

TOPIC -

**“THE PRICE OF ADMIRALTY:
EVOLUTION OF NAVAL
WARFARE”**

BY JOHN KEEGAN

**SCIENCE, TECHNOLOGY & SOCIETY
{ “STS” }**

**BY
FRANK J. GADEK, PH.D.**

TOM CLANCY:

***“JOHN KEEGAN IS THE BEST MILITARY
HISTORIAN IN THE WORLD”***

ME :

***HE DOES HAVE A WAY OF PRESENTING MATERIAL
THAT IS MUCH MORE INFORMATIVE &
INCITEFUL***

HE “HAS A WAY WITH WORDS”

***HE PRESENTS NEW MATERIAL OTHERS HAVE
MISSED***

***HE PROVIDES DETAILED, ILLUMINATING
ANALYSES NOT EXPRESSED BEFORE***

BOOK IS DIVIDED INTO TOPICS:

TRAFALGAR [1800'S]– “THE WOODEN WORLD”

JUTLAND [WW I – EARLY 1900] –
“THE FALL OF THE WOODEN WALLS”

MIDWAY [WW II – AROUND 1940] –
“THE COMING OF THE AIRCRAFT CARRIER”

BATTLE OF THE ATLANTIC [WW II – AROUND 1940] –
CONVOYS & SUBMARINES

AN EMPTY OCEAN [NOW & FUTURE] – DOMINANCE OF SUBMARINES

ME:

TOM CLANCY & MOVIE: “HUNT FOR RED OCTOBER”
MODERN SUBMARINE WARFARE
GIGANTIC SUBS & NUCLEAR & CRUISE MISSILES

“AN EMPTY OCEAN”

TODAY, BECAUSE OF THE DOMINANCE OF SUBMARINES

WITH RESPECT TO THE POWER OF NAVAL OPERATIONS

SURFACE OF OCEANS ARE “EMPTY” – SUBMARINES ARE BELOW

SURFACE – NOT SEEN!

SUBMARINES NOW HAVE CAPABILITY TO ATTACK LAND TARGETS

AS NEVER BEFORE – NUCLEAR & CRUISE MISSILES

NOT JUST SURFACE TARGETS & OTHER SUBS

SCIENCE, TECHNOLOGY & SOCIETY [STS]

SCIENCE & TECHNOLOGY INCREASINGLY PROVIDED
MEANS TO BETTER & MORE BRUTALLY KILL
MORE PEOPLE

SOCIETY RESPONDED BY MAKING USE OF THESE
NEW METHODS FOR THEIR PURPOSES

PATTERN:

BUT CHEAPER & SIMPLER COUNTER METHODS

TO THESE NEW METHODS

CONTINUED TO EVOLVE TO NEUTRALIZE

THEM

WW I & II:

CHEAPER MINES, TORPEDOES & SUBMARINES TO NEUTRALIZE

NEW VERY EXPENSIVE, LARGE & POWERFUL

DREADNAUGHT BATTLESHIPS

TODAY:

NUCLEAR & CRUISE MISSILES – SUBMARINE

LAUNCHED – “CHEAPER” POLITICALLY

& WITH RESPECT TO TRADITIONAL

WARFARE – INTENSIVE GROUND ASSAULTS

BY TROOPS

IN WW I –

GERMAN NAVY DID NOT WANT TO RISK ITS EXPENSIVE
NEW FLEET OF DREADNAUGHTS – WOULD BE
GREAT NEGATIVE POLITICAL & PR DEFEAT
IF SUBSTANTIALLY HURT IN ANY WAY
SO NOT USED VERY MUCH – KEPT IN PORT

BUT ULTIMATELY “SCUTTLED” AT SCAPA FLOW BY
GERMAN CREWS AFTER TURNOVER TO BRITISH
AT END OF WW I
ENDED UP BEING SOLD FOR “SCRAP”

LIKE TODAY & ATOMIC WEAPONS – AFTER GREAT
EXPENSE OF MAKING THEM, NOW BEING
DESTROYED DUE TO CHANGING GLOBAL
POLITICS

BUT THREAT OF ROGUE GROUP GETTING ONE & USING IT
PROLIFERATION OF SCIENCE & TECHNOLOGY

PERSONAL VS IMPERSONAL WARFARE:

IN PAST – EYE TO EYE – YOU COULD ACTUALLY

SEE THE ENEMY & IMMEDIATE EFFECTS OF WAR

TODAY – LIKE A “VIDEO GAME” – E.G. CRUISE MISSILES,
DRONES, ETC.

DO NOT ACTUALLY SEE THE ENEMY – ONLY “BLIPS”

ON A SCREEN

DO NOT SEE IMMEDIATE EFFECTS OF WAR

“WAR AT A GREAT DISTANCE”

LESS PERSONAL

LESS POLITICALLY RISKY

MORALS / ETHICS

WHAT ARE YOU REALLY DOING IN THIS TYPE OF WAR?

PEOPLE ARE SUFFERING GREATLY & NOT ONLY

THE PERCEIVED ENEMIES – BUT DO NOT SEE

POLITICIANS HAVE LESS COLLATERAL DAMAGE

WITH RESPECT TO “BAD PR”

PEOPLE DO NOT REALIZE WHAT IS ACTUALLY

HAPPENING & GREAT SUFFERING INVOLVED

SO LESS PUBLIC OPINION AGAINST SUCH WARS

SO MORE INCENTIVE TO HAVE SUCH WARS

CONTROL OF MEDIA:

PEOPLE DO NOT SEE ACTUAL DRAMATIC EFFECTS OF SUCH WAR

PEOPLE MANIPULATED SO THEY DO NOT OBJECT STRONGLY

AGAINST SUCH WARS

PEOPLE DISTRACTED BY “BREAD & CIRCUSES” [AS IN ROMAN

TIMES] SO NOT SENSITIZED TO BRUTAL EFFECTS

OF SUCH WARS & GREAT SUFFERING BY SO MANY

SOME RESULTS: DECLINE IN SENSITIVITIES, EMPATHY, MORALS,
ETHICS, CHARACTER, INTEGRITY, DOING WHAT
IS RIGHT FOR RIGHT REASONS, LESS
SACRIFICING FOR OVERALL GOOD OF GLOBAL
SOCIETY

GREAT RISE OF MILITARY / INDUSTRIAL

& NOW CONGRESSIONAL COMPLEX

3 GROUPS WORK TOGETHER FOR COMMON

MUTUAL GOALS

GOALS MAY NOT BE IN REAL BEST INTEREST OF

OVERALL PUBLIC / GLOBAL SOCIETY

GREAT SUMS OF MONEY, PRESTIGE, SELF INTEREST,

ETC. INVOLVED

E.G., MOVIE 2006???

WHAT TO DO???

VERY COMPLEX

SOCIETY ISSUES CAN BE DOMINANT

E.G., LOCAL JOBS FROM “WAR INDUSTRY”

“PRESENT” SURVIVAL OF FAMILIES

“VERSUS”

“FUTURE” SURVIVAL OF HUMANITY WORLDWIDE

ALSO, DEGRADATION OF MORALS, ETHICS, CHARACTER,

INTEGRITY, ETC.

“GREENING OF THE COMMONS” SYNDROME

VERY BASIC ["ROOT CAUSE"] ISSUE:

PROPER MANAGEMENT OF STS

TAKES MATURITY, EXPERIENCE, PROPER
INFORMATION, ETC.

REQUIRES EDUCATION & EXPERIENCE
AT A VERY HIGH LEVEL

"GROUP PROCESS"

INTENSE COMMUNITY INVOLVEMENT

ETC.

LOT OF THIS INFORMATION FROM
NUMEROUS NATIONAL SCIENCE FOUNDATION [NSF]
STS & OTHER FUNDED PROGRAMS I WAS
INVOLVED WITH & MY EXTENSIVE SEVERAL DECADES
OF PERSONAL RESEARCH, EXPERIENCES, TRAINING,
ETC.

ADMIRALTY ISSUE

NEW DEMANDS BY STS

REQUIRES MUCH ACTUAL EXPERIENCE

& MATURITY, BESIDES GOOD

DECISION MAKING SKILLS

“ON THE FLY”

“REAL TIME”

NOT MUCH TIME TO DECIDE

GREAT DISASTERS FOR

“MISTAKES”

BRIEF SIMPLISTIC SUMMARY OF TOPICS IN BOOK:

TRAFALGAR 1800'S

WOODEN SHIPS LINED UP IN PARALLEL & FIRED
CANON AT EACH OTHER

SHIPS DID NOT SINK SINCE OF WOOD

BOARDING & TAKING OVER THE SHIP WAS
VICTORY

BRUTAL, BUT PREDICTABLE

ADMIRALS HAD PLENTY OF TIME TO DECIDE
WHAT TO DO & HOW TO DO IT, SINCE
SHIPS WERE SO SLOW & DEPENDENT ON
THE WIND

BUT COMMUNICATION ONLY BY SIMPLE FLAG SYSTEM
& SUFFICIENT

JUTLAND WW I EARLY 1900

NEW BIG & POWERFUL DREADNAUGHT SHIPS

IRON CLAD / ARMORED SHIPS, NOT WOOD

COULD EASILY SINK IN COMPARISON

MORE POWERFUL GUNS

MORE COMPLEX OPERATION

MORE DISASTEROUS CONSEQUENCES OF
MISTAKES

FIGHT AT GREAT DISTANCES – 10-20 MILES

MAY NOT EVEN SEE EACH OTHER

GREAT SPEED

BETTER COMMUNICATION – RADIO

BUT STILL COMMUNICATION ISSUES

FLAGS

RADIO

PERSONAL & VERBAL

HUMANISTIC

MISUNDERSTANDING,
ESPECIALLY IN
STRESSFUL SITUATION
FAST MOVING

NEW TACTICS REQUIRED

MORE UNDERSTANDING OF COMPLEX SHIPS & CAPABILITIES
REQUIRED

FEAR OF “LOW TECH” CHEAPER WEAPONS – MINES, TORPEDOES
& SUBS

ALL IS NEW – MUCH NOT TESTED

SEA POWER CONFIRMED IN ACTUALLY WINING WARS – ECONOMIC
FACTORS – PREVENT ESSENTIAL MATERIALS FROM BEING
DELIVERED - BLOCKADES

LAND WARS MORE STALEMATES DUE TO NEW DEVELOPMENTS
OF STS – E.G., MACHINE GUNS, BARBED WIRE, TRENCH
WARFARE, MORE POWERFUL GUNS / EXPLOSIVES,
MORE MOBILITY – TRAINS, GASOLINE POWERED
TRANSPORTATION INSTEAD OF PEOPLE & HORSES,
OLD & BAD TRADITIONAL TACTICS, ETC

WW II: "NEW"

AIRCRAFT CARRIER
IMPROVED SUBS

MIDWAY – BIG TEST

BATTLES AT SEA

NOT BETWEEN SHIPS BUT BETWEEN LAUNCHED
AIRCRAFT TO ATTACK ENEMY AT A DISTANCE

DO NOT ACTUALLY SEE ENEMY FLEETS

WAR AT A DISTANCE & VERY COMPLEX

REQUIRES MUCH "HIGHER LEVEL THINKING
& ACTUAL EXPERIENCE / TRAINING
WITH IMPLEMENTS OF WAR AT HAND

FEW ADMIRALS & SEAMEN HAD THESE!!!

BUT AS PAUL KENNEDY DOCUMENTS IN HIS BOOK

“RISE & FALL OF GREAT POWERS”

ESSENTIALLY, IT IS GREATER INDUSTRIAL CAPACITY
& READY ACCESS
TO REQUIRED SUFFICIENT
RAW MATERIALS OF NATION, LABOR, ETC.

THAT CAN WIN A WAR

USA GREATEST & COULD QUICKLY RECOVER FROM
DISASTEROUS PEARL HARBOR ATTACK
AS YAMAMOTO KNEW SO WELL

SO WHO REALLY “WINS???”

DIFFICULT TO REALLY DETERMINE TODAY

MANY FACTORS INVOLVED

NOT IN TRADITIONAL METHODS OF DETERMINATION

TRAFALGAR – CLEAR

JUTLAND – COMPLEX – BUT BRITISH READY TO SAIL
FOR NEW BATTLES, GERMANS WERE NOT

WW II MIDWAY – COMPLEX – NEED TO SEE IN OVERALL
CONTEXT AT THAT TIME & IN THE IMMEDIATE
FUTURE – BASICALLY, JAPAN GREATLY HURT &
HAD TO BE MORE DEFENSIVE,
USA NOT SO MUCH HURT & ABLE TO CONTINUE
TO MOUNT OFFENSIVE

ULTIMATELY IT WAS THE “VERY NEW” * & REVOLUTIONARY
STS LONG DEVELOPMENT TIME & GREATLY EXPENSIVE
COMPLEX ***ATOMIC BOMB*** DROPPED TWICE WITH MONSTROUS
RESULTS THAT MADE JAPAN DECIDE TO SURRENDER

THIS AVOIDED TRADITIONAL HIGH CASUALTY RATE WAR OF ATTRITION
JAPAN WANTED – SIMILAR TO WW I TRENCH WARFARE STALEMATES
WHICH HAVE POLITICAL & EMOTIONAL IMPACT ON DECISIONS, NOT
NECESSARILY MILITARY TACTICAL & STRATEGIC IMPACTS

BROKE JAPAN’S “WILL” TO CONTINUE WAR – A VERY DEEPLY CULTURAL
CONVICTION & DETERMINATION

& NOT PHYSICAL ASPECTS OF MAKING WAR – WHICH CAN BE “LOW
TECH, BUT EFFECTIVE IN KILLING & HARMING ENEMY, BUT
OF LIMITED OVERALL EFFECT IN PHYSICAL TERMS, BUT
MAY BE OF GREAT SIGNIFICANCE TO THE “WILL TO CONTINUE
TO FIGHT” OF THE OTHER SIDE – A TEST OF BASIC & INTIMATE
CONVICTIONS TO FIGHT – MORALS, ETHICS, CHARACTER,
INTEGRITY – TO CONTINUE TO DO THE “RIGHT” THING

SO IS WAR A MATTER OF MENTAL & NOT PHYSICAL
DETERMINATION????

WHO IS MOST DETERMINED TO WIN & ON WHAT BASIS,
IRRESPECTIVE OF PHYSICAL CAPABILITY
E.G., VIETNAM, IRAQ, ETC.

TODAY – 2000 – TERRORISM

DETERMINED BY “BELIEFS” TO FIGHT & WIN

RELIGION – WILL GAIN ETERNAL SALVATION
IF FIGHT & DIE FOR CAUSE

CULTURAL FACTORS

MONETARY & PRESTIGE FACTORS

POWER / CONTROL FACTORS

FUTURE:

REQUIRES MUCH MORE SOPHISTICATED THINKING,
PLANNING, PREPARATION, FINANCES, RESEARCH,
ETC. TO BE SUCCESSFUL & DOMINANT IN GLOBAL
ARENA

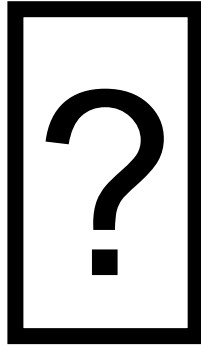
DO WE HAVE IT???

ARE WE IN DECLINE LIKE THE BRITISH EMPIRE????

WHAT WOULD BE REQUIRED TO CHANGE THINGS????

ARE WE PREPARED FOR THIS CHANGE????

CAN WE MAKE THE NECESSARY SACRIFICES / CHANGES???



MORE SPECIFIC DETAILS OF NAVAL TACTICS INVOLVED
FROM A **SIMPLISTIC VIEW** –

MANY STILL DEBATE THE FINE POINTS

WHICH CAN BE SIGNIFICANT ALSO

NELSON AT TRAFALGAR EARLY 1800'S:

HAD PLENTY OF TIME TO PREPARE

USED TACTIC ANOTHER HAD USED EARLIER

CUT THRU LINES OF SHIPS TO ATTACK, SURPRISE
& DISORIENT NORMAL TACTICS OF PARALLEL
SAILING & FIRING AT EACH OTHER

ACTUALLY, ENEMY ANTICIPATED THIS, BUT WERE LESS
MOTIVATED TO FIGHT FOR A VARIETY OF REASONS

NELSON GAVE FREEDOM OF CAPTAIN'S OF SHIPS TO DO WHAT
THEY THOUGHT BEST – "INITIATIVE" – BUT SHOULD
VIGOROUSLY ATTACK IN ANY SITUATION

GREAT VICTORY WAS CLEAR IN MANY WAYS

RESULTED IN PAX BRITANNIA FOR ABOUT 100 YEARS – A LOT
DUE TO INTIMIDATION BY THIS VICTORY

COMMUNICATION NOT A BIG ISSUE

DETAILED TACTICS DECIDED WELL AHEAD OF TIME

IMPLEMENTATION OF BATTLE PLAN ONLY QUESTIONABLE &
DOUBTFUL FACTOR

DEPENDENT ON MANY THINGS – LUCK, MOTIVATION, WEATHER,
ETC.

JUTLAND WW I EARLY 1900'S

LESS CLEAR ON WHO REALLY WON / VICTORY

ALL CAUTIOUS, SINCE "UNTESTED" VERY NEW SHIPS, EQUIPMENT
& TACTICS – LOT AT STAKE IN MANY WAYS

BEATTY OF BRITISH MORE CAVALIERISH & SUFFERED
SEVERE NEGATIVE CONSEQUENCES, BUT ALSO
DEFECT IN PROTECTION FROM FLASH OF POWDER
INTO REST OF SHIP IF HIT BY ENEMY

JELLECO EVEN PUT IN SAFE BY HIS LAWYER STATEMENT THAT
HE WOULD NOT
FOLLOW ENEMY CAVALIERISHLY FOR A "NELSON TYPE
CLEAR VICTORY" DUE TO UNCERTAINTY OF ENEMY
USE OF TORPEDOES, MINES AND SUBS

EVEN CHURCHILL CRITICIZED HIS "CONSERVATIVE" JUTLAND
TACTICS – BUT THEY SAVED THE FLEET TO IMMEDIATELY FIGHT
ANOTHER DAY – GERMANS COULD NOT FIGHT FOR MONTHS

BUT BRITISH RESTRICTED INITIATIVE OF CAPTAINS
OF SHIPS, AS OPPOSED TO NELSON & TRAFALGAR

“JUST FOLLOW LEAD CAPTAIN & SHIP NO MATTER WHAT” –
SUBJECT TO DISCIPLINE IF DON'T

UNREALISTIC EXPECTATIONS OF “ANOTHER DECISIVE
TRAFALGAR” IN A VERY NEW ERA OF NAVAL
BATTLES, SHIPS & TACTICS

COMMUNICATION STILL A BIG ISSUE EVEN WITH RADIOS SINCE
FLAG / LIGHT FLASH SYSTEMS STILL IN OPERATION

ALSO USUAL “HUMAN FACTORS” IN COMMUNICATION INVOLVED,
ESPECIALLY IN SUCH NEW & COMPLEX TACTICS &
OPERATION OF FLEETS

SHIPS DID NOT HAVE TO SEE EACH OTHER TO SHOOT
ACCURATELY AT THE ENEMY – RANGE 10 – 20 MILES
& SHELLS IN TON RANGE SO VERY DAMAGING EVEN
TO ARMoured SHIPS

NEW HAZARDS:

OIL FUEL & FIRE – NOT COAL OR WIND

POWDER FOR SHELLS – COULD FLASH BACK INTO
REST OF SHIP IF INITIALLY IGNITED BY
SHIP BEING HIT BY AN ENEMY SHELL – E.G.
BEATTY AT JUTLAND

COMPLEXITIES OF RUNNING A DAMAGED SHIP

FIRE CONTROL

ELECTRIC

COMMUNICATION

POWER PLANTS & NOT WIND FOR POWER

METAL & NOT WOOD SPLINTERS FROM

SHELLS HITTING SHIP

COMPLEX PHYSICAL DAMAGE CONTROL

OUTCOME OF JUTLAND:

GERMANY WAS BLOCKADED SO COULD NOT GET
NEEDED GOODS TO SURVIVE SO HAD TO
SURRENDER

SO NAVY REALLY WON WW I WAR, NOT ARMY WHICH WAS
STALEMATED BY NEW STS DEVELOPMENTS

AIRFORCE WAS STILL TOO NEW

ECONOMICS WON WW I THEN

FAMOUS BOOK ALSO CONFIRMS THIS ON WW I – “GUNS OF
AUGUST” & OTHERS

WW II – MIDWAY:

NEW DEVELOPMENT OF AIRCRAFT CARRIERS & USE OF AIRPLANES TO DEFEND CARRIERS & ATTACK OTHER TARGETS – SHIPS & LAND TARGETS, BESIDES OTHER AIRCRAFT – SHIPS DO NOT HAVE TO SEE EACH OTHER TO ATTACK & DEFEND

MANY COMPLEX FACTORS INVOLVED IN COMPLEX TACTICS THAT COULD BE USED

NEEDED A “GOOD FEEL” FOR WHAT COULD & COULD NOT BE DONE ALONG WITH HOW TO ACTUALLY DO IT & TIME IT

LITTLE TIME TO REFLECT & PLAN – HAD TO DO AHEAD OF TIME

JAPANESE ADMIRAL OF “OLD SCHOOL” – SHIPS FIGHT IT OUT

USA ADMIRAL MORE OPEN TO NEW TACTICS

LUCK & PERSISTENCE PLAYED BIG ROLLS

COMPLEXITIES:

USUAL DIRECTION & PROTECTION OF SHIPS

USUAL HARD TO FIND ENEMY IN BIG OCEAN

BUT AIRCRAFT “NEW” FACTOR –

- HOW BEST TO USE
- PLAN LAUNCH / LAND
- ARM – FOR AIR, LAND OR SHIP BATTLES
- PROTECT CARRIERS

RADAR HELPED BUT.....

AIRCRAFT COULD ATTACK CARRIERS:

LOW LEVEL WITH TORPEDOES – VERY RISKY

HIGH LEVEL WITH BOMBS – LESS RISK – OUT OF RANGE

OF SHIPS GUNS, BUT SUBJECT TO ENEMY AIRPLANE

ATTACKS & DIFFICULT TO BOMB ACCURATELY AT

SUCH HIGH ALTITUDES

THREAT OF SUBMARINES ALWAYS PRESENT

COMMUNICATION ISSUES – MAINLY HUMAN ASPECTS,
TECHNICALLY SOUND & USE OF RADAR

CONVOYS IN WW II:

“VERY SPECIAL CASE”

SUBMARINES VERY EFFECTIVE

CONVOYS WITH SUFFICIENT SHIP & AIRCRAFT PROTECTION KEY

DIFFICULT TO FIND CONVOYS SINCE OCEAN SO LARGE

BUT EFFECTIVENESS OF “WOLF PACKS” OF SUBS BY GERMANS

LONGER RANGE PROTECTIVE AIRCRAFT & BETTER DEPTH CHARGES
ALONG WITH BETTER SONAR & TACTICS BIG DECIDING
FACTOR

SHEER VOLUME OF CONVOY TRAFFIC VERSUS MORE LIMITED
NUMBER OF GERMAN SUBS

TODAY:

SUBS THE BIGGEST FACTOR

TRADITIONAL BATTLESHIPS OBSOLETE NOW – EVEN CARRIERS AT RISK

“VERY COMPLEX”

TOM CLANCY IN “HUNT FOR RED OCTOBER” NOVEL,
OTHER BOOKS& MOVIE HELPS WITH COMPLEXITIES

SUBS NOW MORE FOR LAND ATTACK [NUCLEAR & CRUISE MISSILES]
RATHER THAN SHIP ATTACK & ATTACK ON OTHER SUBS

“THE EMPTY SEA” – ONLY UNDER SEA OPERATE & NOT DETECTED,
“STEALTH”

VERY COMPLEX SUB SYSTEMS, DETECTION SYSTEMS, OPERATIONAL
SYSTEMS – REQUIRES MUCH MORE SOPHISTICATED TACTICS

OTHER REALTED FACTORS:

CHANGE IN WORLD POLITICS – GEOPOLITICS

USA ONLY SUPER POWER

BUT TERROISTS

GUERRILA WARFARE – NOT DEFEATED WITH MANY MODERN
WEAPONS – ENEMY INTEGRATED WITH CIVILIANS

OTHER COUNTRIES – DEVELOP A FEW MODERN WEAPONS
TO INTIMIDATE OTHERS SO THEY CAN CONTROL
THEIR INTENTIONS BETTER

GLOBAL ECONOMIES

INFORMATION AGE – DIFFICULT TO HIDE MUCH & CYBER WARS

SO MAY BECOME MORE OF A **“TEST OF WILLS”**

HOW CAN A SOCIETY DEVELOP “THE WILL” TO

SUCCEED & PERSEVERE

BACK TO MORALS, ETHICS, CHARACTER, INTEGRITY,
[RELIGION?], ETC.

WHO WILL BE THE STRONGEST?

WHAT WILL THEY THEN DO WITH THEIR STRENGTH?

ECONOMIC ISSUES CAN STILL RULE – THOSE WHO HAVE
SUFFICIENT FUNDS CAN CONTROL THINGS!

ALWAYS THE “HUMAN” FACTOR – PEOPLE WILL BE PEOPLE

WILL WE CONTINUE TO MATURE ENOUGH TO STILL MAKE
LIFE BETTER FOR MOST???

ULTIMATELY

WILL WE CONTINUE TO SURVIVE AS EVEN A PLANET?

“EARTH – NO ESCAPE HATCH” - A WINNING PHRASE
IN A LOCAL ENVIRONMENT CONTEST

OPTIMISTIC – WE HAVE SURVIVED SO FAR

PESSIMISTIC – BUT THE NEW CHALLENGES ARE
OVERWHELMING

SYNDROMES:

DISASTER
GREENING OF THE COMMONS
ETC.

??

**LOT OF SOME VERY SERIOUS ISSUES
TO CONTINUE TO THINK ABOUT !**

**BUT PLEASE DO YOUR OWN RESEARCH
& FORM YOUR OWN " INFORMED "
OPINIONS, IF ONLY TO TRY TO
MINIMIZE STRESS !**

**SHARE WHATEVER YOU FEEL COMFORTABLE
WITH SO WE CAN ALL BENEFIT**

GOOD LUCK !

WE ARE ALL GOING TO NEED IT !

