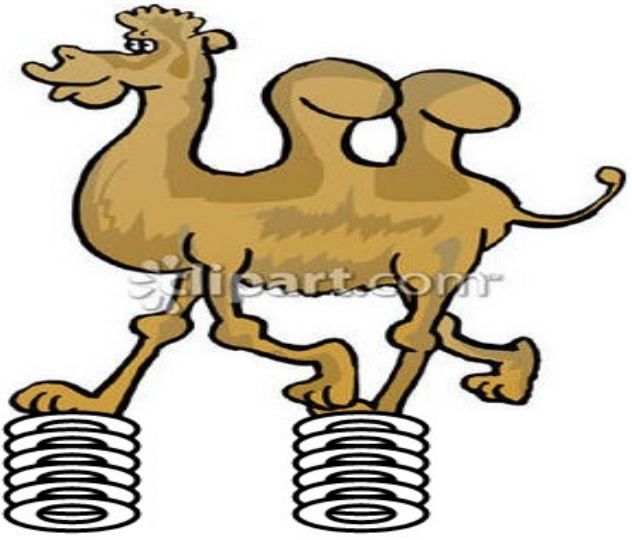
Chaos in the Middle East II

Accelerated by Social Networking and Explained by Chaos Theory



* In 2011 seven relative orderly Middle East countries rebelled against their autocratic rulers.
- These uprisings resulted in chaos throughout the region.
- This course will show how chaos theory predicts that the self organization of beneficial democratic societies in the Middle East is probable in 10 years.

What is the Arab Spring?

- By definition: “The Arab Spring is a revolutionary wave of demonstrations and protests that have taken place since Dec. 18, 2010.
- The pictures above show four of the seven Arab Spring countries that became chaotic within only a few months.

Arab Spring and the Laws of Nature

- Can the Arab Spring be understood by a law of nature? Yes!

* Chaos theory is science's attempt to understand a law of nature that can explain many of the world's non linear phenomena heretofore unapproachable by the present day scientific method. The Arab Spring is one of those.

- Deterministic theories such as Newton's laws of motion can only help us understand the world's linear phenomena. Most of the world's every day phenomena are nonlinear.
- This course's main theme is to show how a fundamental law of nature characterized by chaos theory helps us to understand the Arab Spring and to methodically analyze its dynamics.

Chaos Theory's Five Phase States

1. Order at the Threshold of Chaos

2. Chaos

3. Self Organized Order

4. Chaos Again

5. New More Complex self Organized Order

Phase State Changes

Phase state changes are familiar phenomena in our daily lives. Liquid H_2O is one phase of water, crystallized ice is another. The transition from linear fluid flow to turbulence is a further example. Societies can make phase transitions in analogous ways.

Chaos theory predicts that the transition from order to chaos is usually a rapid phase change where the transition from chaos back to a more complex order is a slower and less predictable process.

The Arab Spring phase state changes from autocratic dictatorships to the chaos of uprisings can also be explained by chaos theory. This phase change occurred rapidly but the transition to self organized, freely elected democratic governments will take longer perhaps decades, if ever.

Transition from Chaos to Self Organization

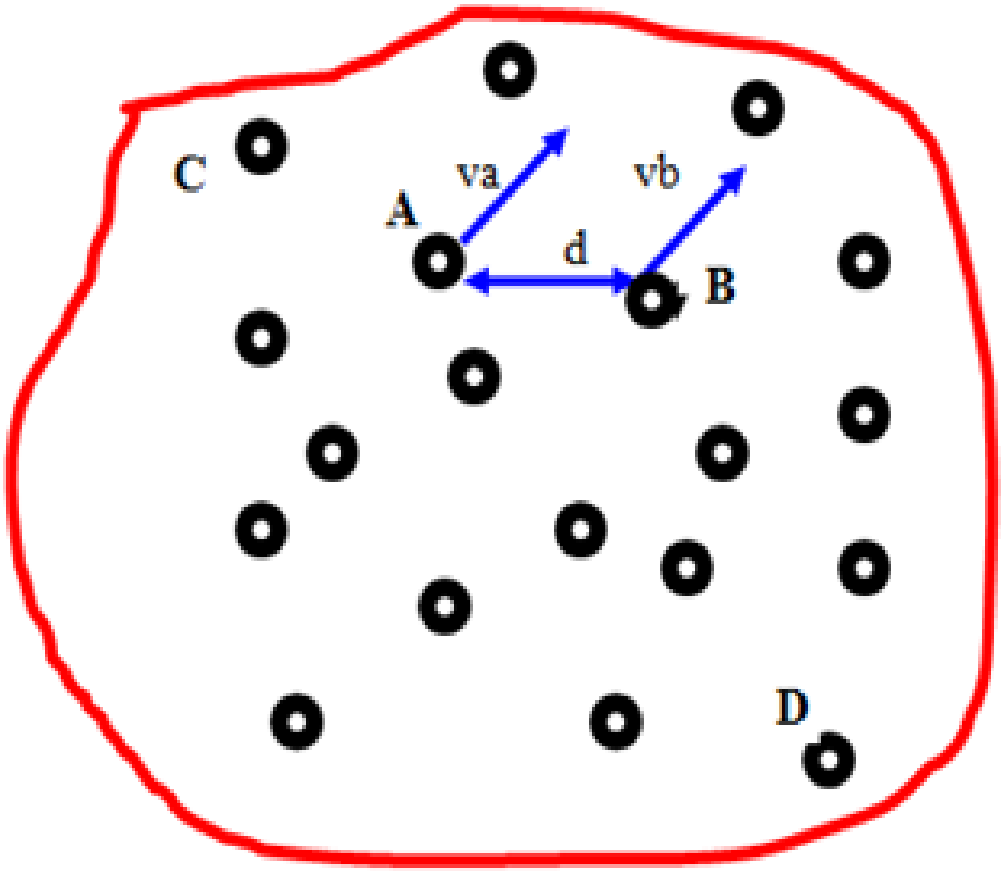
- This picture of birds that formed organized flocks was produced by Richard Dawkins and given to me by John Hadel.
- Chaos theory calls such organized groups of elements networks and they not only occur with animal species but also many physical entities such as stars forming galaxies.

Networks & Elements

The picture shows birds in three self organized flocks formed from previously chaotic groups. The elements in this case were birds. The relationship between the elements of a network is called an algorithm. Many phenomena we experience in daily life can be expressed by nonlinear algorithms. Non linear algorithms can only be interpreted through the use of computer iterative programs. Equations involving non linear algorithms can not be solved by deterministic classical mathematics.

Chaos theory produces useful graphical patterns of the network as a whole. Information concerning the individual elements is lost. Only the characteristics of the network's patterns result. Chaos theory analyses the whole not its individual parts.

Bird Self Organization Explained



* This diagram applies to many phenomenon where its elements such as A & B relate to their neighbors according to rules that may be represented by simple non linear algorithms.

Self Organization

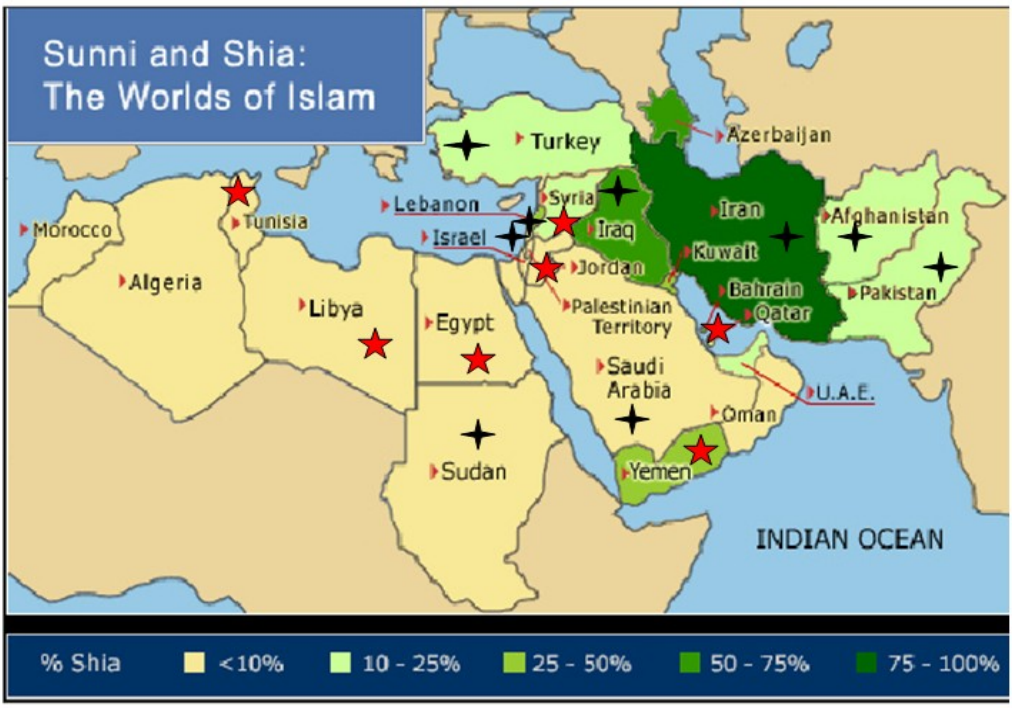
I chose the bird example of chaos theory because of its simplicity. It demonstrates the self organization phase as one of the other four involved in the theory.

We have all seen birds flying in flocks as pictured in the slide. The self organization mode of chaos theory explains why a chaotic group of birds or other animals form flocks or swarms that move together in a holistic organized group.

The sketch shows why. It shows a network of elements, three of which are labeled A,B & C. If A *(bird in this example)* has an instinctive desire to fly in the same direction and velocity as its neighbor B and at the discrete distance, d the entire group of birds may form an organized formation which will fly in a self organized flock.

The instinct for each bird to do as its neighbor had been developed through generations of evolution. The driving survival factor was that the entire flock could take advantage of one bird's discovery of a food source.

Arab Spring & Neighbors



Islamic Countries Surrounding Israel

The Middle East

The 7 Countries marked by red 5 pointed stars in the upper map rebelled against their autocratic leaders. The 9 Countries marked with black 4 pointed stars had a large affect on the Arab Spring countries. The light tan colored countries are predominately Sunni while the green countries are more Shiite. The darker the color the more Shiite the countries are.

Tinny Israel, marked with a red arrow is surrounded by its enemies. Israel and its Egyptian neighbor may, with tongue in cheek be considered the “strange attractor” for the Arab Spring phenomenon. Chaos theory’s strange attractor will be explained in the second booklet on chaos and fractal. For now consider Israel to be an important central factor in the evolution of the Arab Spring.

Chaos in Egypt

Tahrir Square Feb. 2011

Tahrir Square Violence Feb 2011

From Order to Chaos

The theories of evolution and chaos are so similar they may, in my opinion be called the same theory. Do the principles of evolution apply to societal evolution? Yes, claim many historians, but my application of chaos theory to the Arab Spring would be rejected by the scientific community as not being of scientific worth.

If one bird in flock of birds, shown in slide 8 discovered a lush field of worms the flock would quickly become chaotic when all broke ranks and greedily went for the nutrition source. Likewise when Egypt's population recognized Tunisian's protest victory their fear of reprisals was replaced by the conviction that Mubarak could be deposed. Chaos resulted when their simple fear of torture or death was replaced by the more complex hope for freedom. Chaos results when simple relationships between the network's elements become complex.

During in the January 2011 protests Egypt was in what chaos theory calls a chaotic phase state. After Mubarak's deposition and several subsequent elections, chaos still reigned.

Arab Spring's Potential Complex Self Organization

Morsi Is Winner of Egyptian Presidency

Andre Pain/European Pressphoto Agency

The Muslim Brotherhood's win is the focal point for the Middle East response to the Arab Spring.

Arab Spring's Potential Complex Self Organization

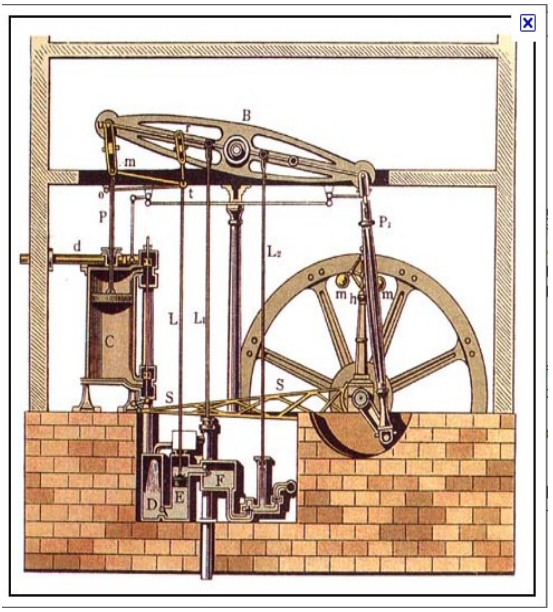
The upper picture shows the Egyptians celebrating the new president's free election victory. It looks chaotic and it is, but beneficially so. It may lead to a more complex but more democratic Egypt. The transition from chaos to a new self organized more complex network is a slow and even improbable outcome but if it happens it can become stable.

The lower picture illustrates how the slow process toward democracy may be chaotic but hopefully it will slowly make the transition to a more beneficial society. We may not like the Muslim Brotherhood's victory but if elected by the majority it may result in the long searched for stable Egypt.

History has tried democracy many times. Athens in 594 bce, the Roman Republic 400 bce and the US Constitutional Convention, 1787 all created stable and beneficial societies for significant periods of time. It may happen in the Middle East as well.

Historical Periods Since 3500 bc

Agricultural Period
3500 bce – 1700 ce



Industrial Period
1700 ce – 1900 ce

Informational Period
1900 – 2100

4th Period
2100 - ??

Each of these historical periods has improved communication which is a fundamental requirement for democracy.

Historical Periods Since the Birth of Civilization

The historical periods illustrated in the slide have been officially determined by historians and represent identifiable periods of significant identifiable societal characteristics.

The birth of civilization is generally attributed to the beginning of the Agriculture Period. It was the longest historical period lasting five millennia. It began when the first civilization occurred in 3500 bce and lasted until the Industrial Period began during the enlightenment era in the 17th century ce.

The Industrial Period lasted until Information and communication technologies revolutionized societal culture during the 20th century. Note the duration of each period is exponentially shorter than the previous period. This exponential decrease in the time required for societal change is continuing today as the 4th Period arrived in 21st century. The time required for communication was extremely slow in ancient times and became more rapid as shipping and commercial travel increased during the Middle ages. It then accelerated when telegraph, telephone, radio, and Internet arrived in the 20th century. Now communication is increasing exponentially with ubiquitous social networking.

Since chaos theory involves feedback systems changes are usually exponential and produce radically extreme values in time or other characteristics of the phenomenon.

Transition to Democracy

US Constitution

Tunisia's Elections

The phase state transition to democracy is wrought with difficulties. If obtained, however a more complex and perhaps a more beneficial government can result.

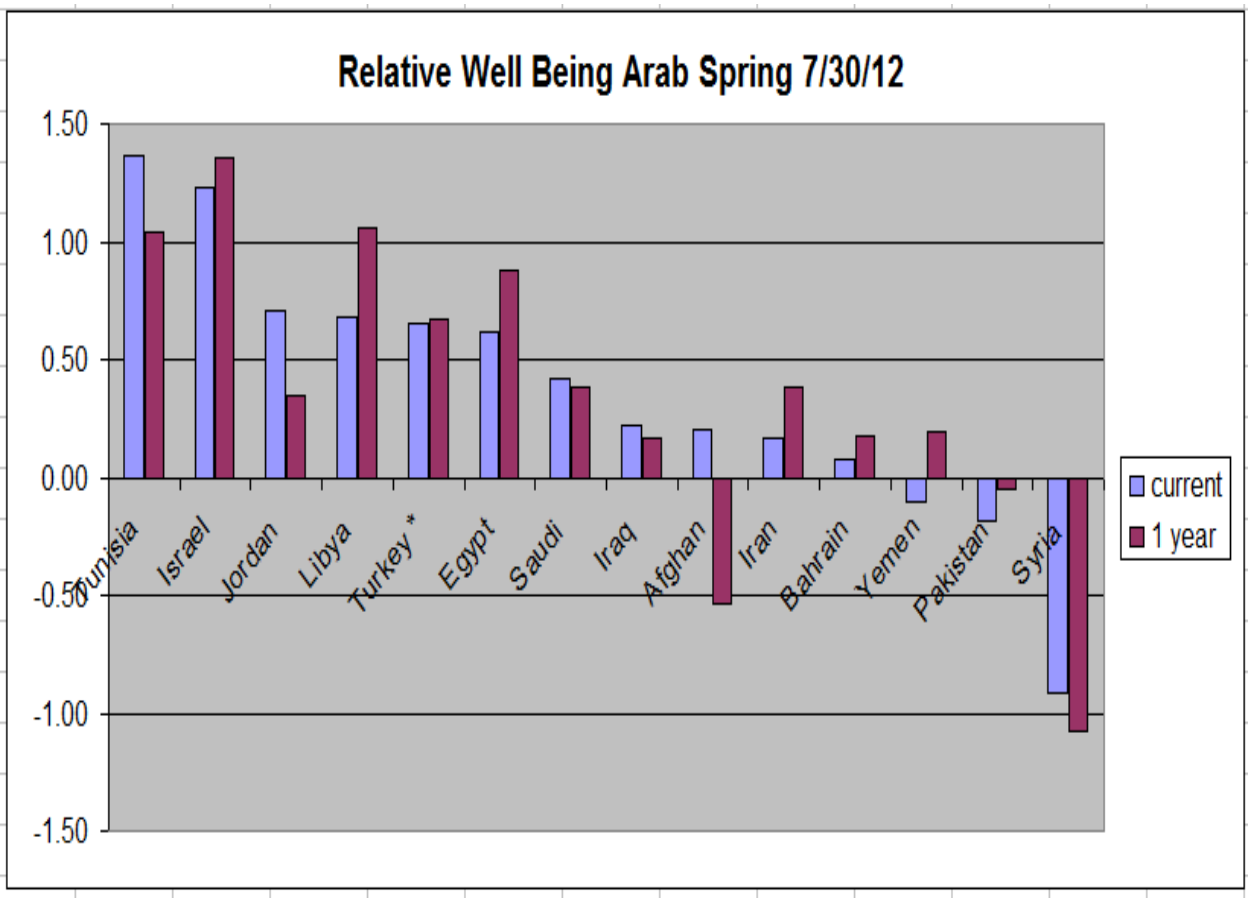
From Chaos to Democracy

History shows us why the transition from autocratic dictatorship to chaos occurred rapidly, especially with rapid efficient internet communication that is occurring in the 4th Historic Period. The transition from dictatorship to democracy is usually a long and arduous task. Chaos theory provides an understanding of this process.

The transition from 13 chaotic colonies to the 225 years of a stable United States of America was a difficult but beneficial phase state transition. Tunisia, Egypt and Libya are hopefully in the process of performing this transition. We were close to losing it in the Civil War. Tunisia and Egypt most likely will have similar trials, just as God or some say Nature had forming a stable but improbable Homo sapiens species.

I have been building a data base of events happening in the Middle East since December 2011. I used this information to make the following analysis of the Arab Spring.

Calculated Well Being



importance =		30%	21%	27%	22%	date	
#	Country	Gb	Ec	Vc	Fe	8/30	Wb
1	Tunisia	6.5	6.5	-1.0	8.0	4.81	1.37
2	Israel	7.5	2.0	-2.0	10.0	4.33	1.23
3	Jordan	7.0	3.0	-5.0	5.0	2.48	0.70
4	Libya	5.0	1.8	-3.0	6.0	2.39	0.68
5	Turkey *	7.0	4.0	-6.5	5.0	2.29	0.65
6	Egypt	5.0	1.0	-4.0	7.0	2.17	0.62
7	Saudi	2.3	5.3	-1.2	0.0	1.48	0.42
8	Iraq	1.5	1.0	-0.8	1.5	0.77	0.22
9	Afghan	3.0	0.7	-2.0	1.0	0.73	0.21
10	Iran	3.0	0.3	-2.0	0.8	0.59	0.17
11	Bahrain	4.0	4.4	-8.5	2.0	0.27	0.08
12	Yemen	3.5	1.4	-8.0	2.0	-0.38	-0.11
13	Pakistar	2.0	1.0	-7.0	2.0	-0.64	-0.18
14	Syria	0.3	0.3	-12.5	0.0	-3.22	-0.92

Wellbeing Calculation

The bar chart shows what is the calculated wellbeing for each country. Wellbeing is defined as: “The state of being happy, healthy and prosperous.” After building a database of events that have taken place in the 14 Middle East counties since November 2011, I subjectively rated four components that I consider most influential in determining the country’s wellbeing. These components were Gb, Government wellbeing; Ec, economics; Vc, violence: and Fe, freedom of elections. I then summed the weighted values for each component and normalized the result to Turkey’s wellbeing value for November 2011. Chaos theory considers the use of four variables representing the components of the country’s wellbeing as being in four dimensional phase space.

Arab Spring's Future

- Countries circled in red are tending toward free elections with Israel the main attractor.
- Those circled in blue are now in chaos with Iran the central attractor.
- 20,000 deaths have occurred in Syria where the blue area meets the red.

Two Middle East Networks

The concept of two distinct networks in the Middle East each with defining individual characteristics became evident to me after applying my chaos theory calculations to the four wellbeing characteristics for the 14 countries.

1. The red areas are predominately Sunni while the blue are Shia.

2. The Arab Spring uprisings occurred in the red area while, except for Syria the blue area dictators successfully repulsed the rioting. Red area countries were Tunisia, Libya, Egypt, Israel and Jordan.

3, The most dramatic difference showed up in my well being calculations. The red area countries averaged .77 while the blue area averaged -.05.

4, The collision at the intersection of the two conflicting areas explains the massive turbulence and chaos in Syria and surrounding countries.

Conclusion

* I can not predict that either of the two Middle East areas will become beneficial and free societies. In fact, chaos theory states that such an outcome is improbable, but if it occurs society will be stable and will survive for a relative long time.
* The Middle East has been a problem for Western Society for millenniums. Perhaps society's improved communication in the 4th Period and the law of nature, characterized by chaos theory will result in more wellbeing in the Middle East by 2020.
* Don't forget what survives lives to make the necessary changes to enable its survival. Maybe that is too obvious to mention. Chaos theory consists of many things that are too obvious for some to discuss, such as: "Chaos is one of God's laws of nature."