



OVERCOMING THE BIASES THAT DERAIL OUR INVESTMENT DECISIONS

Ohio Association of Public Treasurers

June 14, 2018

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1 (C) (D)



2 (C) (D)



3 (C) (D)

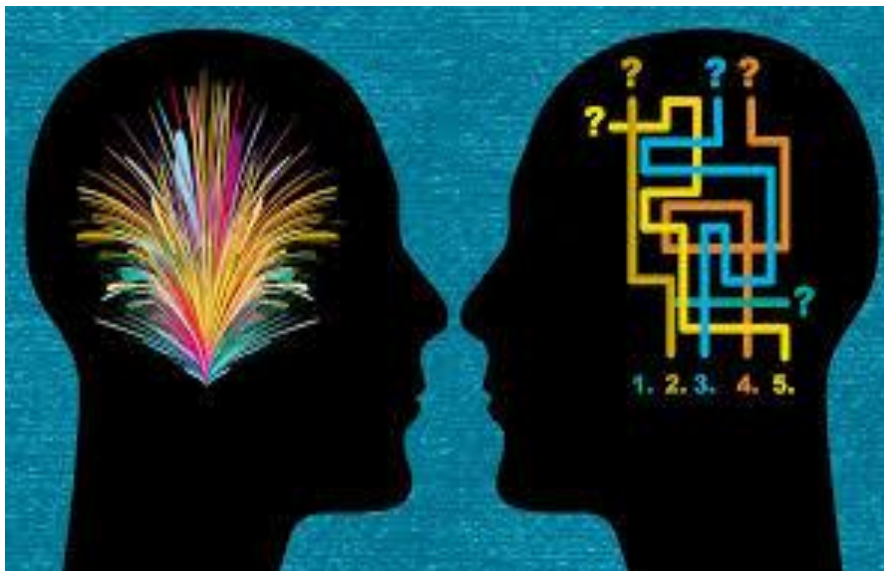
Behavioral Finance

4 (C) (D)

BEHAVIORAL FINANCE

Prevalent Themes

1. Heuristics
2. Framing
3. Market Inefficiencies

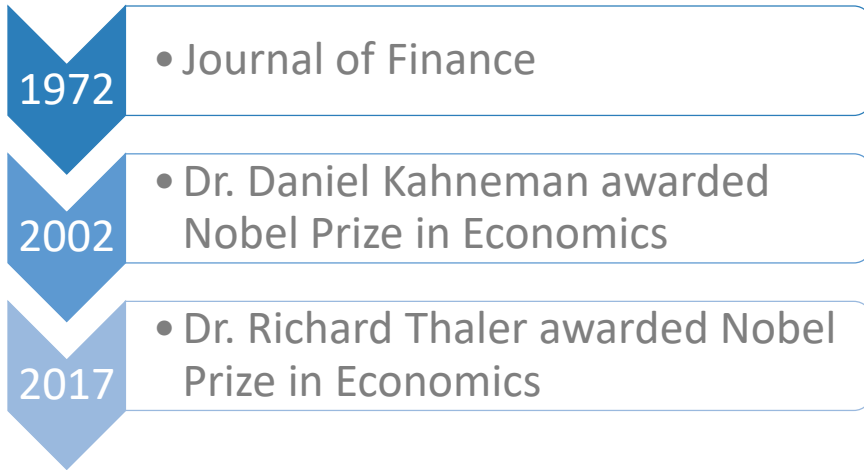




PROSPECT THEORY

- Editing Stage
- Evaluation Stage
 - Reference dependence
 - Loss aversion
 - Non-linear probability weightings
 - Diminishing sensitivity to gains/losses

HISTORY OF BEHAVIORAL FINANCE



1972 JOURNAL OF FINANCE



Dr. Paul Slovic

A full understanding of human limitations will ultimately benefit the decision maker more than naïve faith in the infallibility of his intellect.

2002 NOBEL PRIZE IN ECONOMICS

Dr. Daniel Kahneman

Many ideas happen to us. We have intuition, we have feeling, we have emotion, all of that happens, we don't decide to do it. We don't control it.

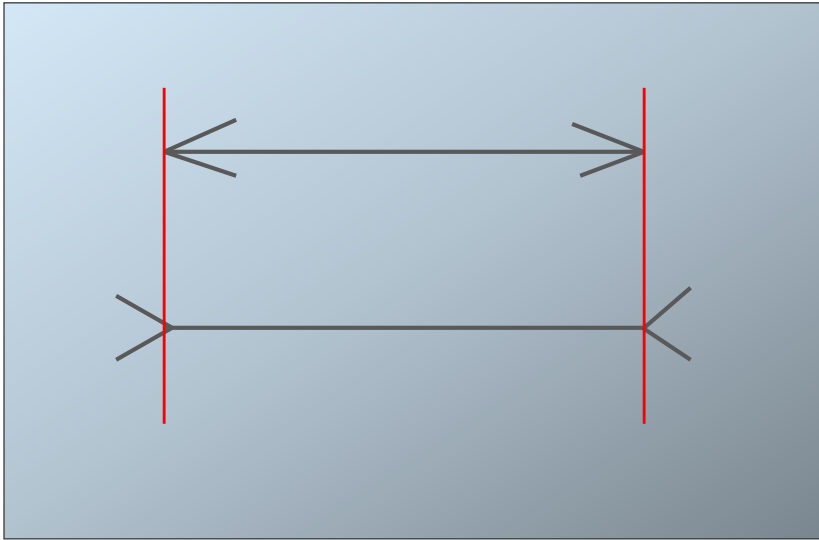
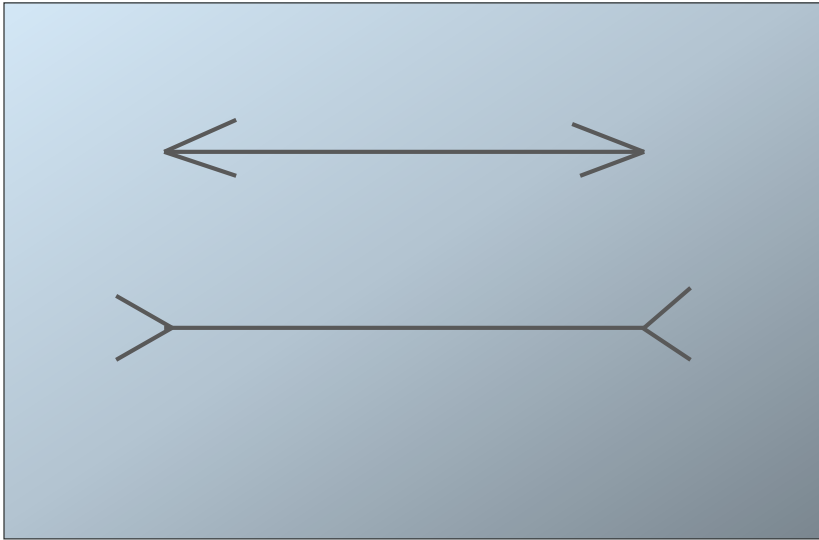


2017 NOBEL PRIZE IN ECONOMICS

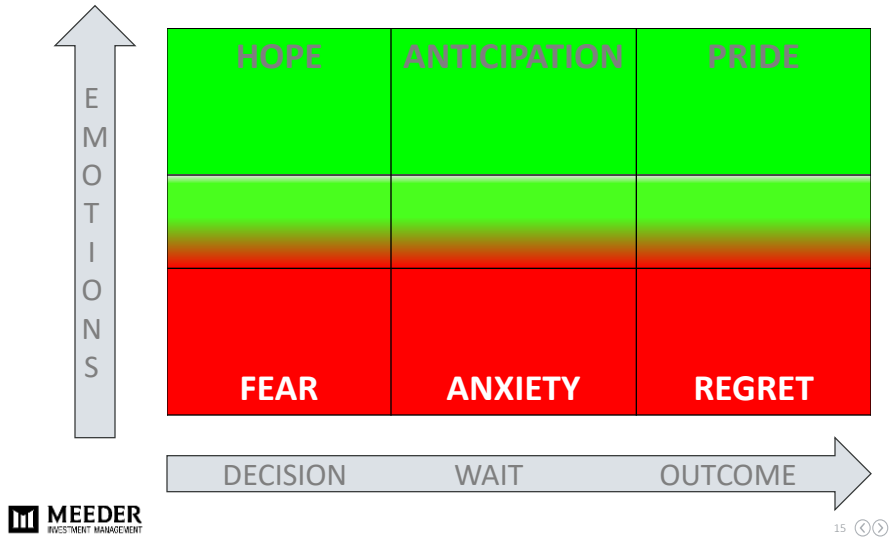
Dr. Richard Thaler



In the 1940s, economics started getting highly mathematical. It was basically because economists weren't smart enough to write down models of real behavior that they started writing down models of highly rational behavior - and they kind of forgot about humans.



EMOTIONAL TIMELINE



HEURISTICS & BIASES

Anchoring	Loss Aversion	Regret
Hindsight bias	Status Quo bias	Self-attribution
Frame dependence	Availability	Aversion to ambiguity
Representativeness	Overconfidence	Confirmation

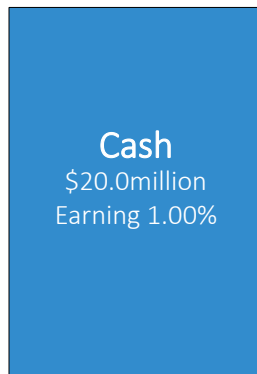
WHAT WOULD YOU CHOOSE?



47.4%

PORTFOLIO RIGHT-SIZING

Current



Right-Sized



Projected Additional Interest Income of \$160,000

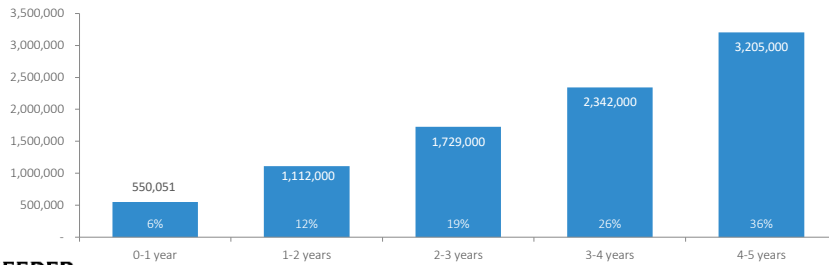
PORTFOLIO RIGHT-SIZING

Public Entity Portfolio

Cash vs Core

Cash	\$ 73,746
Core	\$8,938,051
Total	\$9,011,797

Maturity Distribution



INTEREST RATE EXPECTATIONS

For Bond Investors, Low Expectations in a Low-Yield World

Source: New York Times, Jan 12, 2018

Why investors shouldn't panic over falling bond prices

Source: MarketWatch Feb 13, 2018

Interest rate hikes create 'fragile' economic situation, Marty Feldstein warns

Source: FoxNews, Mar 12, 2018

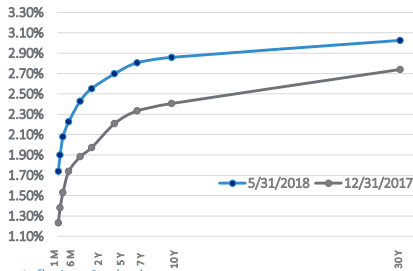
What Goes Up, Must Come Down Is Why U.S. Inflation May Be Tamer

Source: Bloomberg News, Mar 12, 2018

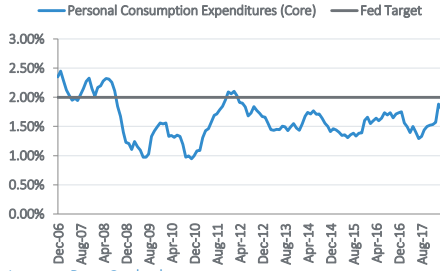


SAMPLE ECONOMIC INDICATORS

Yield Curve



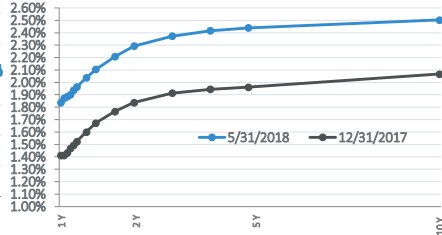
Inflation



Inflation Outlook

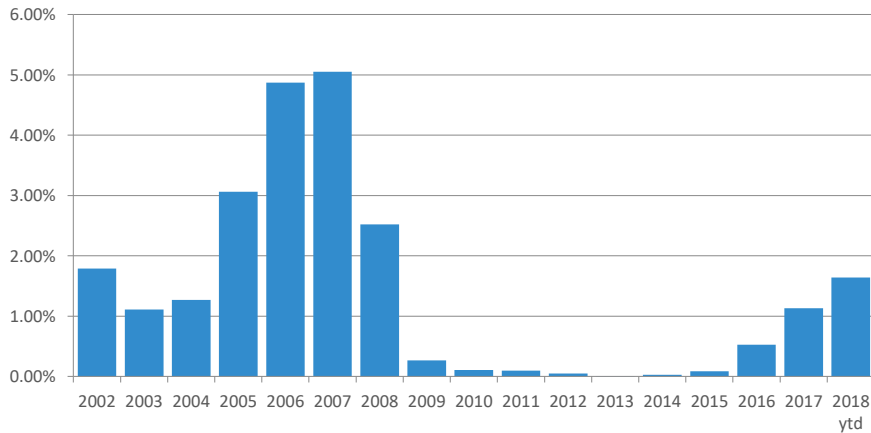


Interest Rate Outlook



INTEREST RATE EXPECTATIONS

Average STAR Ohio Yield



INTEREST RATE EXPECTATIONS

There are known knowns. These are things we know that we know.

There are known unknowns. That is to say, there are things that we know we don't know.

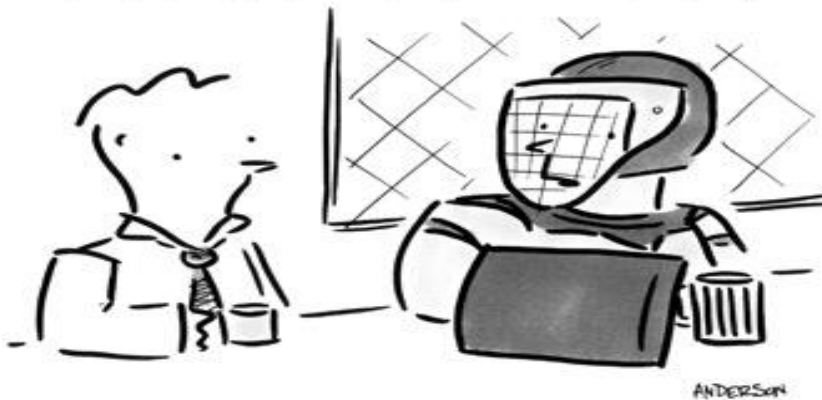
But there are also unknown unknowns. There are things we don't know we don't know.



Donald Rumsfeld

INTEREST RATE EXPECTATIONS

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"My therapist says it's a defense mechanism."

INTEREST RATE EXPECTATIONS

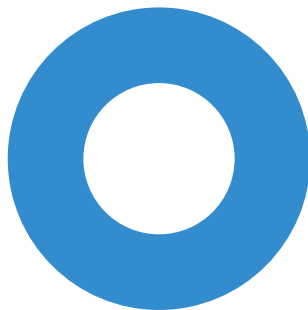
EGO DEFENSE MECHANISMS

- If only....
- Ceteris Paribus
- I was almost right
- It just has not happened yet
- Single prediction



INVESTMENT SELECTION

Public Entity Portfolio



■ Local Bank CDs

Permissible Investment Options



- US Treasuries
- US Government Agencies
- FDIC Insured CDs
- Commercial Paper
- Municipals



INVESTMENT SELECTION

SAMPLE CD INDICATIONS

INSTITUTION	CERT	MATURITY				
		1 YR	2 YR	3 YR	4 YR	5 YR
ALLIANCE BANK	17821	2,400	2,600			
ATLANTIC STEWARDSHIP BANK	25390		2,500			
BANK OF AMERICA	13083	1,900				
BANK OF DELAWARE	82		2,600	2,000		
BANKRUPTED NATIONAL ASSOCIATION	10977	2,000				
BANK HARRIS BANK NATIONAL ASSOCIATION	16572			2,800		
BANK OF NORTH AMERICA	15142	2,400	2,600	2,700	2,800	
BOSTON PRIVATE BANK & TRUST COMPANY	24811					
BUSBY BANK	16450	2,000				
CATHAY BANK	18051			2,700		
CENDEIRA BANK, NATIONAL ASSOCIATION	3008			2,600		
CONNECTICUT BANK	17121		2,500			
CRESCENT BANK	12145			2,800		
FAISLER BANK	16742	2,400				
ENERBANK USA	17293	2,000	2,650			
FOXA BANK & TRUST	20261	1,900				
FARM BANK	1961		2,600	2,700		
FARM POWER FIVE CENTS SAVINGS BANK	12098		2,800			
FIRST BANK	15027	2,500	2,450	2,750		
FIRST VIRGINIA COMMUNITY BANK	16059	2,000		2,700		
FRONTIER BANK	28870	2,000				
GUARANTY BANK	13076			2,800		
HAWAIIAN NATIONAL BANK	19927		2,350			
ISRAEL DISCOUNT BANK OF NEW YORK	828			2,700	2,000	
JPMORGAN CHASE BANK, NATIONAL ASSOCIATION	13959		2,300	2,450	2,450	
MET FINANCIAL BANK, NATIONAL ASSOCIATION	16281		2,300	2,450	2,700	
MBANK	14814	2,000				
MERRILL LYNCH	15165	2,400				
MERRICK BANK OF NEW YORK	16512	2,000	2,400	2,600		
MORGAN STANLEY BANK, NATIONAL ASSOCIATION	13793	2,300	2,700	2,700	2,800	
MOUNTAIN AMERICA FCU	24922			3,000		
NORTHSHORE BANK	16953		2,000			
PARKWAY BANK AND TRUST COMPANY	13058	2,000				
PRINCETON BANK	25383	1,900	2,300			
REGIONS CO-OPERATIVE BANK	20621	1,900	2,300			
SIGNATURE BANK OF ARKANSAS	82			2,600		
SANBORN BANK	1895	1,900				
SONABANK	17961	1,950				
SOUTHWEST BANK	18271	2,000				
STATE BANK OF INDIA	13484	2,000	2,500	2,700	2,900	
STERLING BANK	17823		2,300			
SYNCHRONY BANK	22124			2,750		
THE HUNTINGTON NATIONAL BANK	1650	2,000				
TRISTATE CAPITAL BANK	16851		2,350	2,550		
TRU BANK	12268			2,500		
WEST POINT BANK	15132	2,000				
WESTERN ALLIANCE BANK	361		2,350	2,450		
WESTERN BANK OF WOLF POINT	16973	2,000	2,400			
WEX BANK						

SAMPLE US GOVERNMENT AGENCY INDICATIONS

Issuer	Coupon	Maturity	Outstanding	Notes	ISIN
FED HOME LN BANK	2.320	12/19/19	100	1.75% INC	AE734440 Corp
FED HOME LN BANK	2.650	02/27/21	30	3% INC CONT	AE737272 Corp
FED HOME LN BANK	2.420	03/27/20	15	2% INCNO BERM	AE714145 Corp
FED HOME LN BANK	2.860	04/04/22	15	4% INC BERM	AE714144 Corp
FED FARM CREDIT	2.710	12/14/22	50	4.75% INC	AE713977 Corp
FED FARM CREDIT	2.840	09/29/21	75	3.5% INCNO CONT	AE712349 Corp
FED HOME LN BANK	3.125	03/29/23	50	5% INCNO BERM	AE712020 Corp
FED HOME LN BANK	3.100	03/29/23	15	5% INCNO BERM	AE712111 Corp
FED HOME LN BANK	3.050	03/29/23	50	5% INC BERM	AE712051 Corp
FED HOME LN BANK	2.500	06/29/20	30	2.25% INCMMNC	AE547144 Corp
FED HOME LN BANK	2.330	03/29/20	70	2% INC	AE681161 Corp
FED HOME LN BANK	2.450	06/29/20	25	2.25% INCMMNC	AE669641 Corp
FED HOME LN BANK	2.375	09/13/19	263.2	INCREASE	EA232875 Corp
FED HOME LN BANK	2.750	03/29/23	89	5% INC INC	AE621381 Corp
FED FARM CREDIT	2.470	09/15/20	45	2.5% INCNO CONT	AE688270 Corp
FED FARM CREDIT	2.670	02/14/21	25	3% INCNO CONT	AE688306 Corp
FED FARM CREDIT	2.300	02/19/20	47	2% INC	AE688156 Corp
FREDDIE MAC	2.425	12/29/20	55	2.75% INCMMNC	AE688731 Corp
FED HOME LN BANK	2.480	04/14/21	15	3.25% INC	AE687656 Corp
FED HOME LN BANK	2.400	09/14/20	100	2.5% INC	AE688844 Corp
FED HOME LN BANK	3.000	03/29/23	50	5% INC BERM	AE679887 Corp
FREDDIE MAC	3.050	03/28/23	25	5% INCNO BERM	AE669970 Corp
FREDDIE MAC	2.750	03/29/22	25	4% INC 1X	AE669907 Corp
FED HOME LN BANK	2.350	03/29/20	110	2% INCNO INC	AE652902 Corp
FED HOME LN BANK	2.660	06/14/22	10	4.25% INC	AE669338 Corp
FED HOME LN BANK	2.500	04/14/21	10	3% INC	AE669206 Corp
FREDDIE MAC	2.730	03/29/22	55	4% INC 1X	AE669784 Corp
FED HOME LN BANK	2.820	04/14/20	50	2% INC	AE669728 Corp
FREDDIE MAC	2.830	03/29/23	25	5% INC 1X	AE669689 Corp
FREDDIE MAC	3.000	12/29/22	25	4.75% INC	AE669621 Corp
FED FARM CREDIT	2.440	10/15/20	65	2.5% INC	AE669395 Corp
FREDDIE MAC	2.700	03/29/21	25	3% INCNO BERM	AE669275 Corp
FED HOME LN BANK	2.400	03/27/20	15	2% INCNO INC	AE669231 Corp
FED HOME LN BANK	2.500	06/29/20	50	2.5% INCMMNC	AE633889 Corp
FREDDIE MAC	2.600	09/29/21	25	3.5% INC 1X	AE648788 Corp
FED HOME LN BANK	2.300	12/27/19	15	1.75% INCMMNC	AE648709 Corp
FED HOME LN BANK	3.050	03/29/22	15	3% INCNO BERM	AE648681 Corp
FED HOME LN BANK	2.440	06/29/20	25	2.5% INC	AE648522 Corp
FED HOME LN BANK	2.400	03/29/20	50	2.25% INC	AE648513 Corp
FED FARM CREDIT	3.000	12/14/22	75	4.75% INCMMNC	AE648505 Corp
FED FARM CREDIT	2.820	03/14/22	40	4% INC CONT	AE645138 Corp
FED FARM CREDIT	2.880	03/14/23	70	5% INC CONT	AE645144 Corp
FED HOME LN BANK	2.460	03/28/21	18	3% INC	AE645109 Corp
FREDDIE MAC	2.500	03/27/21	25	3% INCNO BERM	AE645170 Corp
FREDDIE MAC	2.700	03/29/22	50	4% INC 1X	AE632666 Corp
FED FARM CREDIT	2.850	03/29/23	115	5% INC	AE630489 Corp
FED HOME LN BANK	2.750	09/16/21	46.16	INCREASE	EA202511 Corp
FED HOME LN BANK	2.800	03/28/21	63	3% INC CONT	AE631847 Corp
FED FARM CREDIT	3.000	03/27/23	35	5% INCNO INC	AE645383 Corp

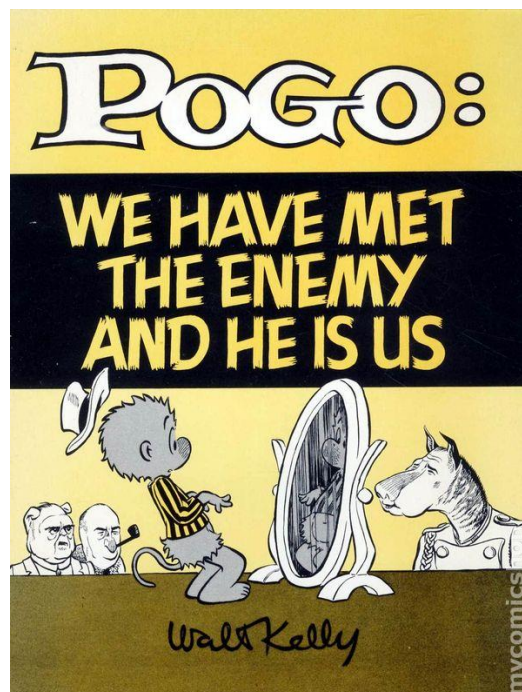


THOUGHTS FOR OVERCOMING BIASES

- Know thyself
- Be more humble
- Develop a disciplined process
- Recognize your level of emotional engagement
- Avoid historical perceptions
- Try to learn from your mistakes



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THANK YOU



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