

Outline for the following power point presentations

STALKING THE DETERMINANTS OF BEHAVIOR: FROM BOOZING STUDENT TO CLEAN LIVING MOVEMENTS AND CHAOS THEORY*

Ruth Clifford Engs, Professor, Applied Science

24 September 1999. HPER Research Lecture Series.

2002 Distinguished HPER Researcher Award, IU, Lecture

*Note: This is based upon two lectures one focusing on clean living movements the other adds chaos theory.

This presentation found at: <http://hdl.handle.net/2022/26432>

The presentation outline and handout to those attending the lecture are found in the next 5 slides. This lecture sums up my whole career as a researcher and the theoretical Model I developed concerning determinants of behavior, in other words what causes people to behave in certain ways. Over my career this has included both quantitative and qualitative historical research.

Investigating the determinants of behavior

Sociological Research

Historical Research

Demographic/cultural variables

Engs, Hanson & Diebold, 1996
Engs & Hanson, 1995; 1993;
1992; 1990; 1989a,b,d; 1986;
1985
Hanson & Engs, 1986a, b;
1984
Hanson, Engs, & Katter, 1984
Engs, 1982 a,b,c; 1981 a,b,c,d
Engs & Rendell, 1987

Public Policy

Engs 2001b
Engs & Hanson, 1989b
Engs & Hanson, 1989a, 1989b,
1988,1986

Cross Cultural

A: in other countries

Engs & Mullen, 1999*
Engs & Teijlingen, 1997
Lu, Engs, & Hanson,
1997
Engs & Rendell, 1987,
1988
Engs & Mulqueeny, 1983
Engs, 1982a, b,c
Engs, 1981a, b, c, d
Engs, 1980b

Theory Testing (Sociological)

Demonization and Deviance

Engs, 2002

Control of Consumption

Engs & Hanson, 1999

Alcohol and Illness

Engs & Aldo Benson, 1995

Subcultural Theory

Engs & Hanson, 1994*

Cycle Theory, Engs, 1991

Family Systems Theory, Engs, 1991*

Reactance Theory

Engs & Hanson, 1989c

Socialization Theory

Hanson, Engs, & Katter, 1984

Theory Testing (Historical)

- *Reform cycles: Underlying themes (2004)*
- *American Clean Living Cycles*
- Engs, 1991, 2000 (2nd ed. 2001)* 2003
- *Cycles of Social Reform*, Engs, 1997
- *Origins of Western European Drinking Culture*, Engs, 1995*
- *American Cycles of Prohibition*, Engs, 1992
- *Romanization as factor in Western European Drinking Norms*, Engs, 1991

Student Health Related Concerns/Problems

Engs 2001b
Engs 1997
Engs, Glickman, & Smyth, 1992
Engs, McKaig, & Jacobs, 1996
Engs, 1990
Engs, 1983
Engs, 1985
Engs, 1974

International

B: between two countries

Engs & Badr, 1983-84
Engs, Hanson, Israelowitz, 1988
Engs, Glickman, Smyth, Hanson, 1990
Engs, Slawinska, Hanson, 1991

Religion

Engs & Badr, 1984
Engs, 1982a
Hanson & Engs, 1987
Engs, Hanson, Israelowitz, 1988
Engs, Hanson, Glickman, 1990

Education/ Intervention

Greer & Engs, 1986
Engs & Torabi, 1984
Engs & Mulhall, 1981a
Engs, 1980a
Engs, 1978
Engs et al., 1978
Engs, 1977b
Engs, 1976
Schladt & Engs, 1971

Hypotheses Development

Engs – Reform cycles and Chaos
Engs 2004 - Health reform Links
Engs, 1999- Forbidden Fruit
Engs & Fors, 1998- Drug Abuse Hysteria
Engs, 1989- Warning Labels

Research Methodology

1. Research questions

2. Hypotheses

3. Type of Research /methods - Testing theories, quantitative studies, and historical research

4. Results

Individual differences: USA gender, age, GPA and religiosity
Scottish age,
Gender and religiosity
Polish class year and gender

Group differences: USA religion, race and fraternities
Scottish religion

Intra-cultural differences: USA urbanity, school size

Cross-culture differences: comparison between university students in USA and in Scotland and Poland

Data based theory testing findings:

reactance,
sub-cultural,
control of consumption

Historical theory testing findings:

Origins of drinking patterns in Europe –
climate,
Romanization,
religion and language

Clean living cycles in the USA –
the religion and immigrant factor

Chaos theory?

4. Conclusions

Working Conclusions from 30 years of research - behavior determinants related to drinking and other health related issues have deep roots in western cultural history. Current behaviors reflect this deep history and changes made through health promotion are at best temporary. Clean living cycles are associated with a spiritual awakening and a clash of deep cultural norms that have their roots in antiquity.

Stalking the Determinants of Behavior: From Drunken Students to Chaos Theory

Ruth Clifford Engs
Professor, Applied Health Science
Indiana University

Stalking the Determinants of Behavior: Research Questions

- Are there differences between individuals ?
- Are there differences between groups ?
- Are there differences between cultures?
- Are there differences over time?

The focus of my 30 years of research has primarily been on determinants of Drinking patterns and Behaviors

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Determinants of Behavior:

Sociological, Historical, Theoretical

- Differences in drinking patterns between different college student demographic groups ?
- Differences in drinking patterns between cultures?
- Cultural drinking patterns arising from antiquity
- Cycles of alcohol consumption and temperance cycles?
- Clean Living Movements?
- An aside (hip gait analysis)
- Chaos Theory?

Hypotheses and Theory Testing: Data Based research on the determinants of drinking behaviors

- Socialization theory
- Reactance Theory
- Control of consumption theory
- Cultural and Sub-cultural theory
- Family systems/co-dependency theory

Testing Cultural and Subcultural Theory as Determinants of Behavior

- Sub cultural theory - a subculture follows their own patterns and does not conform to the rest of society
- Cultural theory - a sub-culture follows the norms of the rest of the society

The background features a dark blue grid pattern overlaid with several thick, wavy, light blue lines that create a sense of movement and depth. The text is centered in a yellow, serif font.

Support for cultural theory

Testing Subculture Theory:
The literature suggests that
religion or religiosity has been
found by most researchers to be a
powerful determinant of
behaviors

Family system theory suggests that dynamics within the family tend to shape behavior in offspring.

Alcoholism runs in families. Co-dependency theory suggests that students who have parents who are problem drinkers would themselves be more likely to be heavy drinkers in comparison to those from non problem drinking families

Testing Family Systems/Co-Dependency Theory

Table 2: Comparison of students with positive and negative family background using *t* test for mean number of drinks and chi-square for percent of students consuming different numbers of drinks per week.

	N	Mean	SD	T	Abstainer (<1)	Light (1-7)	Moderate (8-14)	Mod/heavy (15-21)	Heavy (22-28)	At risk (>28)
Total										
Positive	155	10.1	11.8	1.2	34	25	12	10	10	9
Negative	175	10.1	12.7		40	21	9	9	9	9
Male										
Positive	68	13.4	13.5	1.6	33	15	7	15	16	13
Negative	64	15.2	17.4		36	13	9	8	9	25
Female										
Positive	86	7.6	9.8	1.6	35	33	15	7	6	4
Negative	110	7.6	10.0		42	25	9	10	8	6

Reactance theory, as a determinant of behavior, suggests that whenever people believe their freedom either has or will be unjustly threatened, they enter into a reactance motivational state and act to regain control by not complying. Coercion, in particular, leads to the arousal of reactance, which in turn tends to reduce compliance

Testing Reactance Theory

Table 1: Q/F Drinking Patterns of all Students by Age Group in Percent

Drinking Classification	Under 21 years (n=1,987)	21 Years + (n=1,388)
Abstainer	18.8	24.7
Infrequent Drinker	9.6	11.0
Light Drinker	9.5	11.1
Moderate Drinker	17.8	18.2
Moderate/heavy Drinker	20.4	19.8
Heavy Drinker	24.0	15.3*

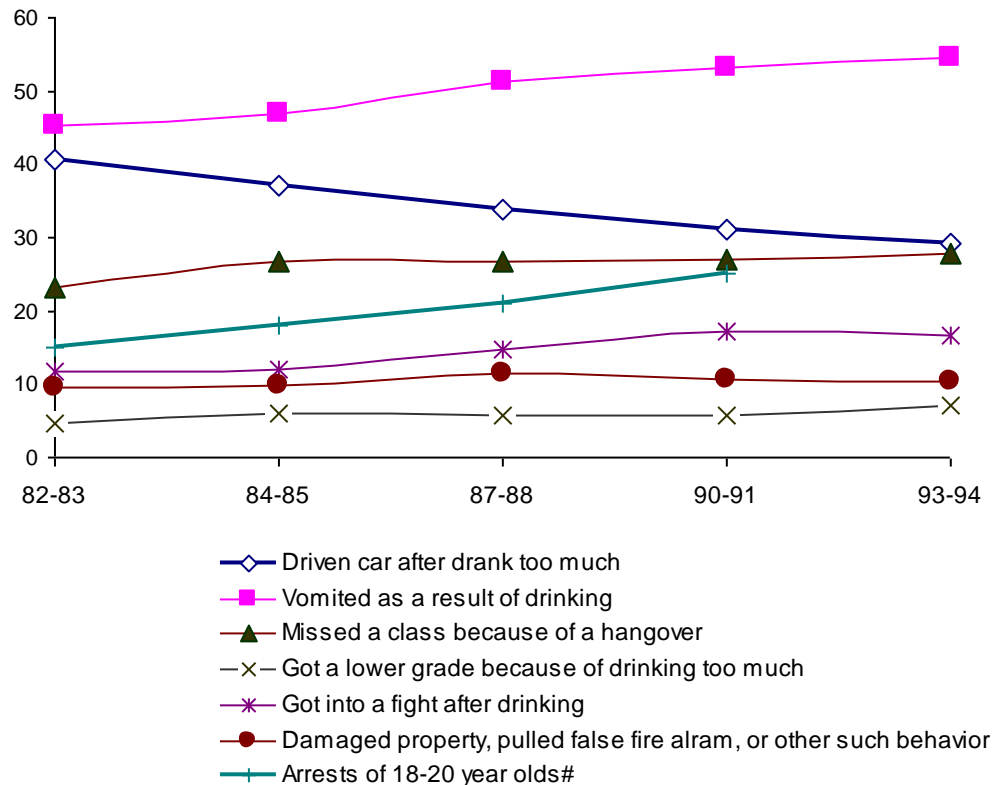
* $\chi^2 = 47.5, p < .001$. Engs, Ruth C. and David J., Hanson. Reactance Theory: A test with collegiate drinking (1989).

Control or Reduction of Consumption Theory as a determinant of behavior suggests that if you reduce the supply of something (ALCOHOL) you will reduce the problems associated with its use.

- eg. 21 year old drinking age to reduce associated with college student drinking

Testing Control of Consumption Theory

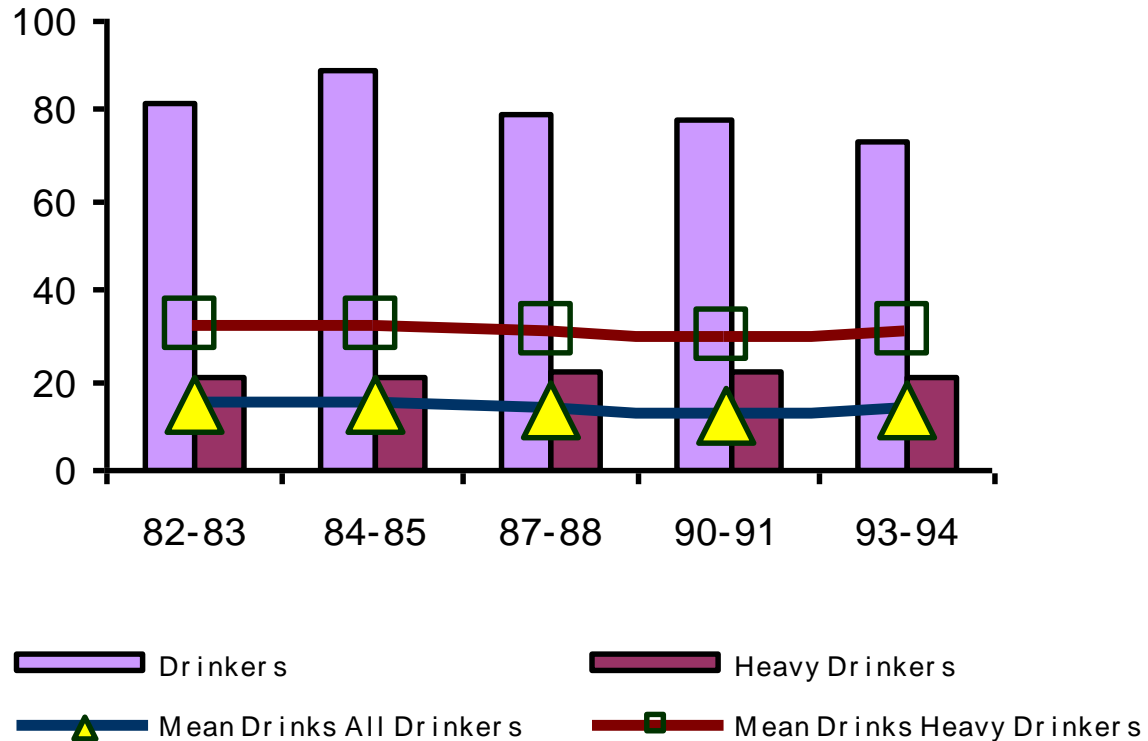
Figure 2: Trends of Selected Problems Related to Alcohol Consumption from 1982 to 1994 (Arrests/1,000 other problems in percent)*



Testing Control of consumption Theory

Figure 1 : Per cent of Students Over Time who Drank and who were Heavy ("binge") Drinkers (bar graph).*

Mean Number Drinks per Week (line graph) *



Hypothesis Development: Archival

- Origins of drinking cultures
- Clean living cycles
- Chaos theory and clean living cycles

ON GOING RESEARCH

Testing the hypothesis that drinking patterns developed in antiquity and remain more or less intact into modern times

“THE ROMANS AND THE BARBARIANS HYPOTHESIS”

RQ: Are deep roots in antiquity associated with determinants of behaviors

- H02: There is no significant difference between drinking patterns of ancient Rome and northern Barbarian civilizations
- H02: There is no significant differences between drinking patterns and practices between modern European cultures and the cultures spawned by them in the New World

Table 1: Ranking of 16 western European by various factors

Country	Liters/year Absolute Alcohol	KG/year Wine Beer	Language	Number Control Policies	Viticulture	Religion
Norway	5.7	4 46	Germanic	26	No	Prot.
Finland	6.0	3 63	Neither	-	No	Prot.
Sweden	7.1	9 48	Germanic	24	No	Prot.
U.K.	9.8	8 121	Germanic	17	Parts	Prot.
Ireland	10.0	3 81	Neither	16	No	R.C.
Denmark	11.0	14 132	Germanic	13	No	Prot.
Germany (DDR)	12.0	11 139	Germanic	-	No	Prot.
Netherlands	12.1	13 87	Germanic	9	No	Prot.
Germany (FR)	12.7	25 146	Germanic	12	Yes	Both
Switzerland	13.3	43 69	Both	14	Parts	Both
Belg/Lux	16.9	20 130	Both	10	No	R.C.
Austria	14.4	36 105	Germanic	8	Yes	R.C.
Portugal	-	85 28	Romance	-	Yes	R.C.
Italy	16.0	89 18	Romance	6	Yes	R.C.
Spain	19.2	61 48	Romance	10	Yes	R.C.
France	20.8	94 44	Romance	15	Yes	R.C.

Table 2: Results of Pearson Rho Correlation* for 1984-1986 total per capita alcohol consumption, per capita wine and beer consumption, spoken language group, commercial viticulture and former Roman province status, and religion.

	Total per capita consumption.	Wine	Beer	Spoken Language	Viti-Culture	Former Province	Religion
Total per capita consump	1.0	.2	-.8*	-.1	.3	.4	.7*
Wine		1.0	-.4	.8*	.8*	.7*	.5+
Beer			1.0	-.6*	-.1	0	.3
Spoken language				1.0	.6+	.8*	.6
Viticulture					1.0	.8*	.6*
Province						1.0	.8*
Religion							1.0

* P < .05. From: Engs (1995) Origins of drinking patterns in Western Culture

Testing the hypothesis that cycles
of reform activities concerning
alcohol and other health behaviors
with moral overtones act as a
determinant of behaviors

“THE CLEAN LIVING MOVEMENTS
HYPOTHESIS”

RQ: Are there cycles of reform activities concerning alcohol and other health behaviors that have moral overtones

- H01: There is no difference in drinking patterns over time
- H02: There is no differences in reform activities concerning drinking and other behaviors related to health with moral overtones over the decades

There is a tide in the affairs of men,
with flood and ebb, we will admit
readily enough.

Luther Gulick, *World's
Work* (1908)

American reform has come in waves, with a decade or more of intense activity followed by periods of relative apathy about social problems.

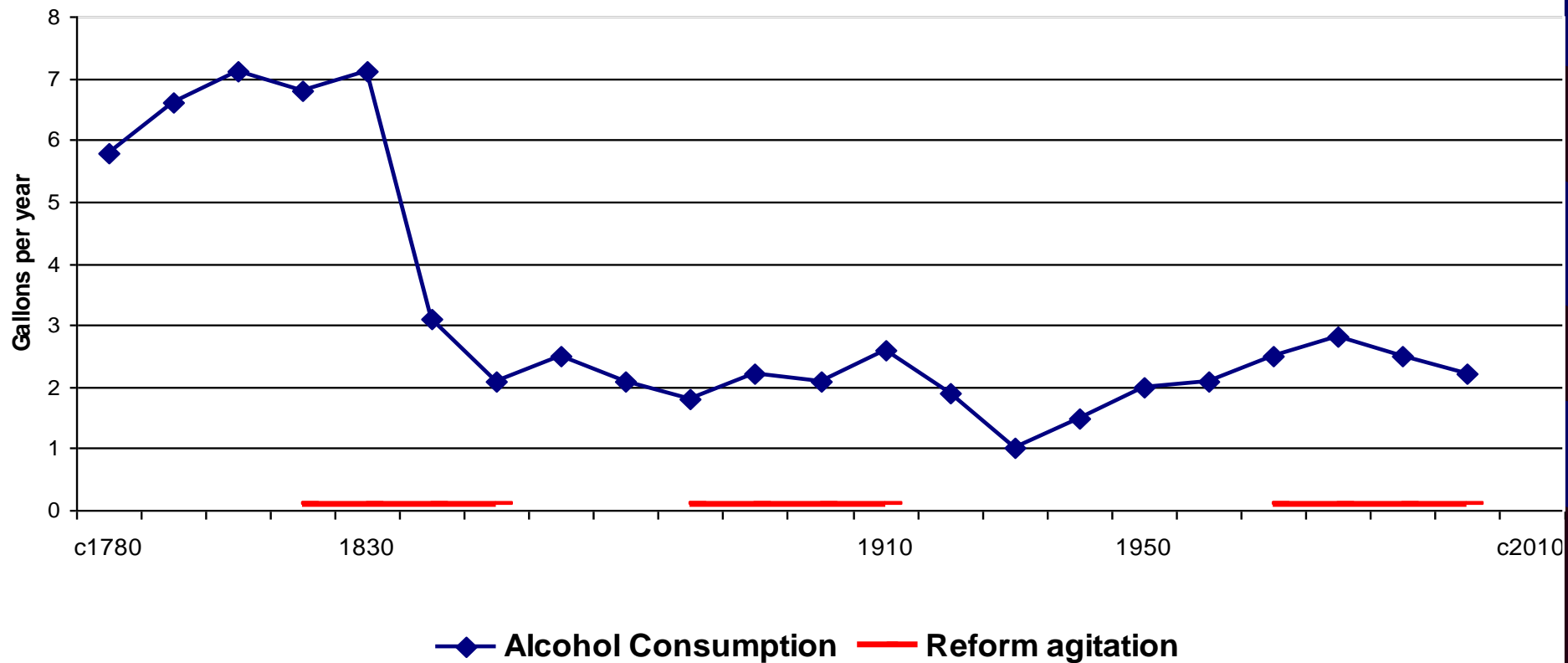
Ronald G. Walters,
American Reformers 1815-1860
(1978)

A Clean Living Movement is a period of time when a surge of health-reform crusades, many with moral overtones, erupts into the popular consciousness and generally includes temperance, social purity, diet, physical exercise, and anti-tobacco and drug campaigns.

Ruth Engs, CLEAN LIVING MOVEMENTS: AMERICAN CYCLES OF
HEALTH REFORM 2000

Health reform eras for alcohol, tobacco, drugs, exercise, food labeling

Per capita alcohol consumption from 1790 to 2000 in the USA



In clean living movements issues that have lifestyle or moral undertones are generally involved. A lone crusade such as the elimination of polio or smallpox is not a clean living movement

Current Project A: What are the links between health reformers in the Progressive era

- Anti-tobacco
- Temperance
- Purity
- Pro exercise
- Diet
- Eugenics

Current Project: B History of
the Eugenics Movement
Leaders, terms, institutions,
organizations, journals, etc

An Aside (Project C): Case study
of exercise and gait mechanics pre
and post THR for osteoarthritis
(Co-author: Vassilios Vardaxis)

- Pre-test - two weeks prior to surgery
- Post-test every month until gait change of other hip

Current Project D: Can Clean
Living Movements be explained
by Chaos Theory

Chaos

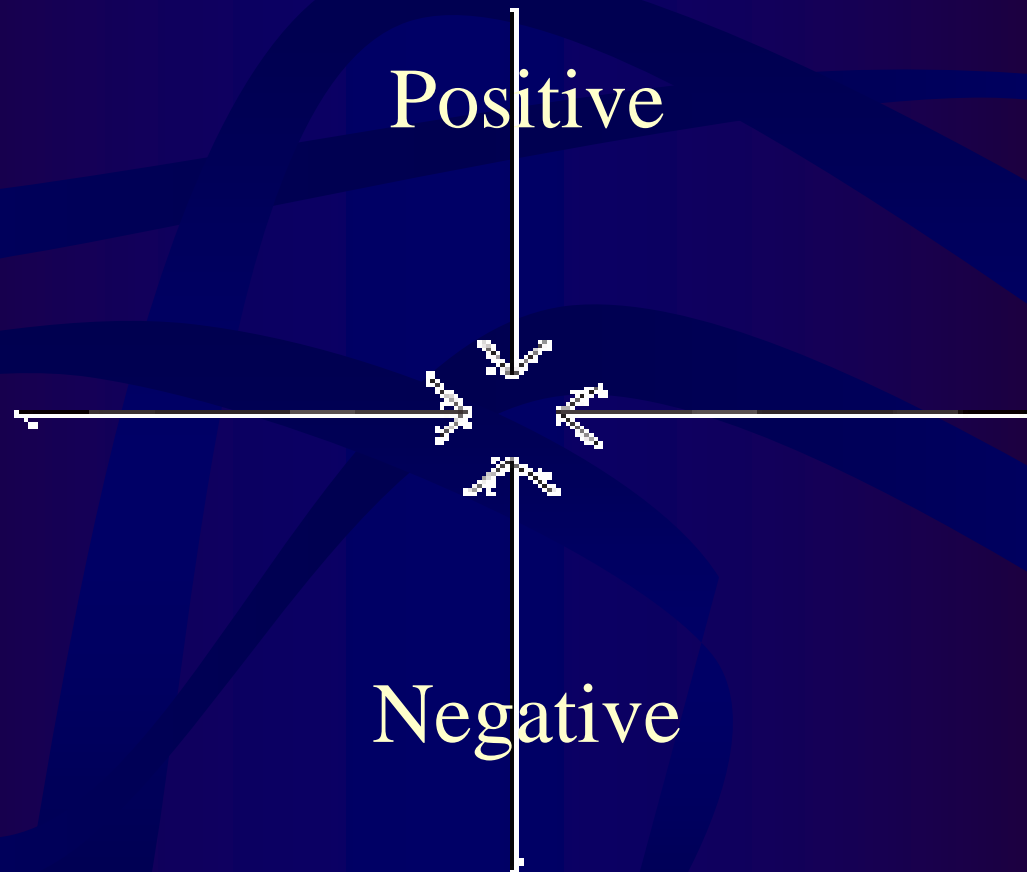
The word "Chaos" is rendered in a 3D, white, sans-serif font with a slight shadow. It is positioned in the upper center of the frame. The background consists of a dark blue gradient with several horizontal, wavy bands of a lighter blue color. The overall aesthetic is digital and abstract.

Research Questions: from ignoring to concern

8

10

Point Attractor



Boys will be boys

vs.

We need to change this
irresponsible, immoral, negative,
evil behavior

An alcohol problem is perceived as a major cause of societal discord

- Ardent spirits 1820 => State Prohibition
1850s
- The saloon 1870s => national prohibition
1920s
- Drunk driving & youth 1980 => more severe
DD laws and 21 year old purchase law 1987+

In first phase stage the object,
behavior, subject becomes
demonized

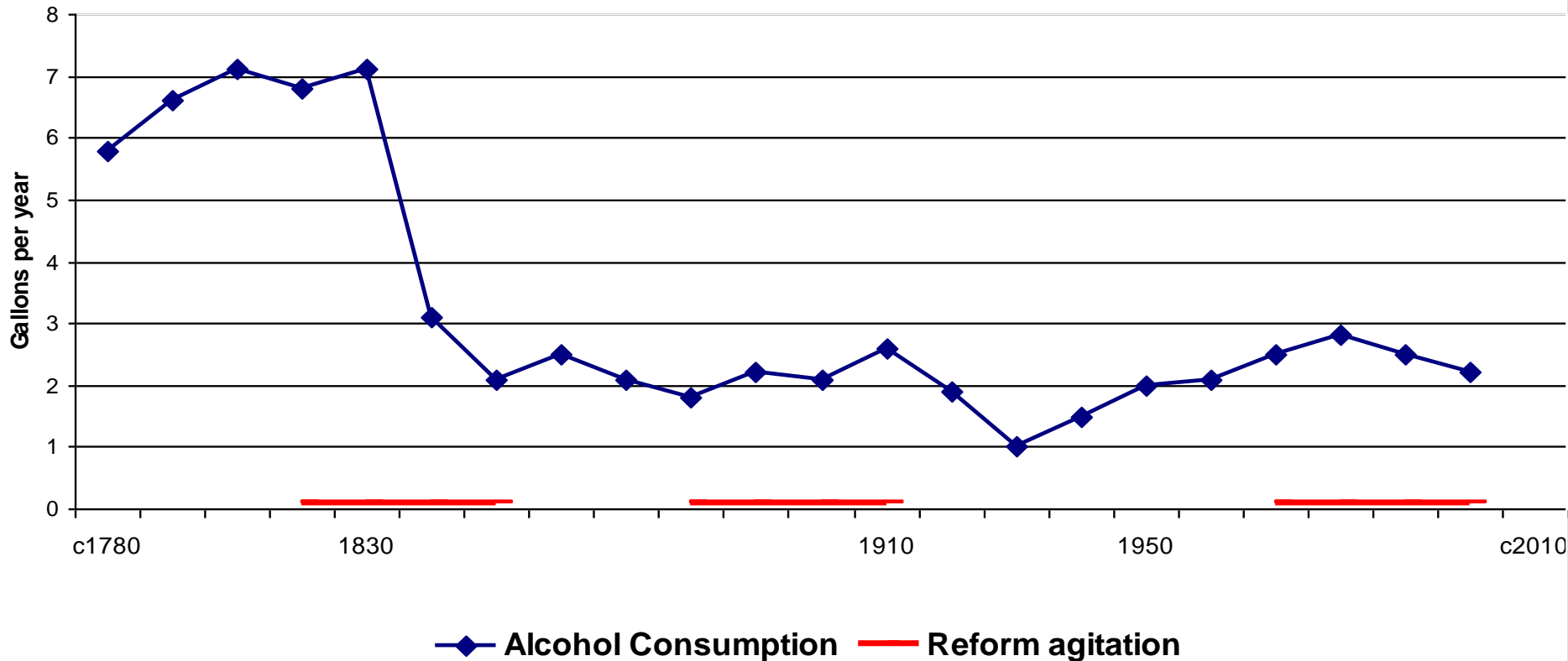
- Demon rum
- Evil tobacco companies

In backlash phase substances or behavior is acceptable and those not doing it are considered anti-social or even anti-American

- Cigarettes passed out to soldiers WWI
- Complete acceptance of smoking and drinking in the 1950s-60s in any environment.

Passage of anti-alcohol, tobacco, drug, food labeling and other laws

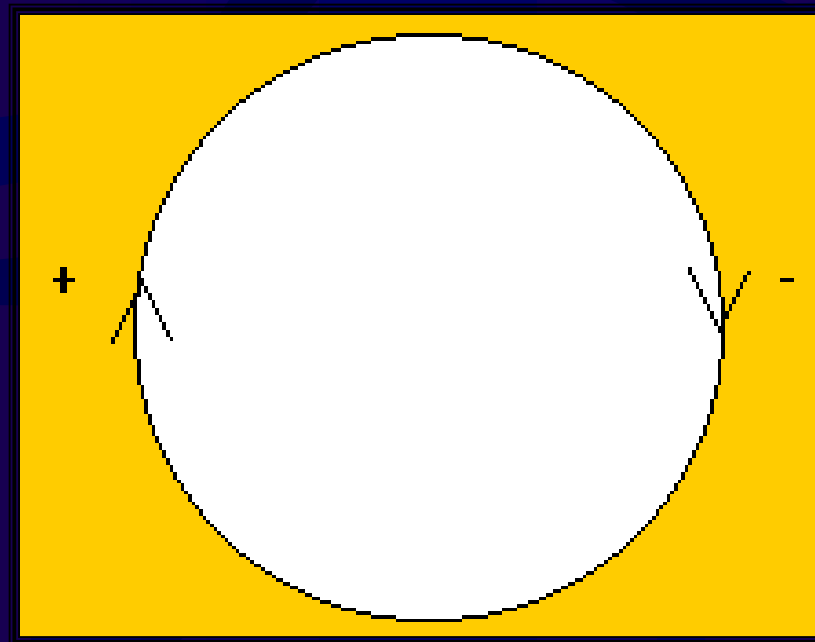
Per capita alcohol consumption from 1790 to 2000 in the USA



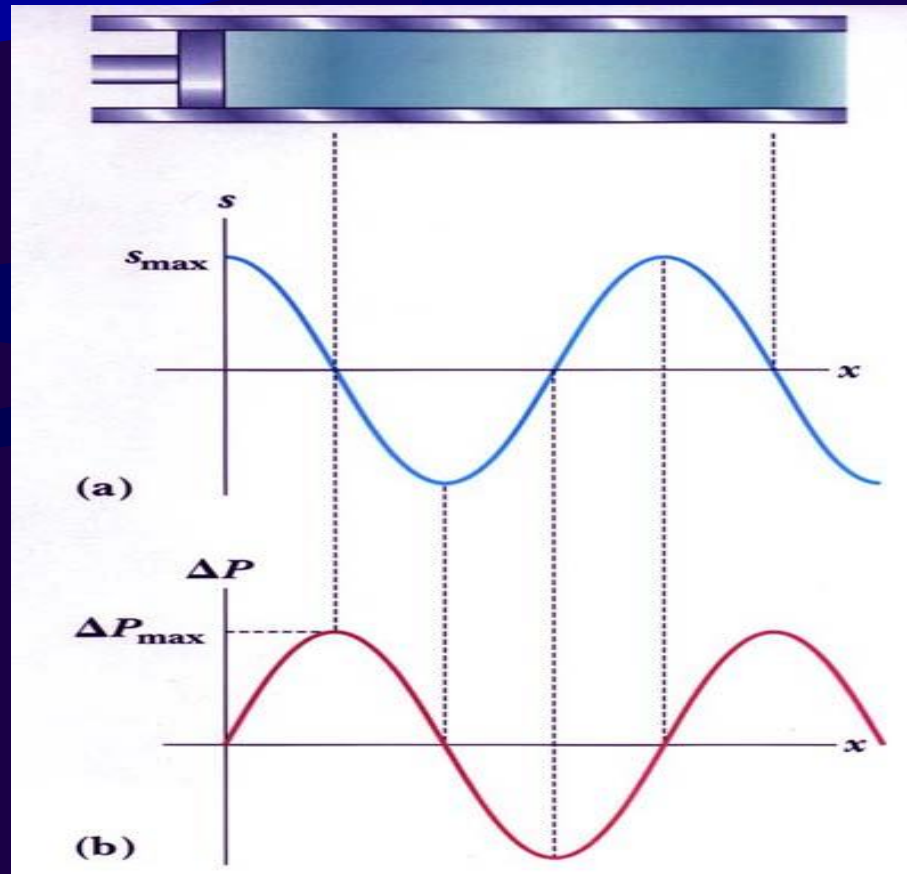
These laws often lead to backlash

- Wild frontier - drunks in saloons
- Roaring twenties - drunks in speakeasies
- Boozing students- drunks on campus

Cycle Attractor

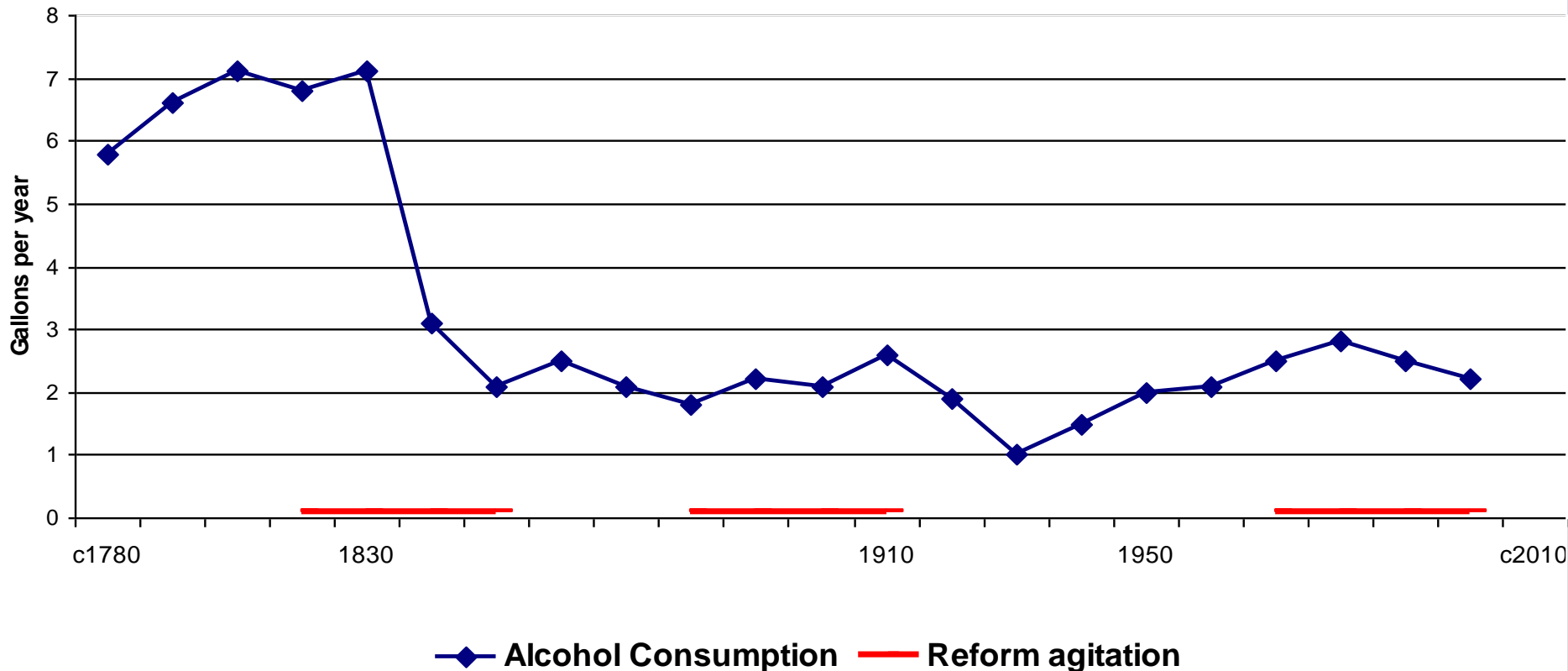


Cycle - the sin wave

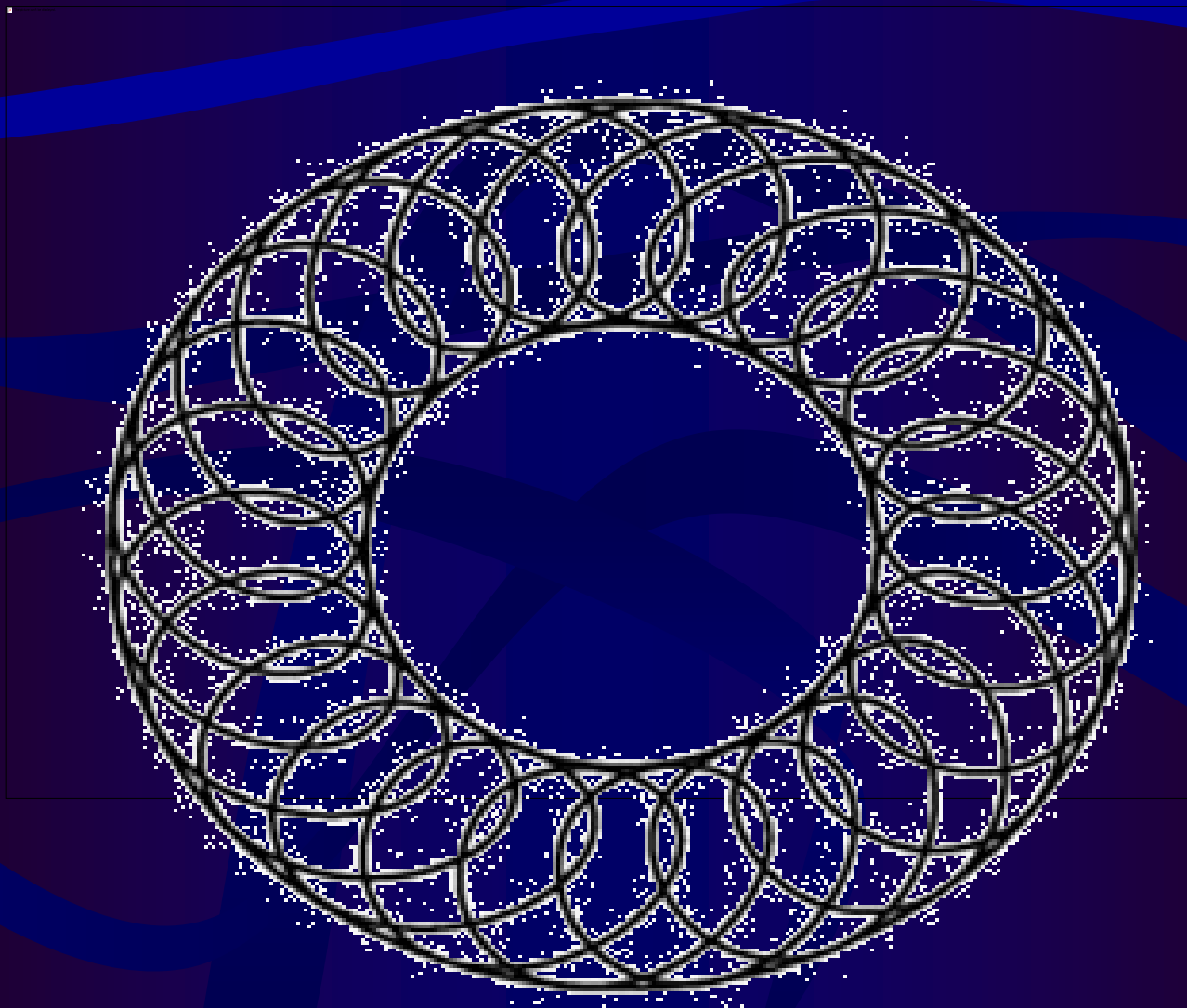


As a sub-set of these cycles can alcohol consumption patterns be explained by chaos theory?

Per capita alcohol consumption from 1790 to 2000 in the USA



Torus attractor





The cycles never repeat exactly



Sunspot Cycles

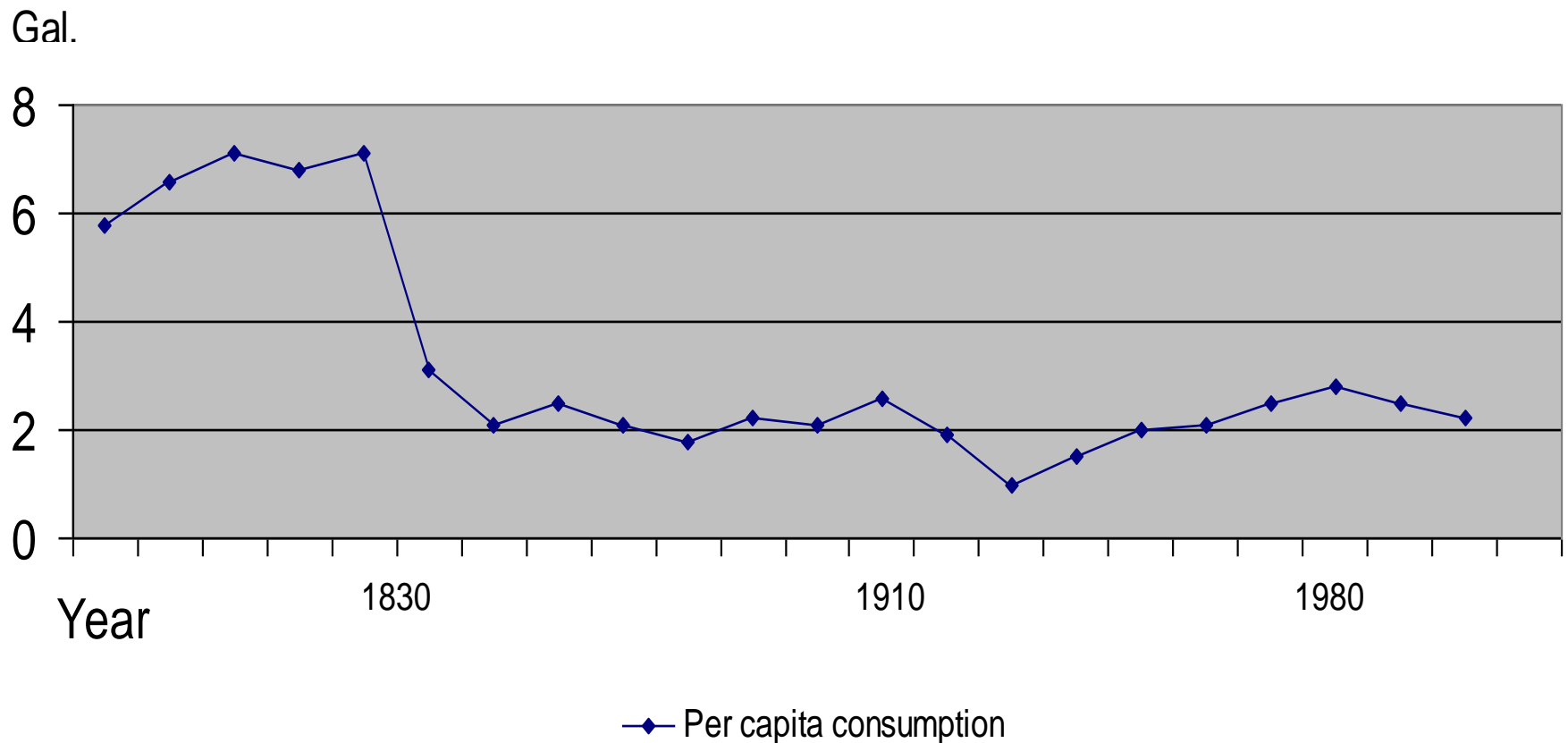
The Four Seasons

Waves Hitting Beach

Economic Depressions

Alcohol consumption and Chaos Theory?

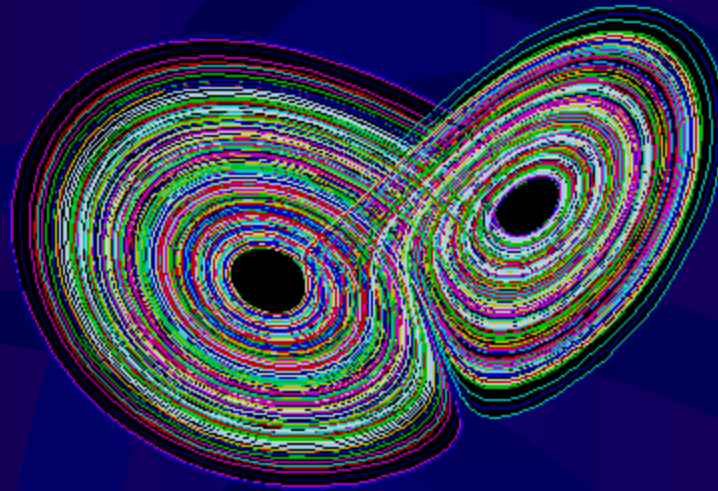
PER CAPITA CONSUMPTION OF ABSOLUTE ALCOHOL
FROM 1790 - 2000 IN GALLONS



The duration of the cycles is about 80 years

- Ardent spirits 1820 => State Prohibition
1850s
- The saloon 1870s => national prohibition
1920s
- Drunk driving & youth 1980 => more
severe DD laws and 21 year old purchase
law 1987+

Strange attractor



At the edge of chaos

The butterfly example

Could one person drinking a beer
cause public policy to restrict all
alcohol?

Note: Chaos graphics based on Lorenz 1963; Barton, 1994

THE END