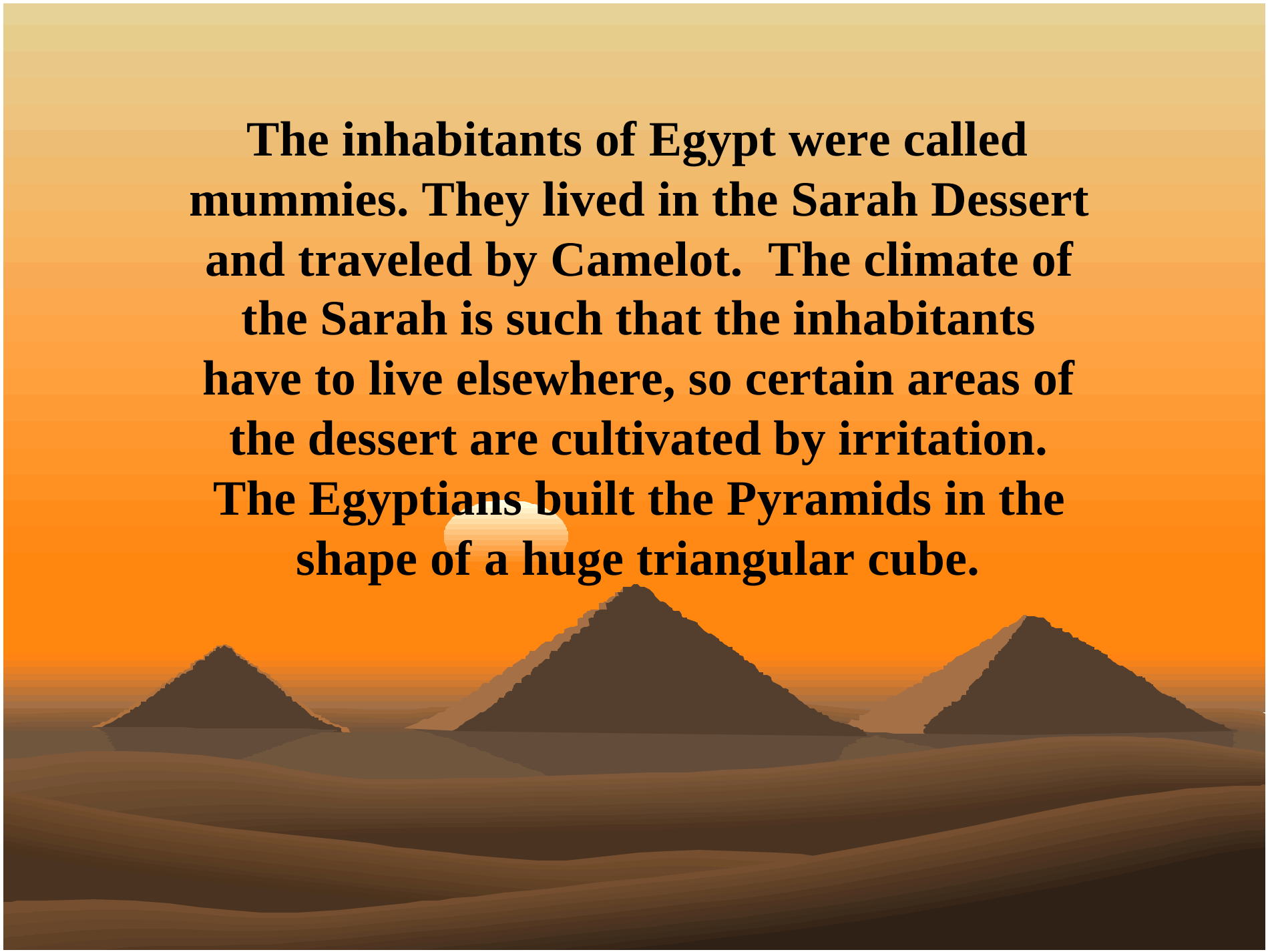
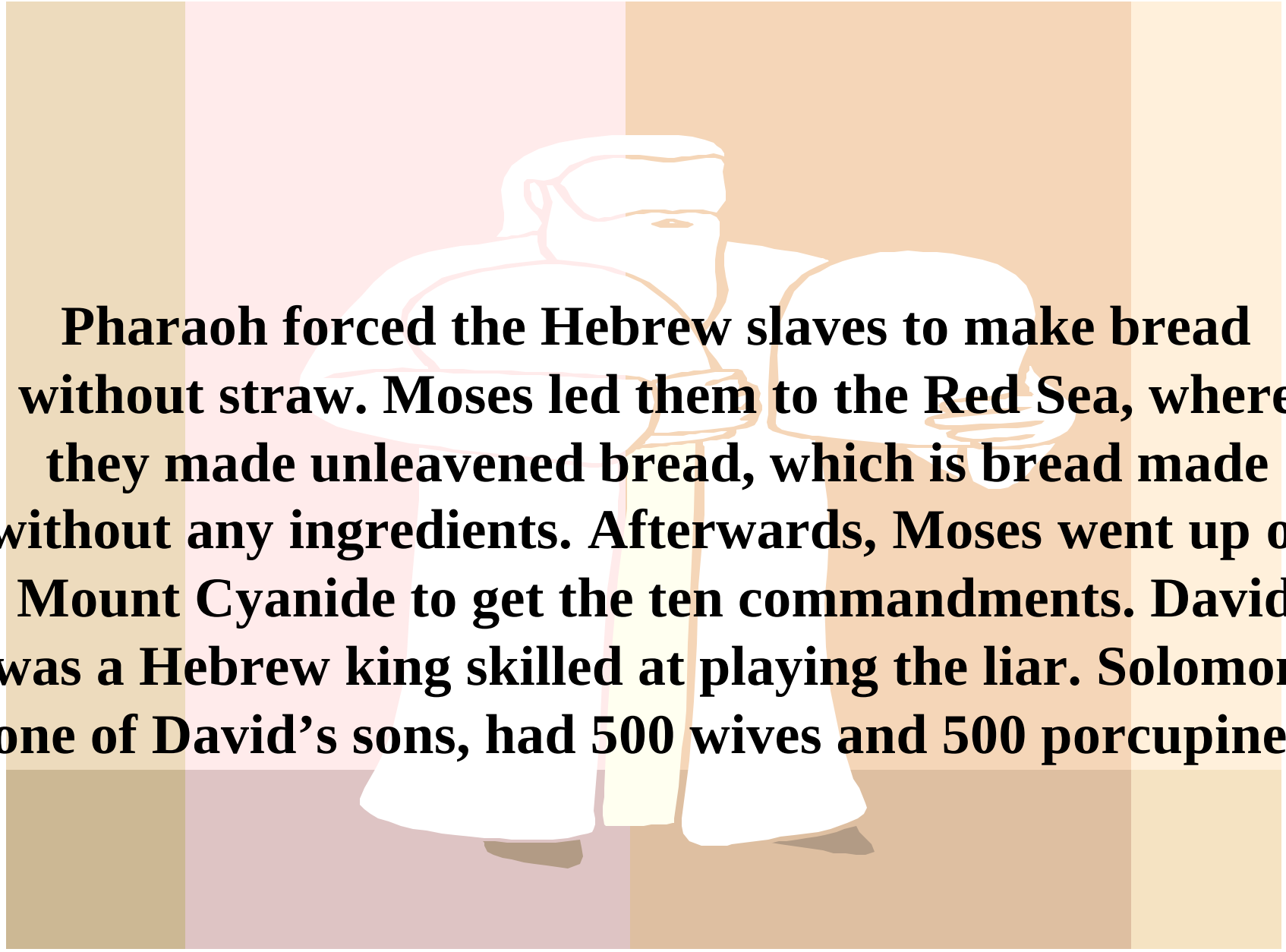
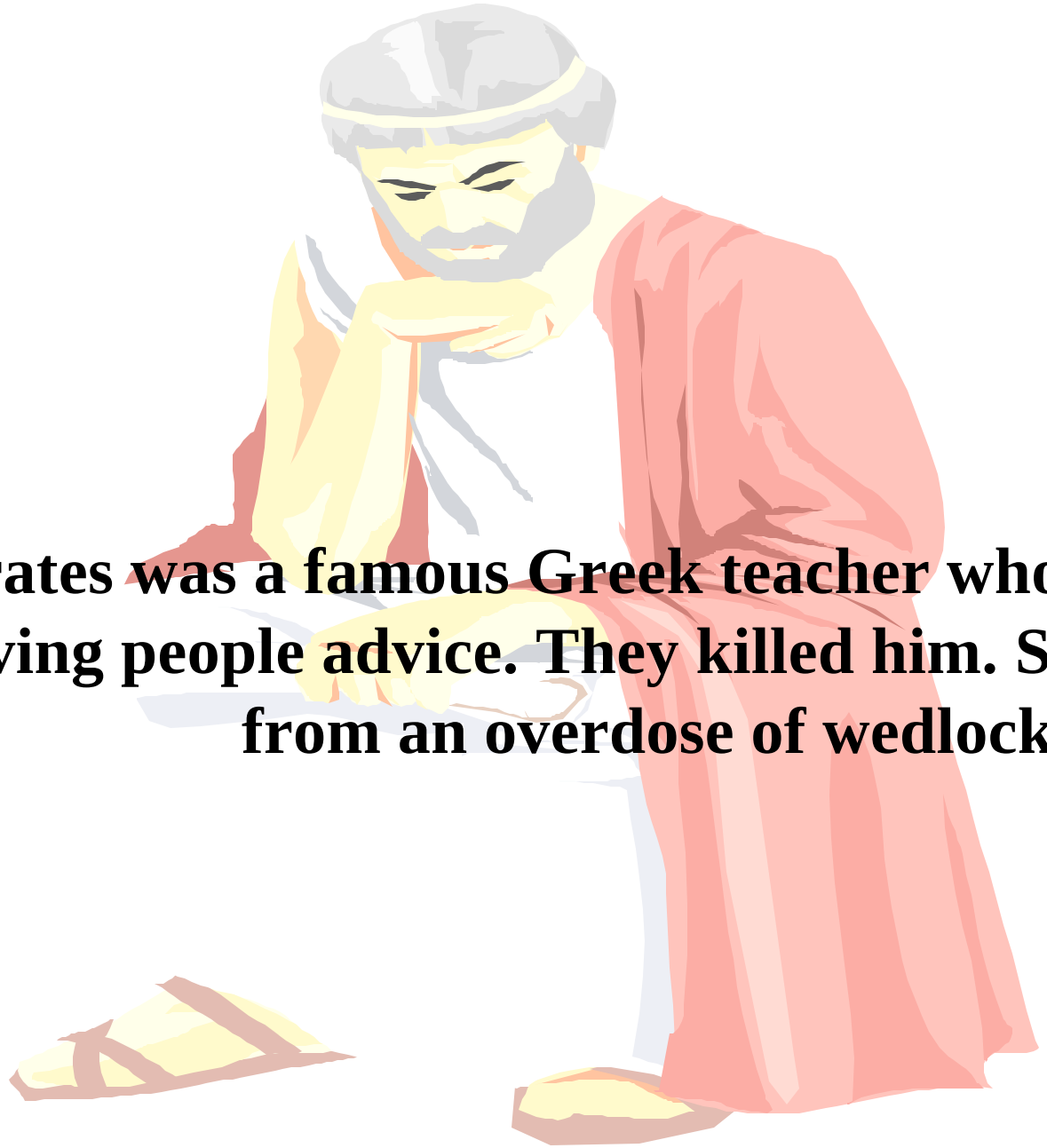
George Wauer
Deputy Director, OT&E
Strategic and C3ISR Systems

The inhabitants of Egypt were called mummies. They lived in the Sarah Dessert and traveled by Camelot. The climate of the Sarah is such that the inhabitants have to live elsewhere, so certain areas of the dessert are cultivated by irritation. The Egyptians built the Pyramids in the shape of a huge triangular cube.

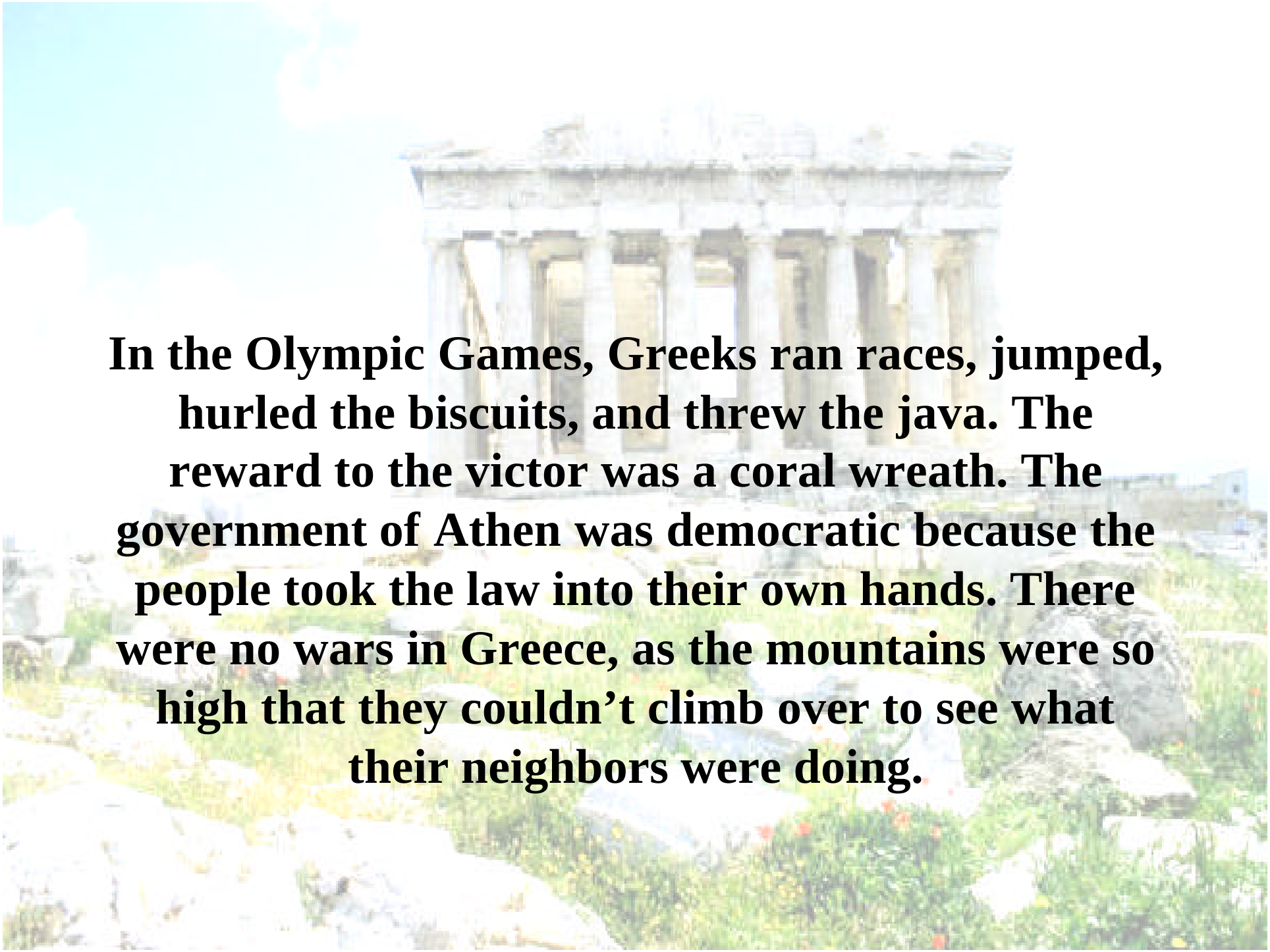




Pharaoh forced the Hebrew slaves to make bread without straw. Moses led them to the Red Sea, where they made unleavened bread, which is bread made without any ingredients. Afterwards, Moses went up on Mount Cyanide to get the ten commandments. David was a Hebrew king skilled at playing the liar. Solomon, one of David's sons, had 500 wives and 500 porcupines.



Socrates was a famous Greek teacher who went around giving people advice. They killed him. Socrates dies from an overdose of wedlock.



In the Olympic Games, Greeks ran races, jumped, hurled the biscuits, and threw the java. The reward to the victor was a coral wreath. The government of Athen was democratic because the people took the law into their own hands. There were no wars in Greece, as the mountains were so high that they couldn't climb over to see what their neighbors were doing.

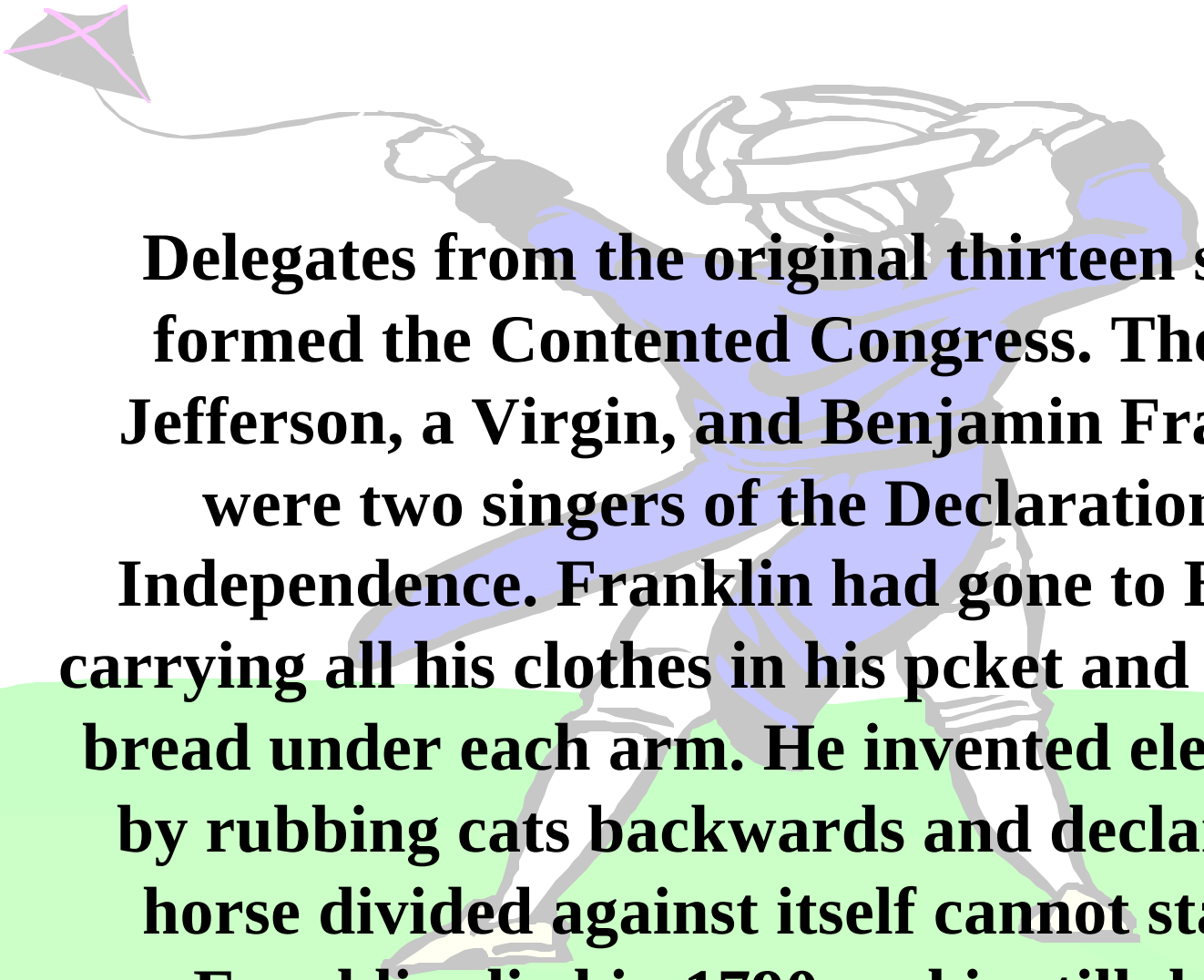
History call people Romans because they never stayed in one place for very long. At Roman banquets, the guests wore garlic in their hair. Julius Caesar extinguished himself on the battlefields of Gaul. The Ides of March killed him because they thought he was going to be made king. Nero was a cruel tyrany who would torture his poor subjects by playing the fiddle to them.

Martin Luther was nailed to the church door at Wittenberg for selling papal indulgences. It was the painter Donatello's interest in the female nude that made him the father of the Renaissance. It was an age of great inventions and discoveries. Gutenberg invented Bible. Sir Walter Raleigh is a historical figure because he invented cigarettes. Another important invention was the circulation of blood. Sir Francis Drake circumcised the world with a 100-foot clipper.

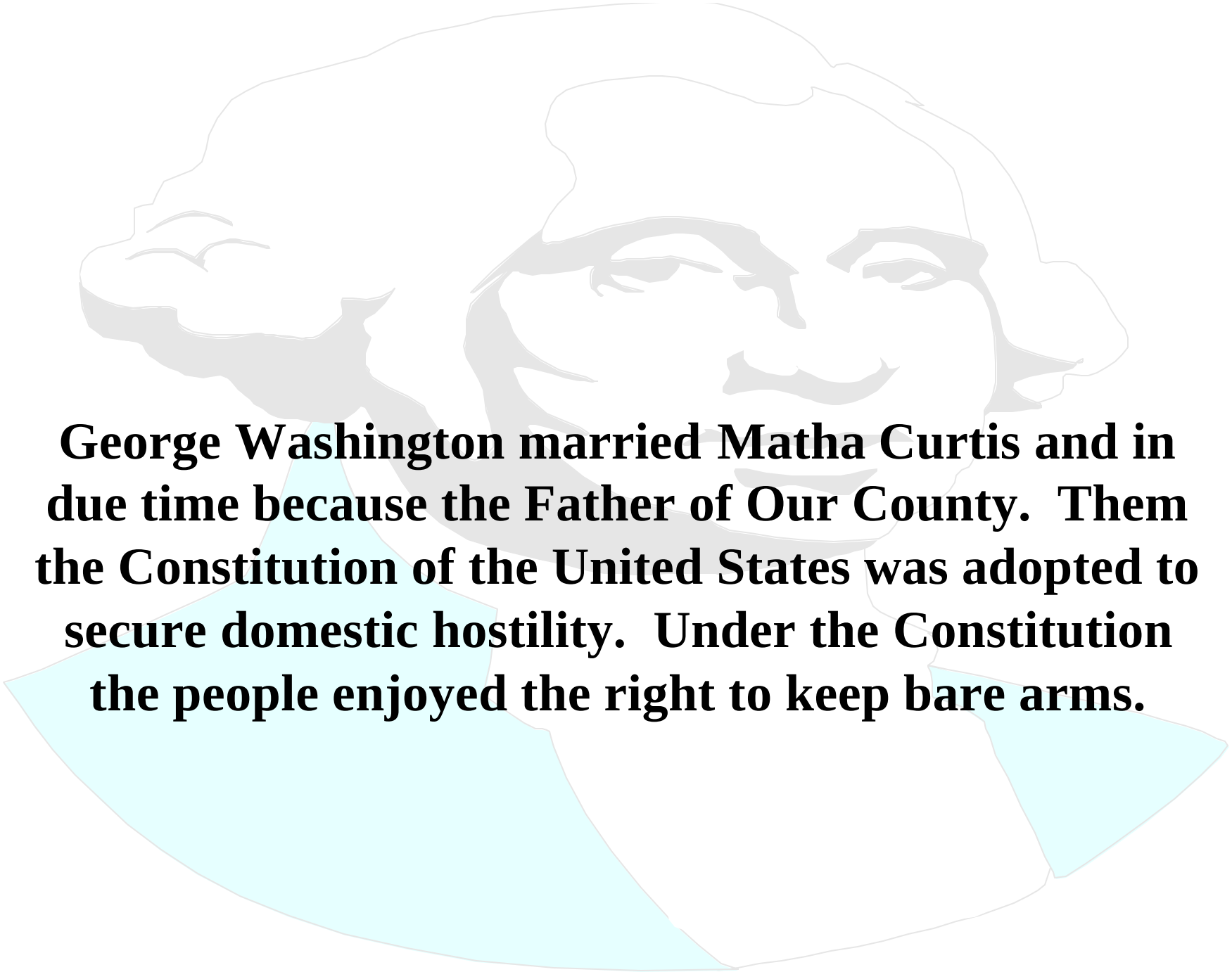
The government of England was a limited mockery. Henry VIII found walking difficult because he had an abbess on his knee. Queen Elizabeth was the “Virgin Queen.” As a queen she was a success. When Elizabeth exposed herself before her troops, they all shouted “hurrah.” Then her navy went out and defeated the Spanish Armadillo.

The greatest writer of the Renaissance was William Shakespear. Shakespear never made much money and is famous only because of his plays. He lived in Windsor with his merry wives, writing tragedies, comedies and errors. In one of Shakespear's famous plays, Hamlet rations out his situation by relieving himself in a long soliloquy. In another, Lady Macbeth tries to convince Macbeth to kill the King by attacking his manhood. The next great author was John Milton. Milton wrote "Paradise Lost." Then his wife dies and he wrote "Paradise Regained."

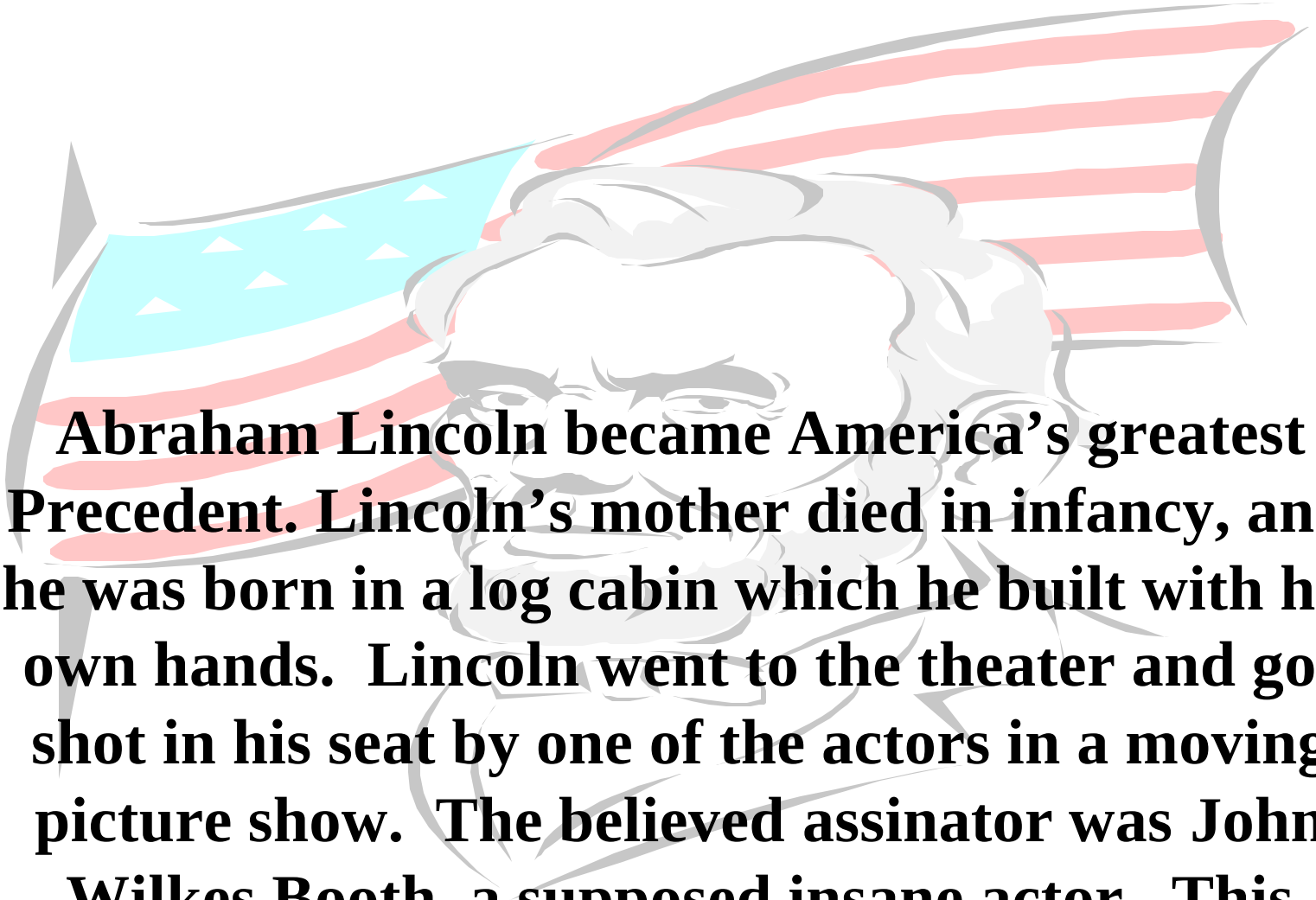
One of the causes of the Revolutionary Wars was the English put tacks in their tea. Also, the colonists would send their pacels through the post without stamps. During the War, Red Coats and Paul Revere was throwing balls over stone walls. The dogs were barking and the peacocks crowing. Finally, the colonists won the War and no longer had to pay for taxis.



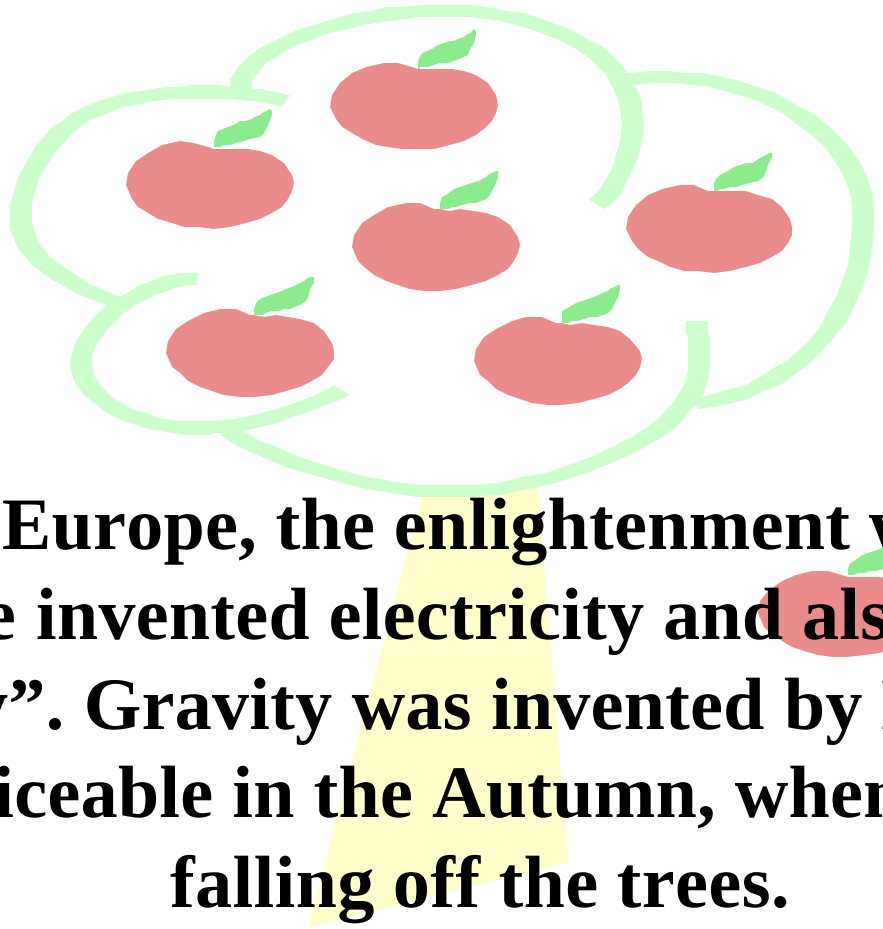
Delegates from the original thirteen states formed the Contented Congress. Thomas Jefferson, a Virgin, and Benjamin Franklin were two singers of the Declaration of Independence. Franklin had gone to Boston carrying all his clothes in his pcket and a loaf of bread under each arm. He invented electricity by rubbing cats backwards and declared “a horse divided against itself cannot stand.” Franklin died in 1790 and is still dead.



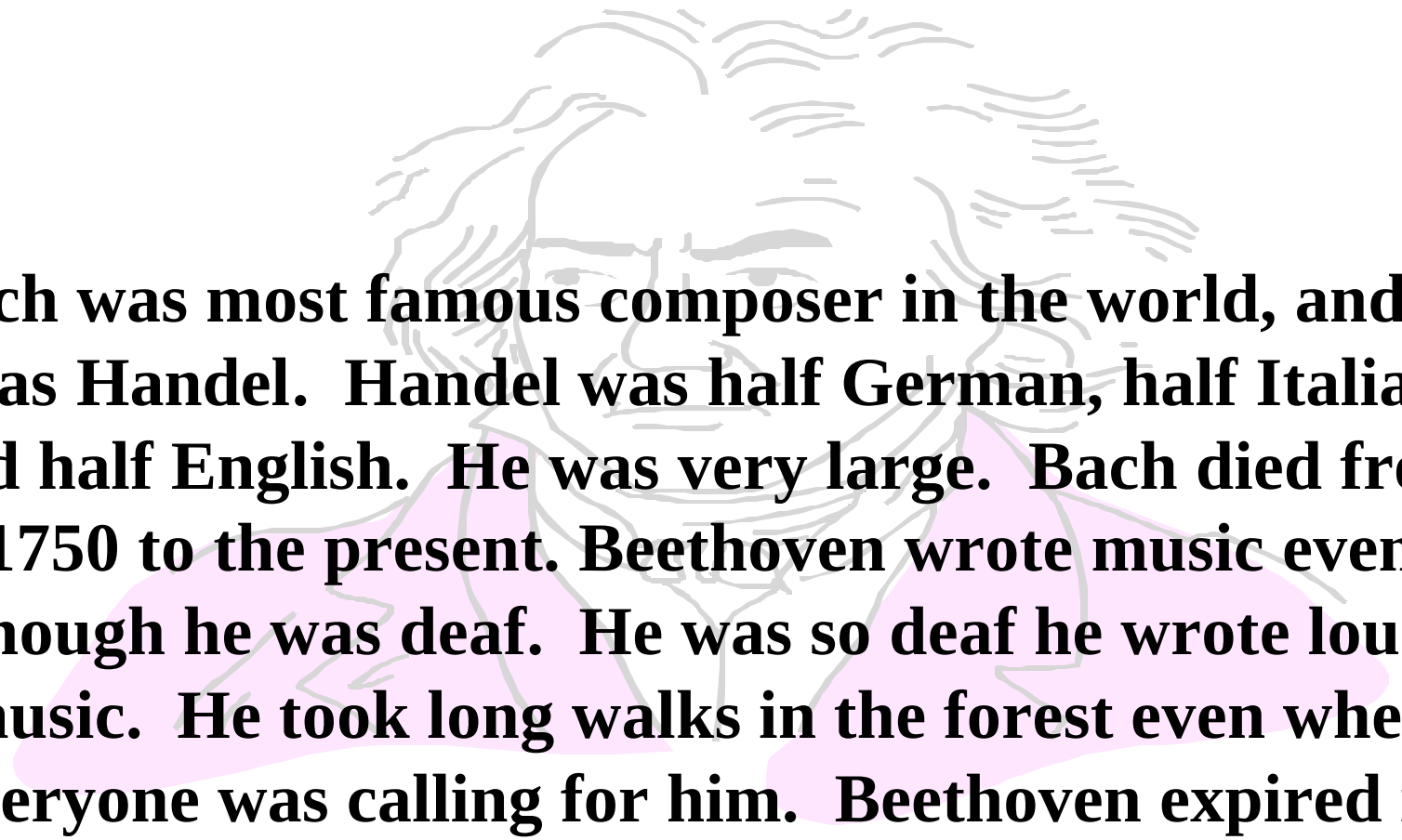
George Washington married Matha Curtis and in due time because the Father of Our County. Them the Constitution of the United States was adopted to secure domestic hostility. Under the Constitution the people enjoyed the right to keep bare arms.



Abraham Lincoln became America's greatest Precedent. Lincoln's mother died in infancy, and he was born in a log cabin which he built with his own hands. Lincoln went to the theater and got shot in his seat by one of the actors in a moving picture show. The believed assinator was John Wilkes Booth, a supposed insane actor. This ruined Booth's career.

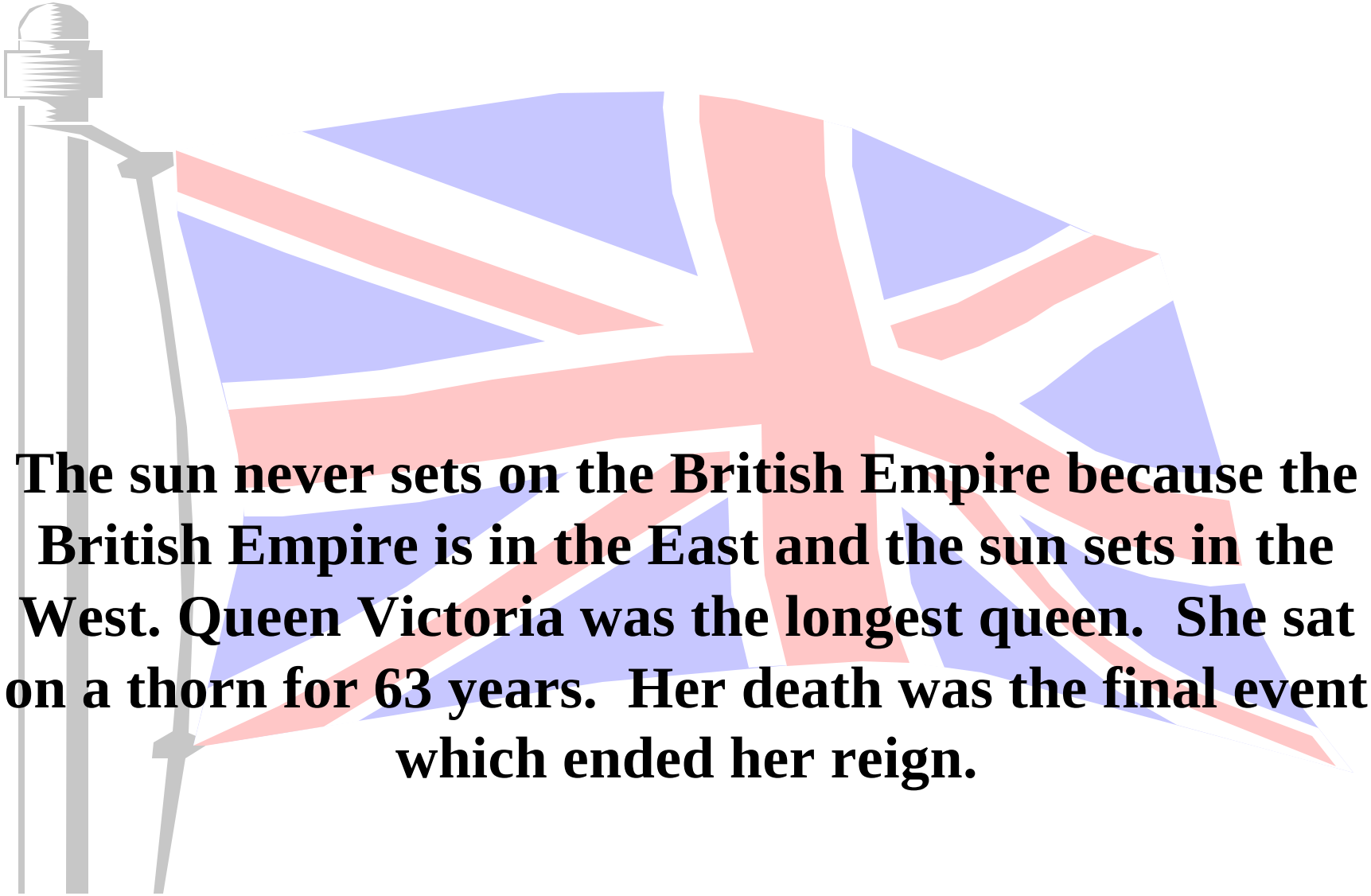


Meanwhile in Europe, the enlightenment was a reasonable time. Voltare invented electricity and also wrote a book called “Candy”. Gravity was invented by Issac Walton. It is chiefly noticeable in the Autumn, when the apples are falling off the trees.



Bach was most famous composer in the world, and so was Handel. Handel was half German, half Italian and half English. He was very large. Bach died from 1750 to the present. Beethoven wrote music even though he was deaf. He was so deaf he wrote loud music. He took long walks in the forest even when everyone was calling for him. Beethoven expired in 1827 and later died for this.

France was in a very serious state. The French Revolution was accomplished before it happened. During the Napoleonic Wars, the crowned heads of Europe were trembling in their shoes. Then the Spanish gorrilas came down from the hills and nipped at Napolean's flanks. Napoleon became ill with bladder problems and was very tense and unrestrained. He wanted an heir to inheret his power, but since Josephine was a baroness, she couldn't bear him any children.

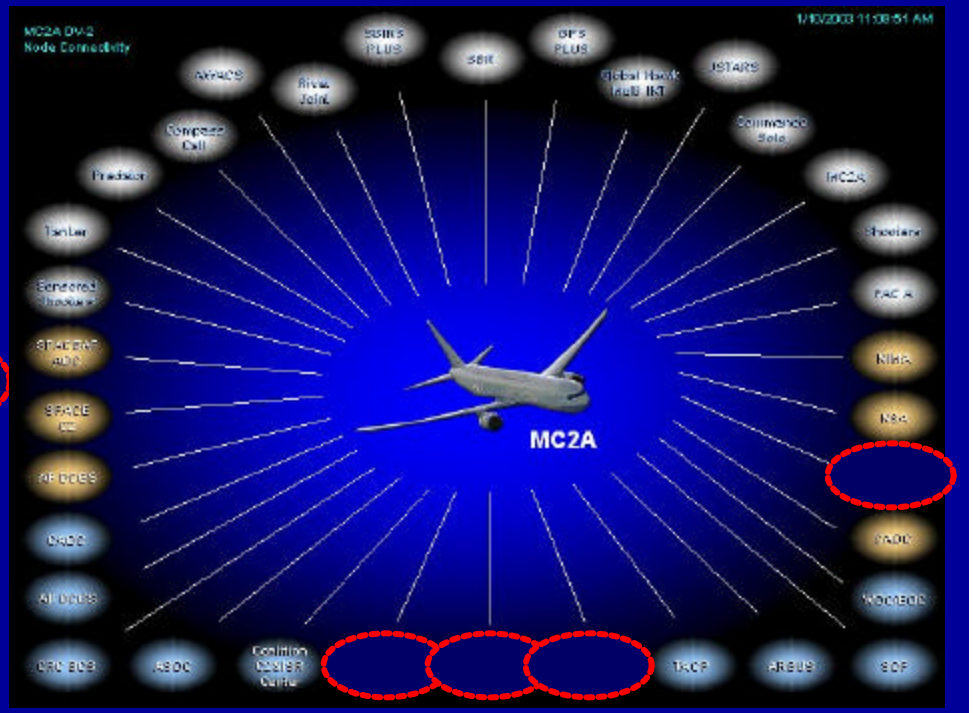


The sun never sets on the British Empire because the British Empire is in the East and the sun sets in the West. Queen Victoria was the longest queen. She sat on a thorn for 63 years. Her death was the final event which ended her reign.

The nineteenth century was a time of many great inventions and thoughts. The invention of the steamboat caused a network of rivers to spring up. Cyrus McCormick invented the McCormick Raper, which did the work of a hundred men. Samuel Morse invented a code for telepathy. Louis Pastuer discovered a cure for rabbis. Charles Darwin was a naturalist who wrote the "Organ of the Species". Madman Curie discovered radium. And Karl Marx because one of the Marx Brothers.

Interoperability
or
An Issue of 3's

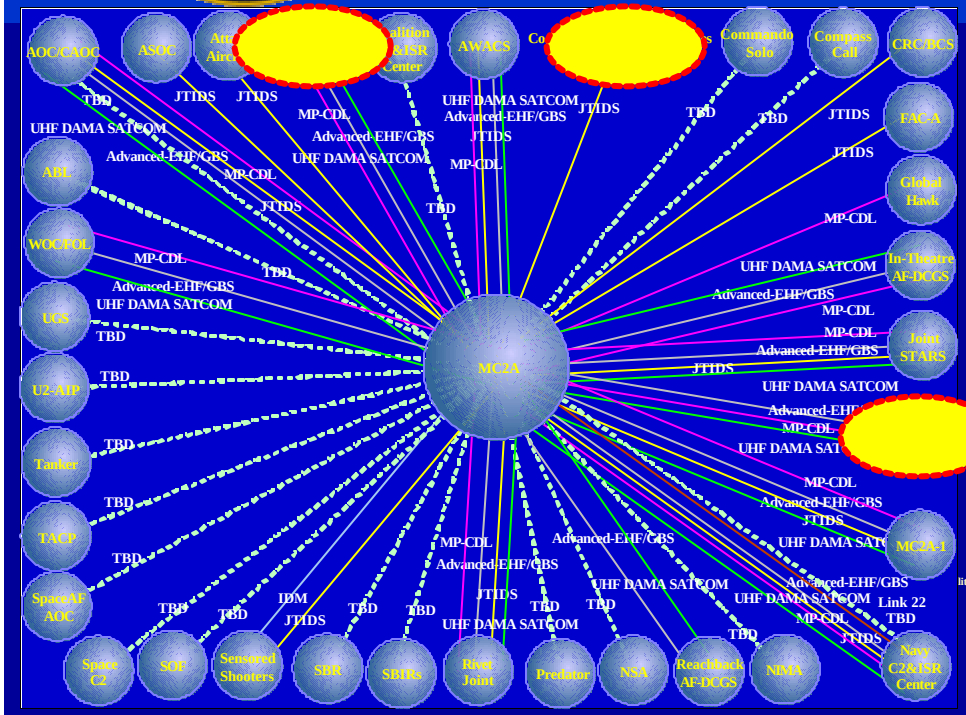
MC2A Operational Architecture

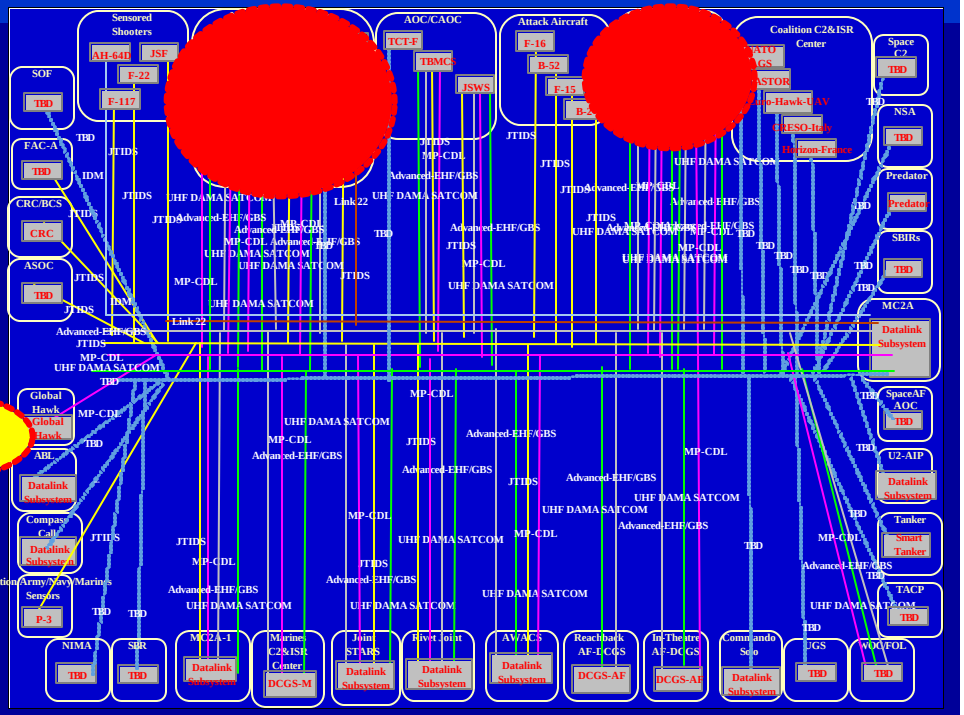


MC2A Operational Architecture effort includes Navy, Marine and Army Nodes and activity definitions

Information Exchange Requirements are being derived based on the activity definitions

MC2A System Architecture





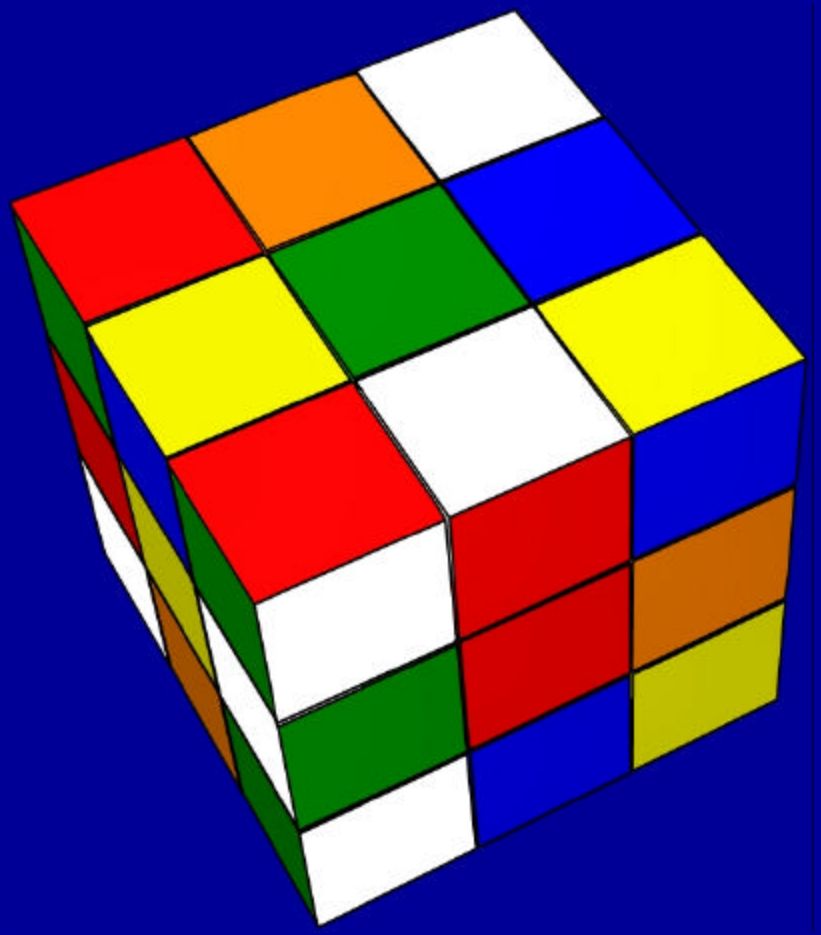
System Architecture work is defining the communications and data interfaces to Navy, Marine and Army Systems
System Threads (e.g., TCT) will be used to refine architecture

AN ISSUE OF 3's

Management	Aspects	Services
Vision	Architectures	Army
Leadership	*Tools*	Navy
Perseverance	Accountability	Air Force

3 Acceptable Answers: Yes Sir, No Sir and No Excuse Sir

ISSUES OF 3's



ISSUES OF 3's

Ranges
HWIL
M&S

Tools

ISSUES OF 3's

Fielded

Development

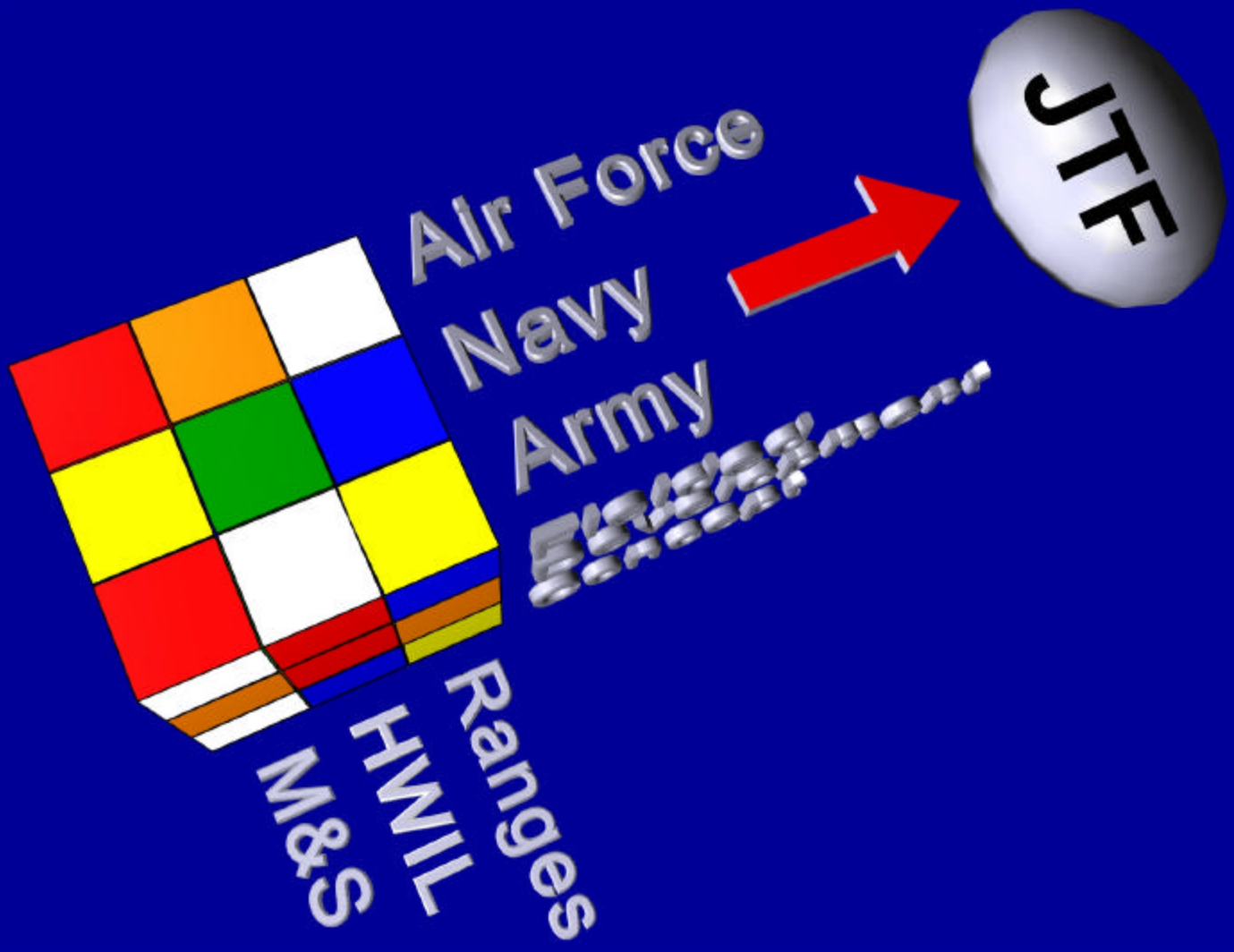
Concept

Life Cycle

ISSUES OF 3's

Services

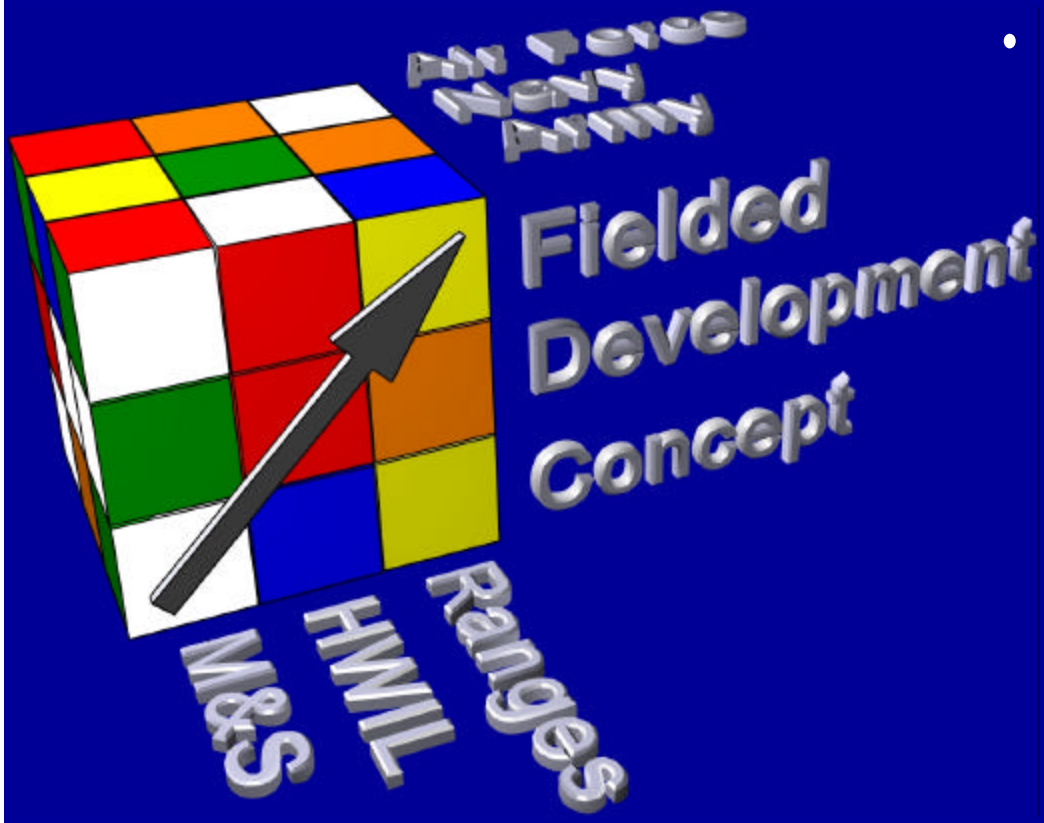
ISSUES OF 3's



ISSUES OF 3's

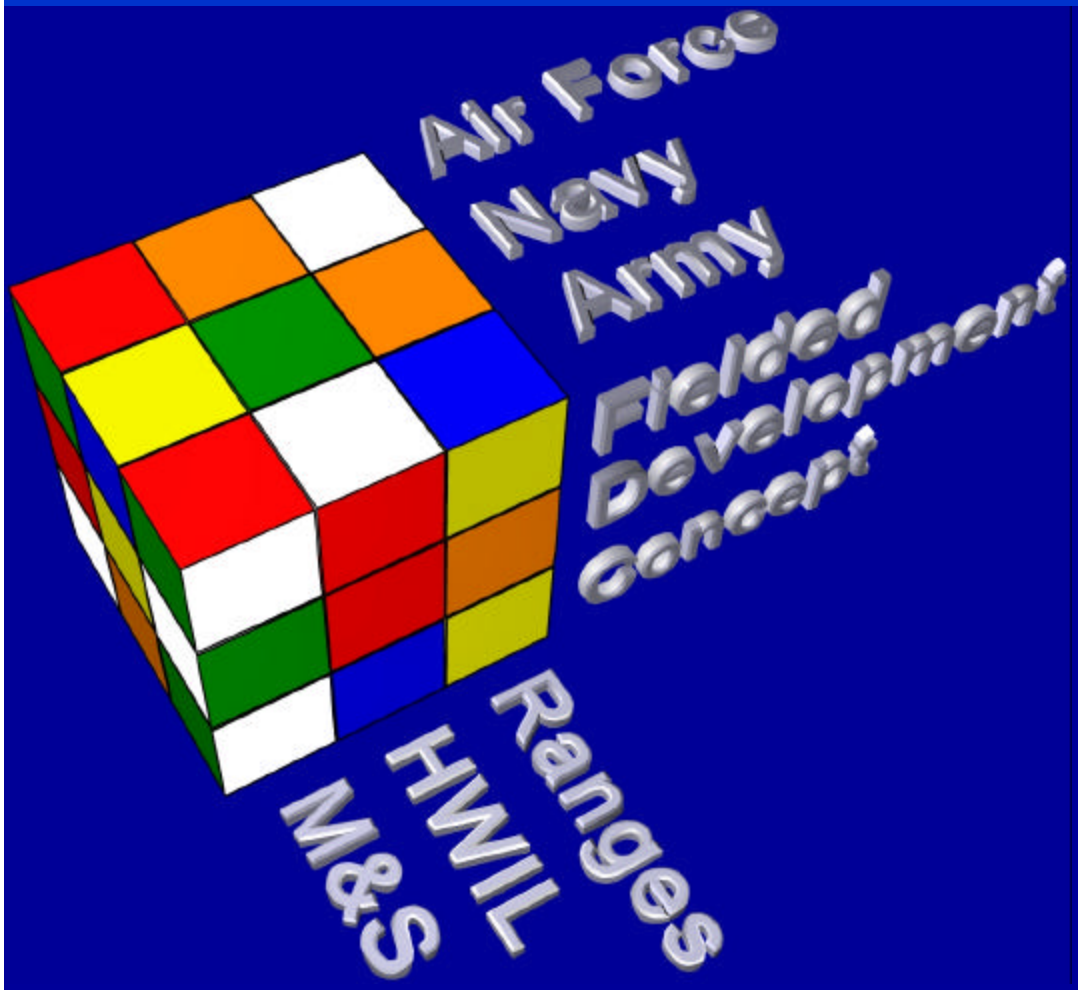
- 4.3 x 10^{19} Different Possibilities Only 1 Solution
- Since WWII est. 3.1 x 10^{3} Tried
- Using Present Approach Reach 4.3 x 10^{19} by CY 3525

ISSUES OF 3's



- **Interoperability Problems Manifests Themselves in the FIELD Within and Across all Services.**
  - Legacy Systems Need to be Addressed, but…
  - Present "Cube" Produces More Problems.
  - Solution is Getting the Process "Cube" to Produce Interoperable Systems.

FIELD TESTING AND TRAINING

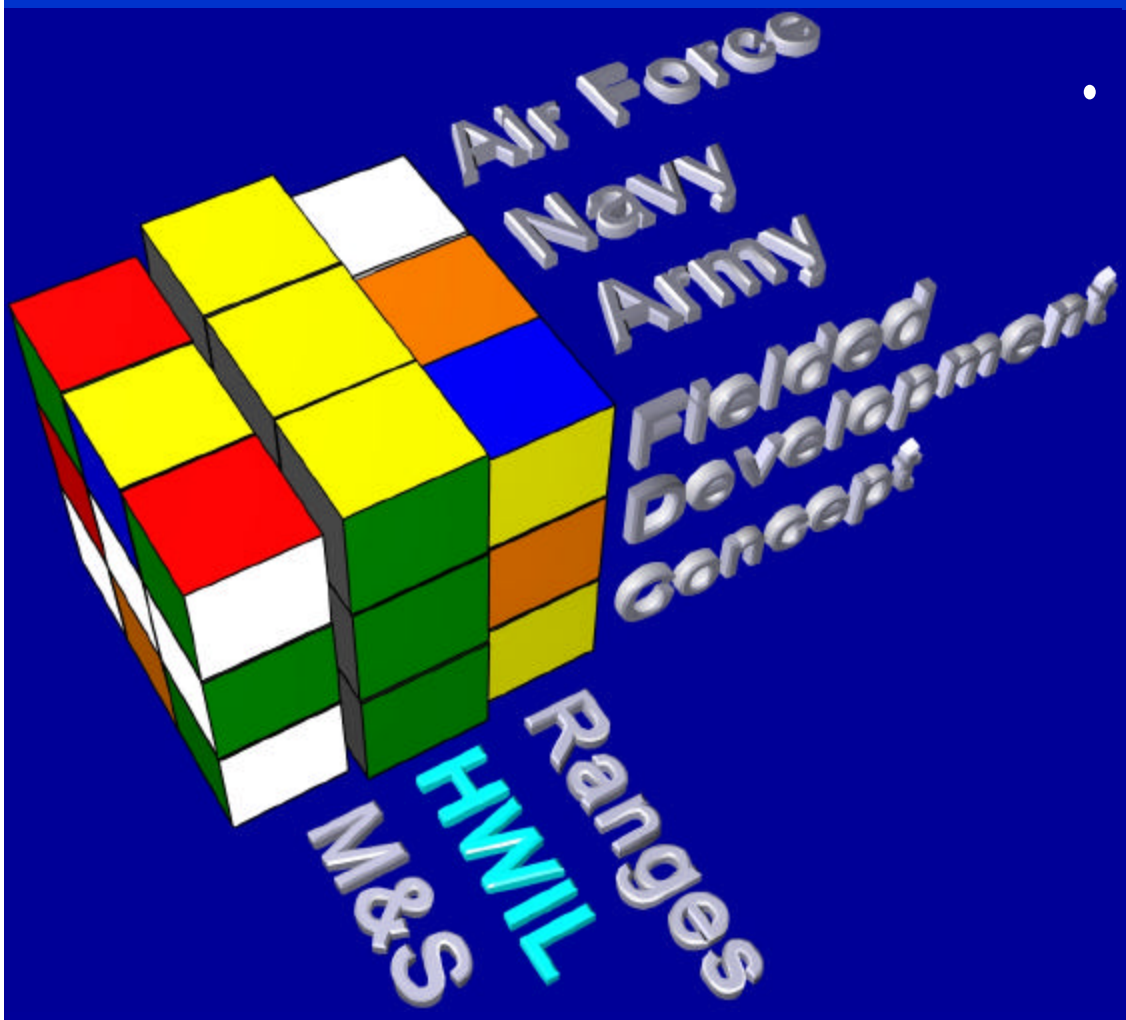


Critical, but Constrained

- Huge # of Interfaces
- Combinations of Interfaces and Conditions (# spirals)
- Information Warfare
- Tying up Combat Assets

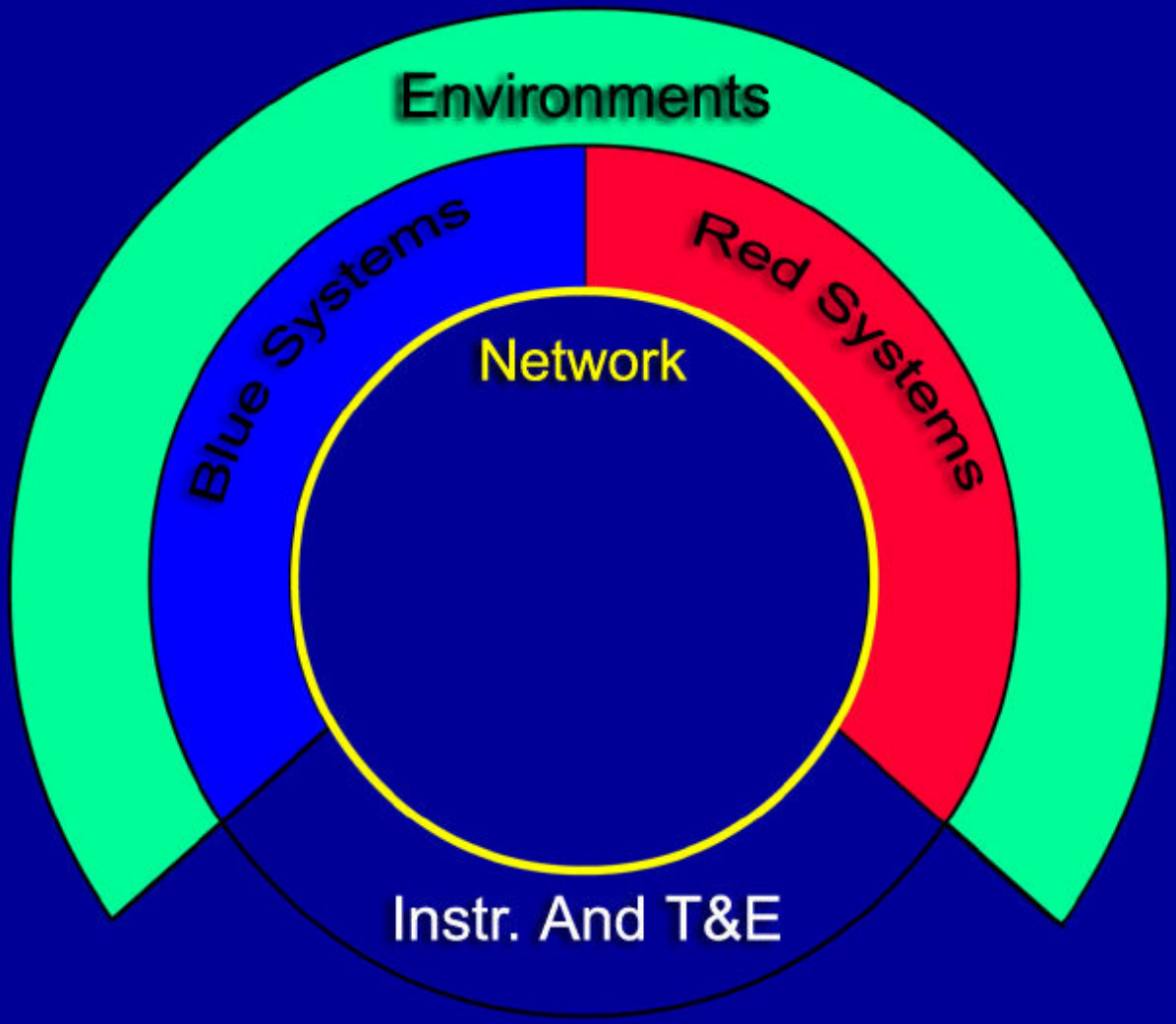
Should be Focused for Specific Objectives

ISSUES OF 3's

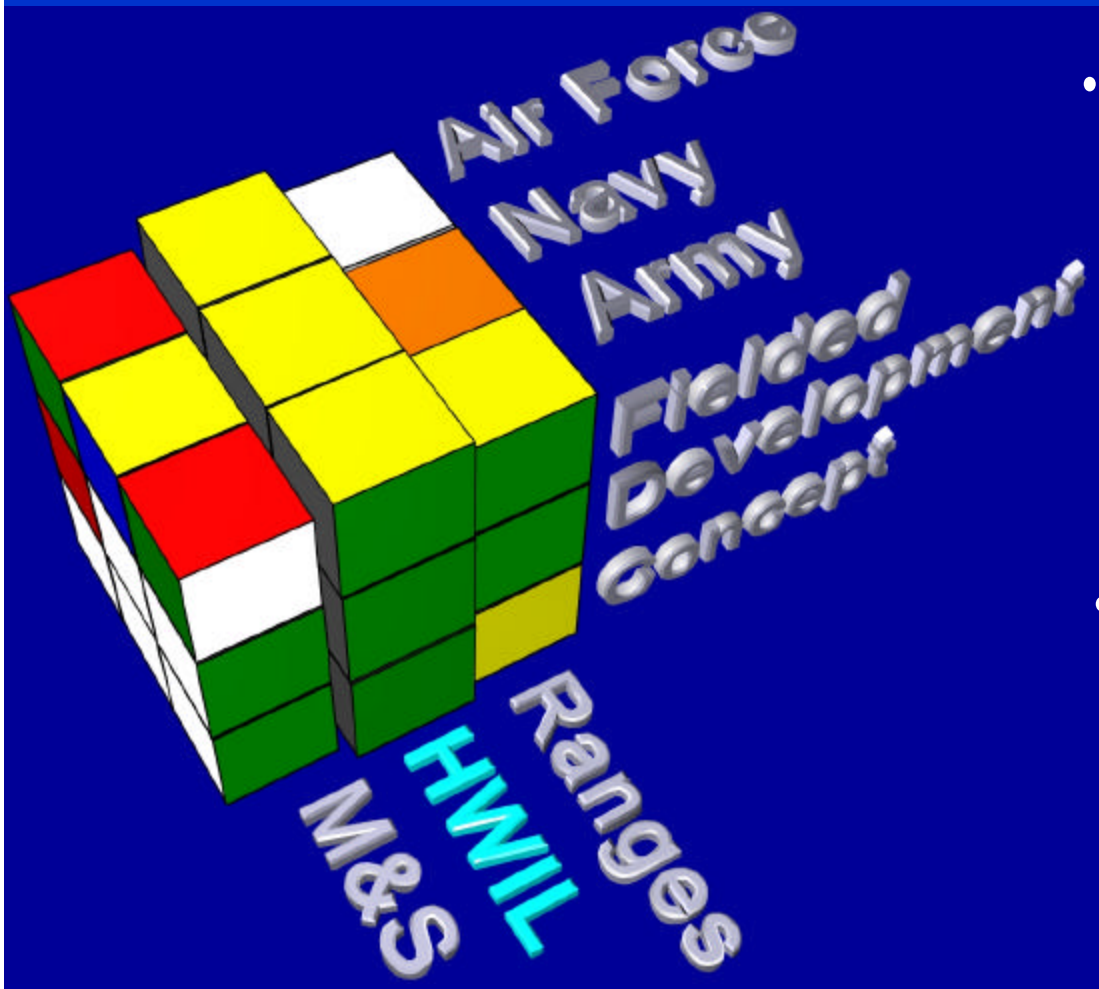


- Key to the "Cube" is the HWIL Slice

Elements of an HWIL Testbed



ISSUES OF 3's



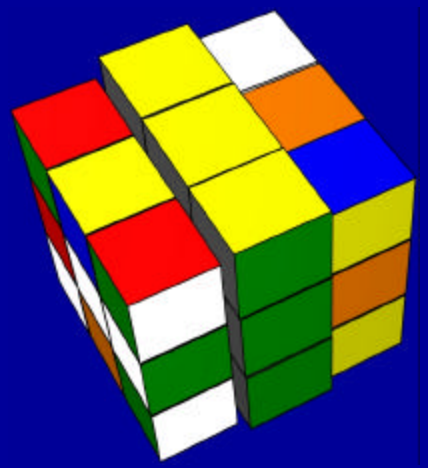
- **Key to the "Cube" is the HWIL Slice**
  - Drives M&S as inputs
  - Predicts Field Tests and Focus to Critical Points
  - Ranges become Compatible with Sim over Live
- **Will be Used for:**
  - Testing (Affordable Confidence)
  - Training (inc. JTF Level)
  - Engineering/Architectures

Extensive vs Exhaustive

- **HWIL Facilities Are Everywhere**
  - No One Knows Where They All Are, What They Cost or What They Do. More Being Built.
  - Most Developed Unique Environments, Threats and M&S of Interfaces.
  - Many Atrophy After Program Fielded.
  - All the Services Have These Problems to Varying Degrees
  - Question of Effectiveness and Efficiency

CHALLENGES TO HWIL SLICE

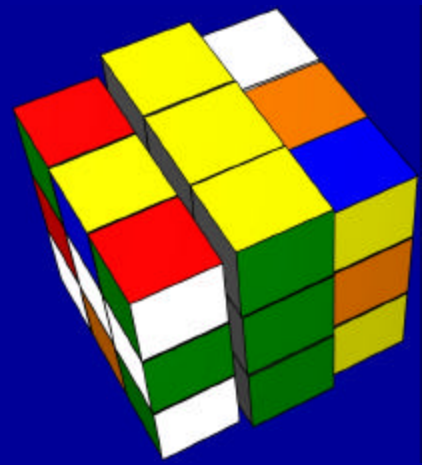
- **Services Responsible to "…Train and Equip…"**
- **Money**
- **OSD Sometimes "Heavy-handed"**
- **Ownership of Facilities**
- **Populating and Sustaining HWIL Slice**
- **No Instant Gratification - 3 Phases**
  - Near (1-3yrs), Mid (4-6yrs), Long (7-9yrs)
- **Others**



3 LEVELS OF ACTIVITY

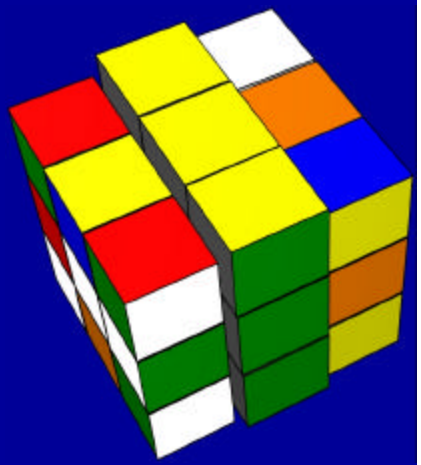
- **Strategic**
  - Vision, Business Case, ID Risks, Risk Mitigation, Roles/Respon., Commitment, Incentives to Build and Maintain
- **Operational**
  - Organizational, Funding, Planning, ROEs
- **Tactical**
  - Standards, scheduling, day-to-day ops
  - Connecting nodes, running events

For HWIL Slice; Critical to do in Sequence



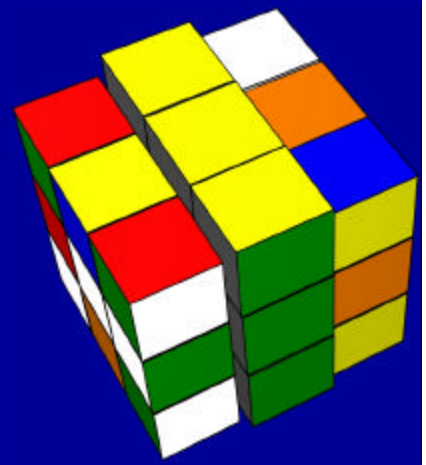
APPROACH

- **Slow up Tactical Implementation**
- **Take 6 Months To:**
  - Develop Strategic Plan
  - Generate the Common Vision
  - Obtain “Champions” in OSD and Each Service
    - Stenbit, Wynne, Cartwright
    - 3 Star Level (C4ISR & PPBS)
  - Get the Organizational Issues Solved



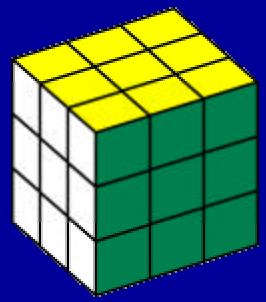
REQUIRED FROM ACQUISITION COMMUNITY

- Champion and Support
- PMs Include in SOW, Sustain Over Life Cycle
- Discipline the Process (Limit Waivers)
- Configuration Control



ACCEPTABLE ANSWERS
(Yes, Sir; No, Sir and No Excuse, Sir)

- Have We Been Working Interoperability for 50+ Years? Yes, Sir!
- Have We Achieved It? No, Sir!
- Why Not? No Excuse, Sir!
- 10 Years From Now, Will We Still Be Trying to Solve the "Cube"?



JDEP
(My Opinion)

- **Kill It or Restructure It**
- **Presently "Seeds of Defeat" Are Sown.**
  - Vision Not Well Articulated
  - Service Commitment Lacking
  - No One In-charge
  - Not High Priority at DISA
  - Working Tactical Before Strategic and Operational Level

Recommend Restructure