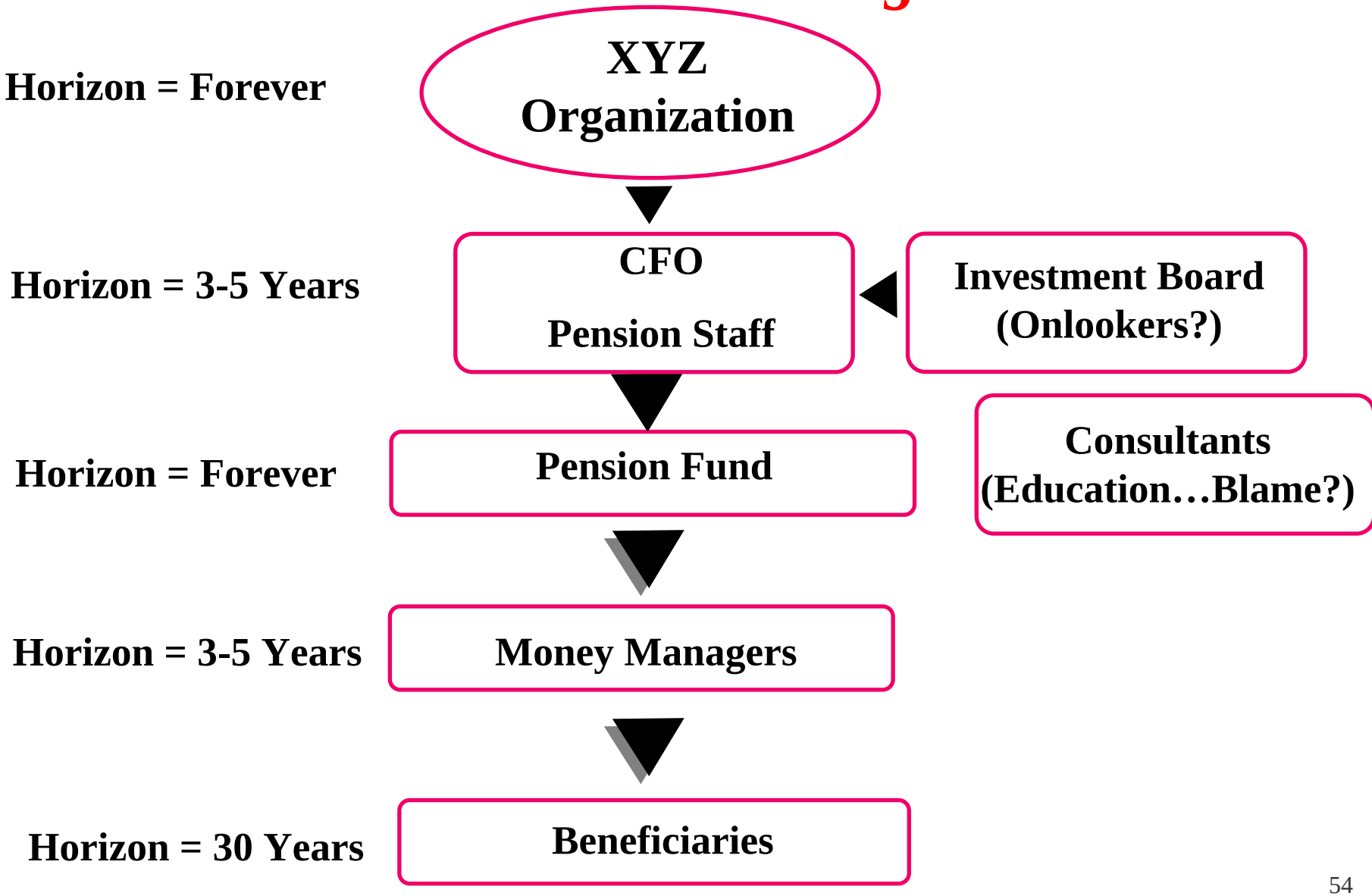
- Height:
  - Average American Male: 5’9”
  - Average CEO: 6’
  - 30% of CEOs > 6’2” versus 3.9% overall
  - 1” height = 1.8% increase in wages

- Beauty:
  - Above average +9% wages (male lawyers +12%)
  - Below average –5% wages
  - Obese women –17% wages

So Much for that Merit Raise, Engermann & Owyang, www.stloiusfed.org, 2005

Agent Risks

Evaluation versus Planning Horizon



Agent Risks

Loss Aversion

"The Equity Premium Puzzle"

- **Since 1926:** **Real Return** **Value of $1**
  - **Stocks** **7%** **$2000**
  - **Bonds** **1%** **$35**
  - **Why does a Long Term Investor hold Bonds?**
- **Stock Returns over 1 month:**
  - **62% win (up month)**
  - **38% lose (down 97% of average gain)**
- **Stock Returns over 5 years:**
  - **90% win (up over 5 years)**
  - **10% lose (down 63% of average gain)**

Aspects of Investor Psychology Daniel Kahneman & Mark Riepe, Journal of Portfolio Management, Summer 1998

Agent Risks

Myopic Loss Aversion:

- **Evaluation Horizon drives Asset Allocation…**
  Not the Planning Horizon (Portfolio Life)
- **Over 1 Year Evaluation Horizon:**
  - **Utility of Stocks (7% return, 17% Standard Deviation) equals the**
  - **Utility of 5 Year Bonds (1% return, 7% Std Dev)**
  - **i.e. 50:50 Asset mix**
- **Longer Evaluation Horizon…**
  - **More Stocks or**
  - **Accept Lower Equity Risk Premium: 3% @ 5 yrs**

Aspects of Investor Psychology Daniel Kahneman & Mark Riepe, Journal of Portfolio Management, Summer 1998

Agent Risks:

Loss Aversion versus the "Prudent Man Rule"

(Frame Portfolios as a Whole)

a)	Cost	Market	Gain (or loss)
Undisclosed Perceptions, Inc.	*200,000*	*300,000*	*100,000*
Crispy Cream Diet Centers	*200,000*	*310,000*	*110,000*
Harley Safety Equipment	*200,000*	*280,000*	*80,000*
Boston Red Sox B Shares	*200,000*	*120,000*	***(80,000)***
New Orleans Health Foods	*200,000*	*260,000*	*60,000*
TOTAL	*1,000,000*	*1,270,000*	*270,000*

b) Enron, K-Mart, Emerging Markets….

c) ***Embarrassment & Riches….***

Agents Risks

Trust

is related to income… and cultural history

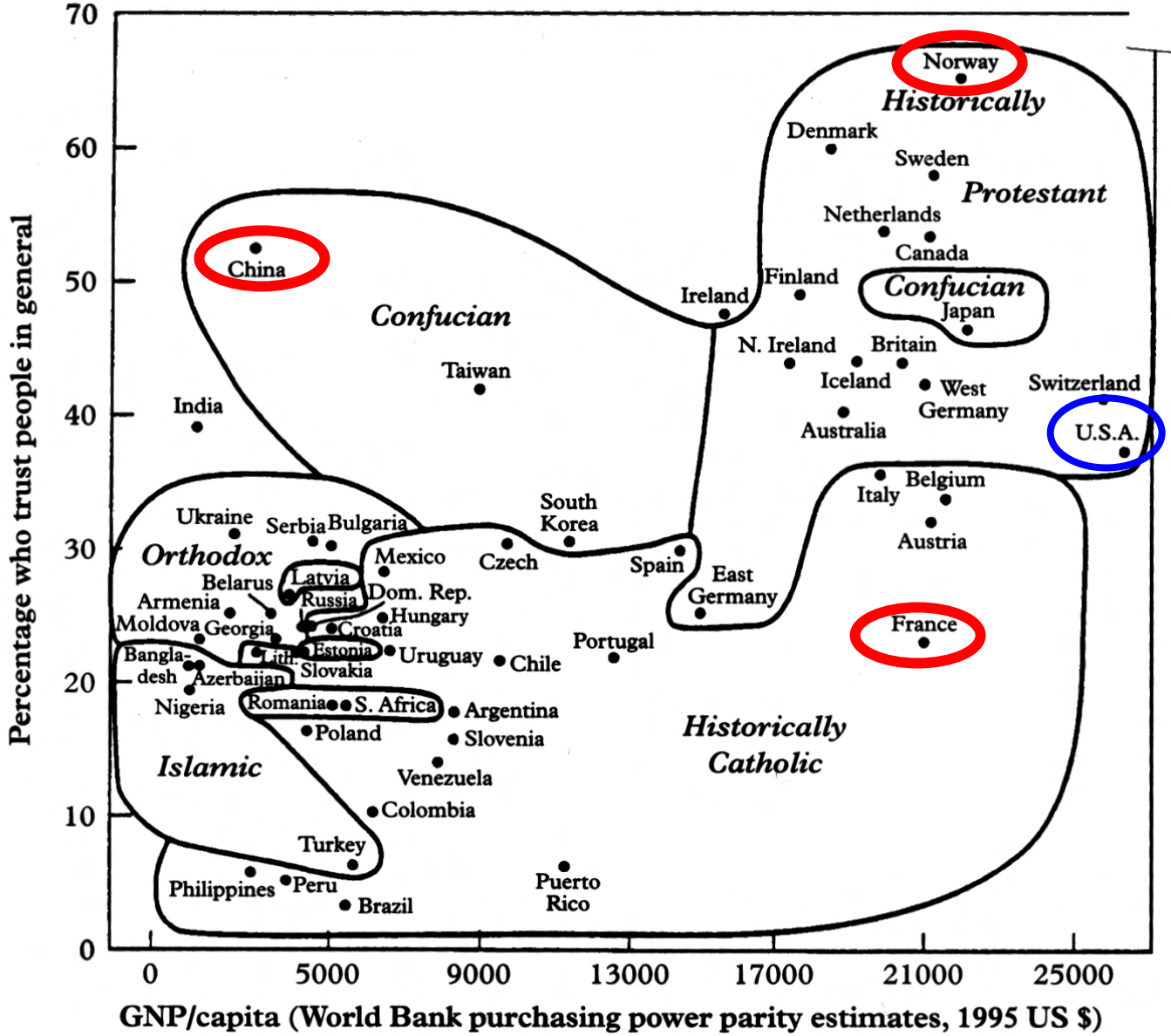
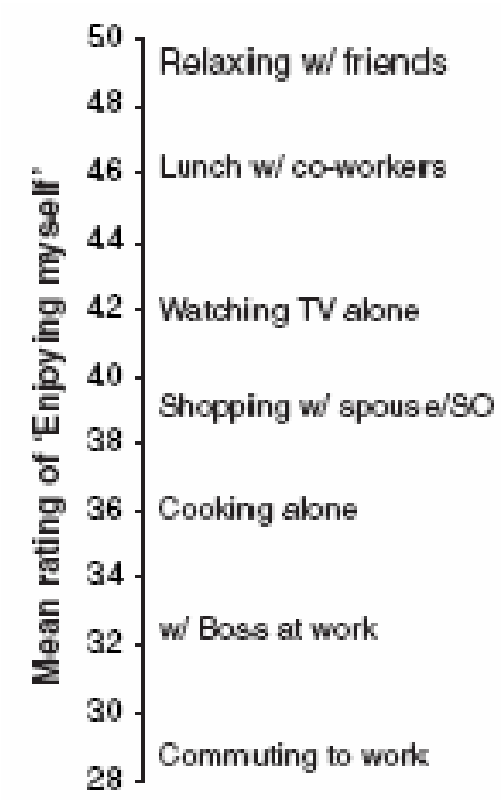


Figure 4.1 Interpersonal trust by cultural tradition and level of economic development and religious tradition. Trust by GNP/capita: $r = 0.63$ $p < 0.000$

<u>Democracy & Trust</u>, Mark Warren, 1999

Agents Risks : *Trust with clients*

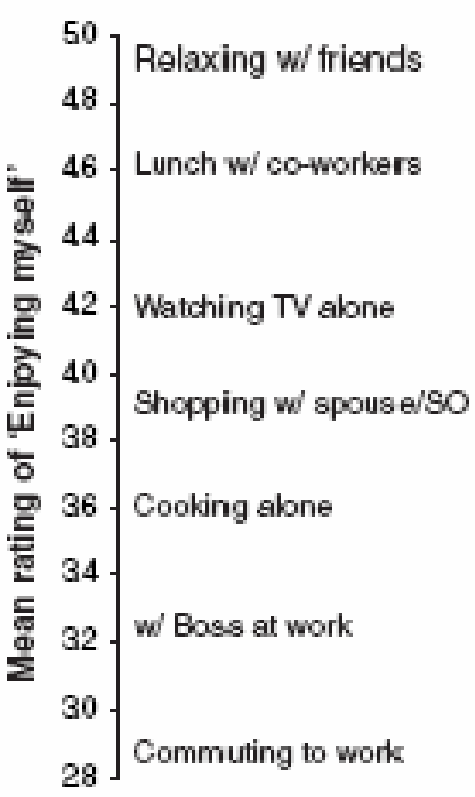
Enjoyment



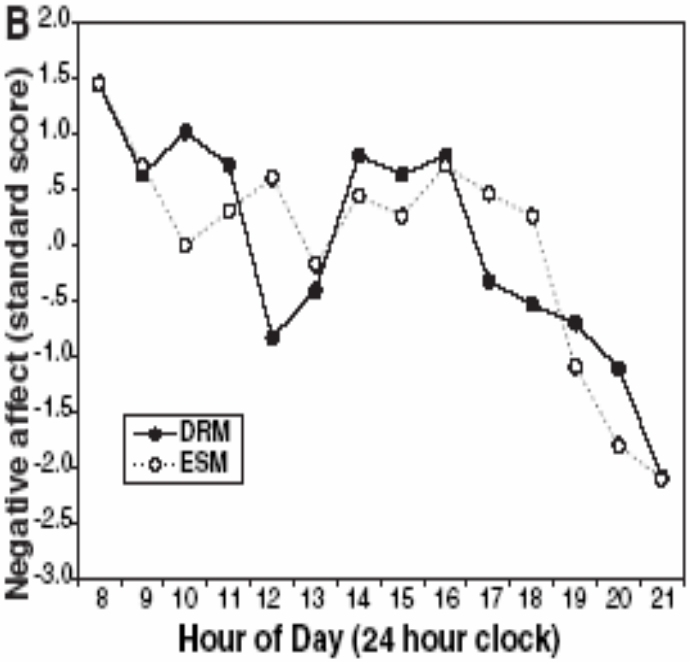
Source: "Day Reconstruction Method", Kahneman, Science Dec 2004

Agents Risks : *Trust with clients*

Enjoyment



Negative feelings

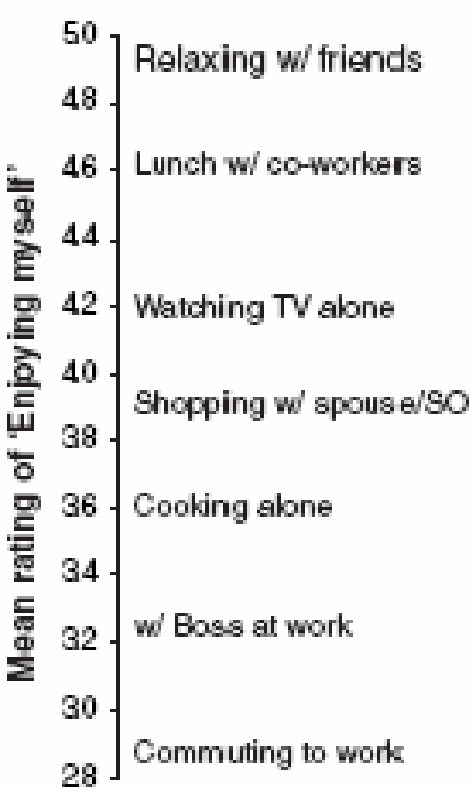


Source: "Day Reconstruction Method", Kahneman, Science Dec 2004

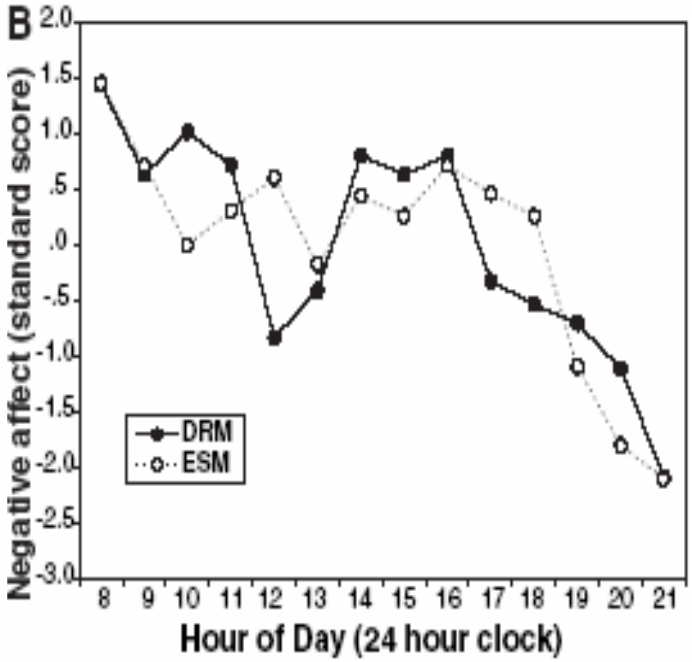
Agents Risks : *Trust with clients*

- Clients & Prospects may be optimal at 11:30 am
- Be a friend & take them for lunch

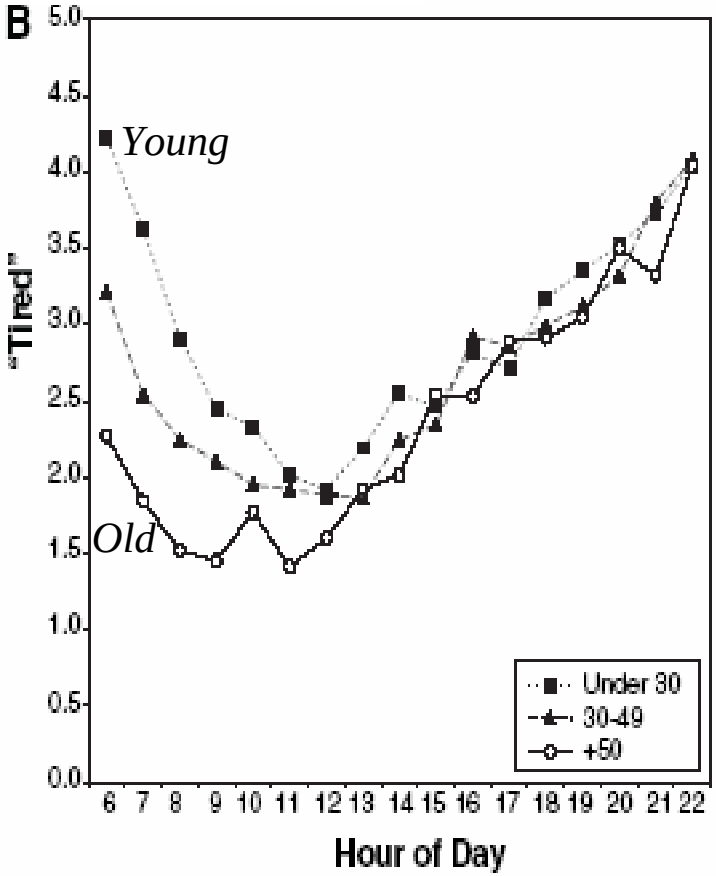
Enjoyment



Negative feelings



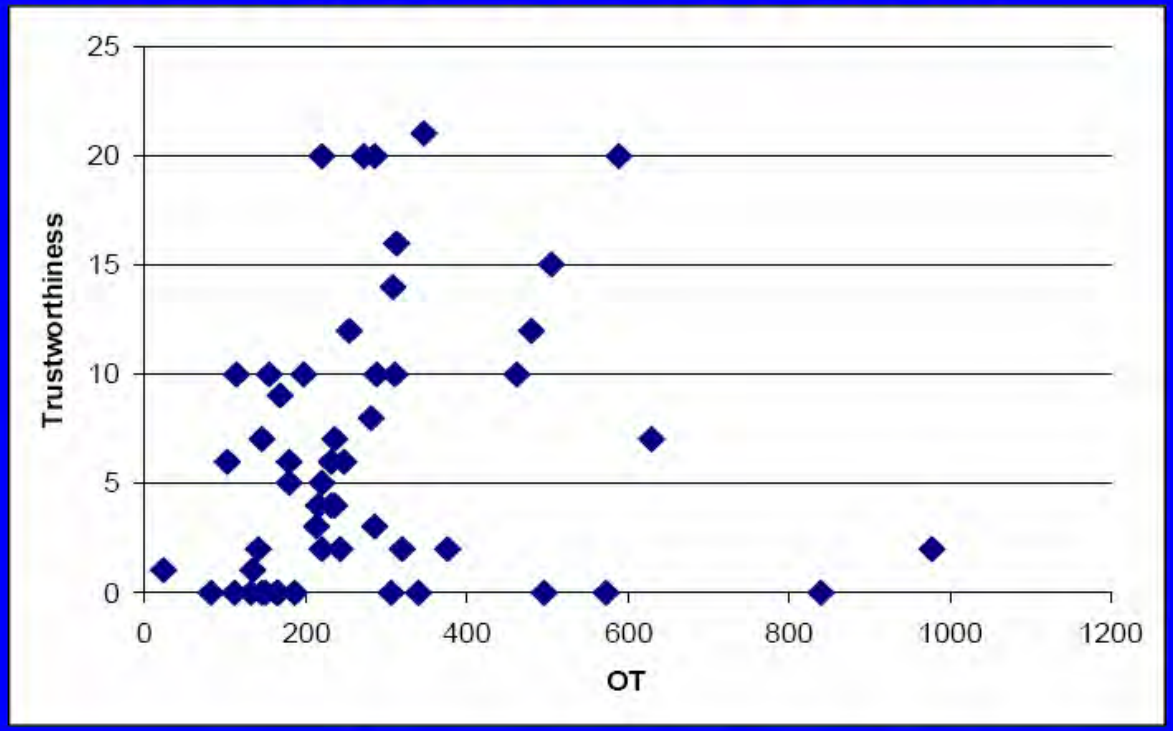
Tired



Source: "Day Reconstruction Method", Kahneman, Science Dec 2004

Oxytocin and Trust

December, 2005



nature

June 2, 2005

- Intranasal infusion of OT more than doubles the number of people who trust a stranger with <u>all</u> their money

Center for Neuroeconomics Studies

Agents Risks *Trust….?*

- Oxytocin – Hormone from Hypothalmus –
- Tested as a nasal spray:
  - Investors receive 12 units of money
  - Investors can give 4, 8 or all to Trustee
  - Trustees profits will triple the number of units
  - Trustees may or may not give units back
- With Oxytocin
  - 45% of Investors invested maximum amount with Trustees vs 21% without Oxytocin
  - Investors increased average investment with Trustees by 17%
- Trustees were unaffected – They returned nearly half of units with or without Oxytocin (i.e. no change in generosity)

"Paying through the nose", Economist, June 4, 2005

Over-confidence in Random Events

Theory: Shots should cluster more than chance expectations.

Interview with 100 fans:

91% of Fans – "Hits follow hits"…and believe:

61% Hit Rate following hits, even if a 50% shooter

42% Hit Rate following misses, even if a 50% shooter

84% of Fans – "Always pass ball to hot hand!"

Source: Thomas Gilovich, "How We Know What Isn't So"

Over-confidence in Random Events

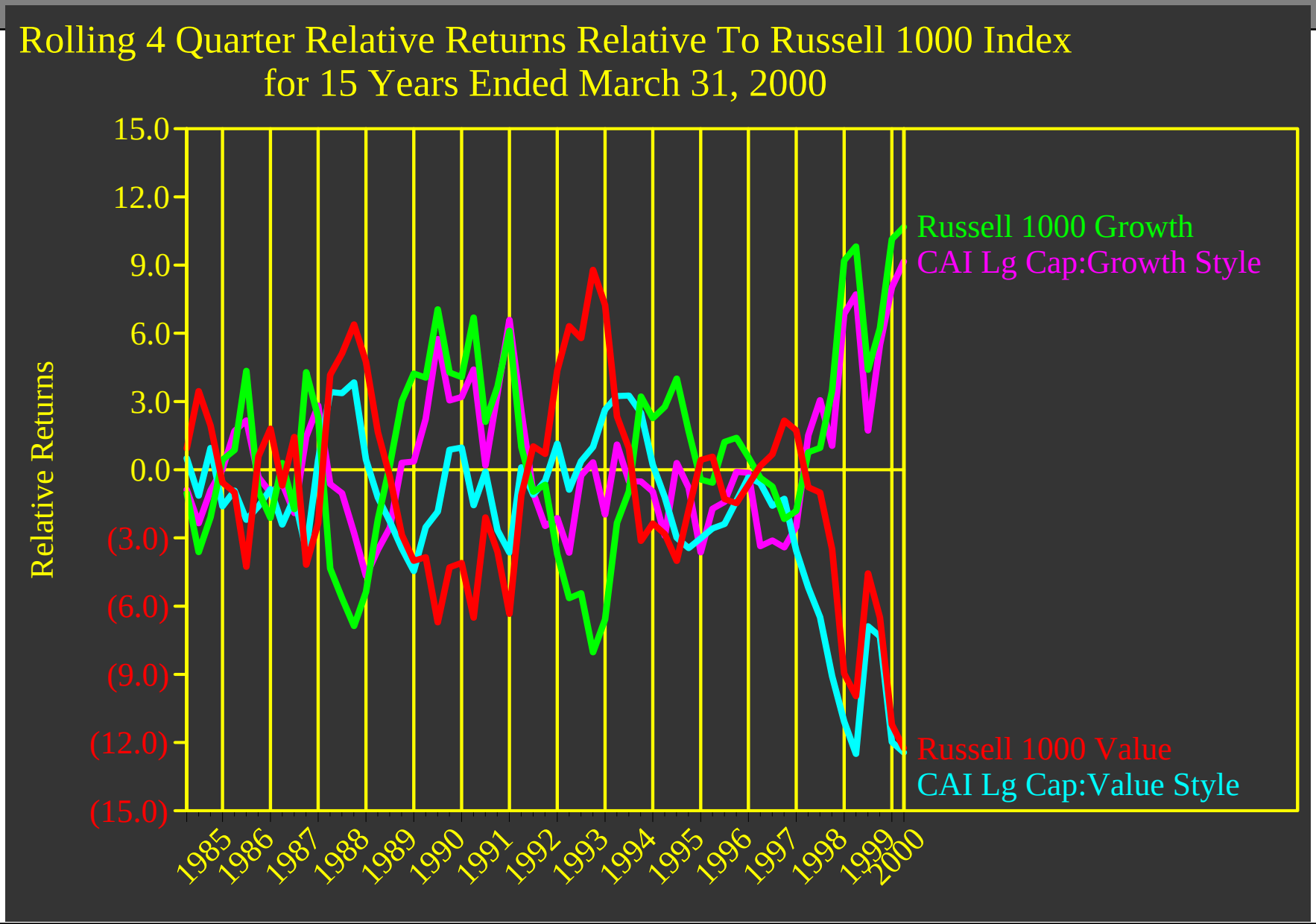
	Making			Missing		
Last Shot(s)	**1**	**2**	**3**	**1**	**2**	**3**
% Hits	**51%**	**50%**	**46%**	**54%**	**53%**	**56%**

Philadelphia 76ers 1980-81

(only team to keep such records)

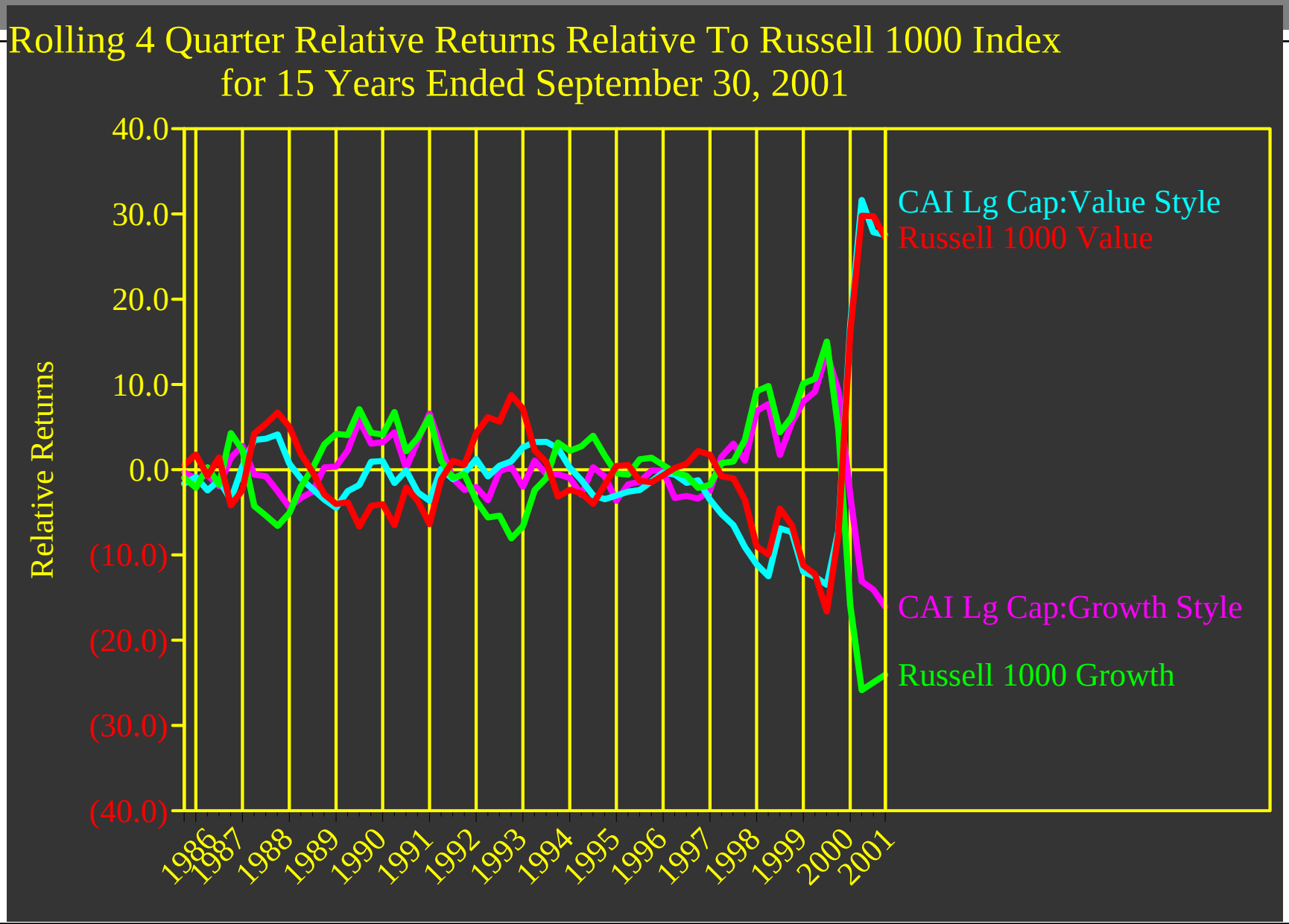
Source: Thomas Gilovich, "How We Know What Isn't So"

Over-confidence in Random Events



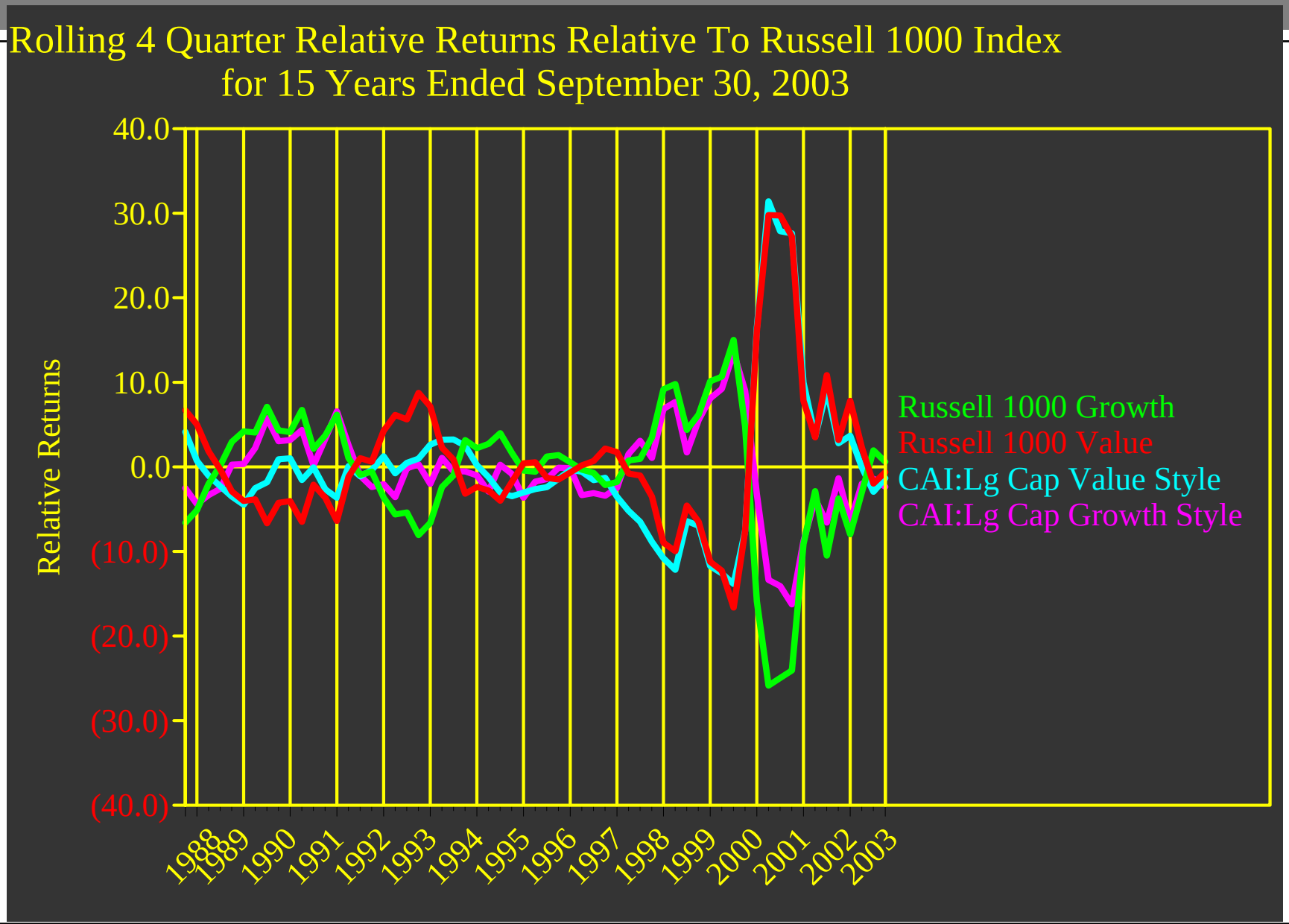
Source: Consultant Database, 2001

Over-confidence in Random Events



Source: Consultant Database, 2001

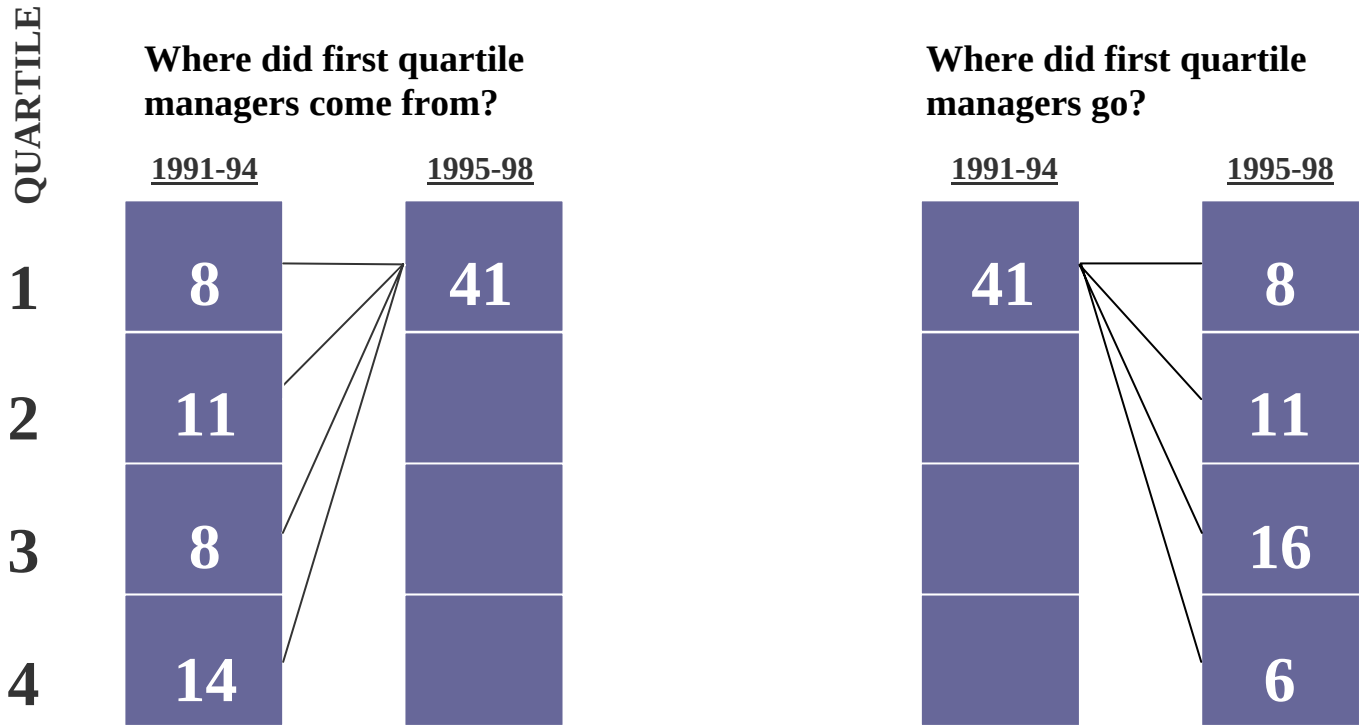
Over-confidence in Random Events



Source: Consultant Database, 2001

Over-confidence in Random Events

Representativeness Bias



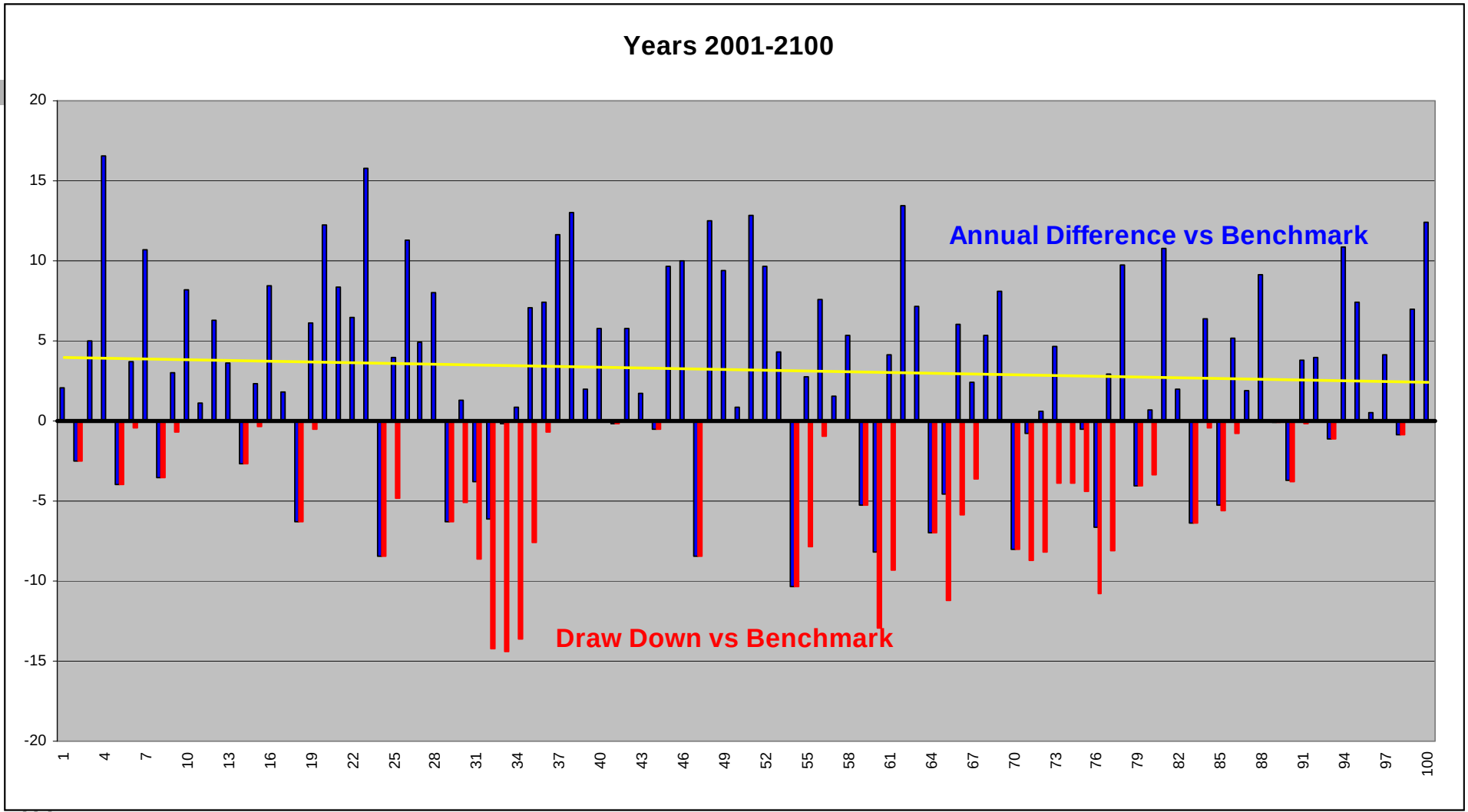
Universe consisted of 162 institutional managers in Russell's Growth, Market-Oriented, and Value universes with 8 years of history ending 1998.

Example: Of the 41 managers in the top quartile for years 1991-1994, only 8 remained in the first quartile in years 1995-1998.

Source: Frank Russell, as of 1998

Over-confidence in Random Events

Excess Returns are Variable (Alpha = 3%, Std Dev 6%, Info Ratio 0.50)



The market is a fierce warrior

- **“Draw them in with the prospect of gain.**
- **Take them by confusion.**
- **Use anger to throw them into disarray.”**
- **Sun Tzu - “Art of War”**

Rules of the Agent Warrior

- **Self-attribution Bias**
  - Don't confuse brains with a Bull Market
- **Loss Aversion**
  - Frame Portfolios as a Whole (the Prudent Person Rule)
  - Stretch Evaluation Horizon toward Planning Horizon
- **Representativeness Bias**
  - Understand Probabilities of Random Events
- **Empathy Gap**
  - Cool Analysis versus Fear & Greed
- **Impact Bias**
  - Realistic expectations
  - "The secret of life is knowing that what you got is what you would have wanted in the first place if you could have known" – Garrison Keillor