

Braccio, Nadia

De: Rachel Pelletier - Perso [rachelp@vl.videotron.ca]
Envoyé: 15 janvier 2014 14:04
À: Greffe
Objet: À verser au dossier R 3863-2013 (observations)
Pièces jointes: nasa-thefutureof-war.pdf; HQ Lettre P.1.jpg; HQ Lettre p.2.jpg; HQ Lettre p.3.jpg; HQ Lettre p.4.jpg; HQ réponse.jpg; HQ Courrier recommandé.jpg

à l'attention de Madame Louise Pelletier,

Bonjour Madame,

Je suis de Lévis. SVP prenez note au dossier de la régie au sujet des abus de Hydro Québec avec les nouveaux compteurs intelligents (outils de mort) auprès des citoyens.

1) Le 30 mai 2012, j'ai fait parvenir par courrier recommandé à Mme Isabelle Courville (RW 665 958 733 CA)- Présidente Hydro Québec Distribution, à M. Thyerry Vandal (RW 665 968 747 CA) Président Directeur Général Hydro Qc un " AVIS DE NON CONSENTEMENT À L'INSTALLATION DES COMPTEURS DIT INTELLIGENTS & À L'INTRUSION ET LA SURVEILLANCE DOMICIAIRE".

J'ai fait parvenir à Hydro Québec cette requête la lueur des informations dont je disposais qui déjà à l'époque démontrent de nombreuses études qui s'accumulent de plus en plus à l'effet que ce sont des engins de mort qui bousillent les champs électromagnétiques, le système immunitaire, le cerveau et tant d'autres choses pour ne pas parler des effets pour les personnes électrosensibles. Pour moi ce travail d'Hydro Québec fait parti du plan des illuminatis pour entre autre rendre la population malade et faible au service des grosses pharma et tellement plus. - Voir ce document produit par la NASA: The End Of Mankind "Leaked Document" 2013 (<http://youtu.be/eN4XICOyRb8> - video de 25 minutes qui explique) où il est question des compteurs intelligents comme outils d'asservissement de la population.

2) le 15 février 2013, j'ai reçu une lettre de Hyro Québec - non signé, du service à la clientèle m'indiquant que je serai informé et j'aurai le choix ou non de ces compteurs sur ma maison.

3) J'ai récemment découvert qu'il y avait 2 des 3 compteurs de la maison remplacés par les nouveaux compteurs dit intelligents- cela fut fait sans mon consentement, à mon insu, sans consultation - depuis un temps déjà je constate avoir des maux de tête qui persistent dans la journée et le soir, ce qui tout à fait hors du commun pour moi qui n'en ai jamais eu - je n'ai aucune idée de quand ils ont fait ces installations sur ma maison outrepassant tous mes droits -

4) pour le moment je vais me prévaloir de mon droit de retrait à Hydro dans un délai raisonnable avec copie à la protection au consommateur - s'ils ne le font pas, je travaillerai à me regrouper avec d'autres dans la même situation et irait en poursuite judiciaire -

Merci de votre attention et de prendre en considération les malversations de Hydro Québec et de rendre la plus juste décision soit à l'effet qu'Hydro retire du Québec ces compteurs de malheur

Piece jointe: Lettre envoyé à HQ. Réponse d'Hydro, Courrier recommandé, document de la NASA qui explique comment les compteur font partis du plan de contrôle de la population

Rachel

www.fleurdevie.ca

oooooooooooooooooooooooooooo

*Rappelle toi, seul l'amour existe
le reste n'est qu'apparence*

Remember only love is real, the rest is appearance

oo

THIS IS A PRIVATE COMMUNICATION BETWEEN THE PARTIES
NOTICE TO AGENT IS NOTICE TO PRINCIPAL-NOTICE TO PRINCIPAL IS NOTICE TO
AGENT

Applicable to all Successors and Assigns

COPY

De: **Rachel Pelletier**
6495 St-Laurent
Lévis Québec, G6V 3N9

Lévis, le 30 mai 2012

À: Isabelle Courville; Présidente –
Hydro-Québec Distribution
75 , boulevard René-Lévesque Ouest
Montréal, Québec H2Z 1A4

Canada Registered Mail # RW 665 958 733 CA

CC: Thierry Vandal
Président-Directeur Général
HYDRO QUÉBEC
75, Boul René Lévesque
Montréal, Québec H2Z 1A4

Canada Registered Mail # RW 665 958 747 CA

CC: Michael L. Turcotte,
Président du Conseil d'administration
HYDRO QUÉBEC
75, Boul René Lévesque
Montréal, Québec H2Z 1A4

Canada Registered Mail # RW 665 958 755 CA

OBJET: Avis de non consentement à l'installation de compteurs électriques dit intelligents et à l'intrusion et à la surveillance domiciliaires.

Madame Isabelle Courville,
et tous les agents, officiers, employés, contacteurs ou partis intéressés.

Selon les dernières nouvelles annoncées par Hydro Québec, il est dans votre intention d'installer un "Compteur intelligent" ou mécanisme qui fasse un relevé détaillé à distance des activités électriques sur les résidences du Québec. Compteurs qui émettent des pollutions électromagnétiques et fonctionnent par reliance de type wi-fi. S'il s'avérait que soit installé un tel équipement à l'adresse ci-dessus(résidence) , et/ou dans un entourage (environnement) de 3 kilomètres, vous ou toute autre partie seront considérées comme ayant commis une violation de résidence et de cet avis pour avoir installé ou utilisé un tel mécanisme sur ou dans la propriété de **Rachel Pelletier à l'adresse ci-haut mentionnée et/ou dans un entourage (environnement) de 3 kilomètres.**

L'installation ou l'utilisation de tout mécanisme ayant une activité polluante électromagnétique de surveillance est refusé et interdit à cette adresse et/ou dans un entourage (environnement) de 3 kilomètres. Un consentement écrit est légalement requis pour l'installation de tout mécanisme dit "intelligent" ayant une capacité de surveillance et de tout mécanisme qui puisse récolter et

transmettre des informations SANS FIL de nature privées et personnelles à des parties non autorisées ou non nommées pour des utilités non autorisées et non nommées.

L'autorisation de partager ou de divulguer des informations de nature personnelles et privées ne peut être donnée que par la partie d'où ces informations émanent. Cette autorisation est ici déniée et refusée eu égard à la propriété ci haut mentionnée et à ses occupants et/ou dans un entourage (environnement) de 3 kilomètres. Il est du droit de chaque citoyen de DIRE et de faire valoir ses droits pour les fournisseurs de services et même d'influencer les législations. D'autres ressources existent pour être alimenté en énergie et seront utilisés au besoin dans le temps afin de se libérer du monopole exercé sur les citoyens du Québec par Hydro-Québec. Le "compteur intelligent" viole les droits à la vie privée et met en danger les résidants en fonction des facteurs suivants:

1. Il identifie les appareils électriques individuellement dans la résidence et enregistre quand ils sont en opération, ce qui est une invasion à la vie privée.
2. Il enregistre les activités de la maison et de leurs occupants en violation des droits et de la sécurité domestique.
3. Il transmet des signaux sans fil qui peuvent être interceptés par des partis inconnus et non autorisés. Ces signaux peuvent être utilisés pour surveiller les comportements et l'occupation des lieux et aussi être utilisés par des criminels, favorisant les activités criminelles contre les habitants.
4. Des données sur les habitudes quotidiennes des occupants sont récoltées, enregistrées et conservées en permanence dans des bases de données qui peuvent être accessibles à des parties non autorisés ou non invités à connaître et partager ces données, par ceux qui sont à l'origine de ces données.
5. Ceux qui ont accès au "compteur intelligent" ont un accès permanent à l'histoire des activités de la maison, de tout ce qui s'y passe dans le temps et permet une vision hautement détaillée et invasive de la vie des habitants de la maison.
6. Ces bases de données peuvent être partagée ou tomber entre les mains de criminels, de maîtres chanteurs, de pirates de transmissions sans fil, des employés d' Hydro Québec et d'autres parties non identifiés qui pourraient agir contre les intérêts des citoyens qui sont sous cette surveillance des compteurs.
7. Les "compteurs intelligents" sont par définition des appareils de surveillance qui violent les lois d'interdiction de mise sur écoute en enregistrant et en conservant les données privées, les activités et comportements individuels sans le consentement et dans l'ignorance des personnes ainsi enregistrées.
8. Il sera possible par exemple avec l'analyse de données recueillies sur la base des "compteurs intelligents", pour des parties non autorisés et à distance, de connaître les conditions médicales d'une personne, ses activités sexuelles, sa localisation physique dans la maison , ses habitudes de vacances et des informations personnelles et autres habitudes des habitants d'un lieu.
9. Hydro Québec n'a pas dévoilé jusqu'à quel point les données seront enregistrées, conservées et partagées ou encore comment ces informations seront utilisées, nonobstant la violation des droits à la vie privés, ce qui constitue un agenda caché derrière les capacités d'enregistrement et de transmission du "compteur intelligent".
10. De plus, à l'heure où la science décrit les effets nocifs des micro ondes et des appareils sans fil sur la santé, on peut estimer que le niveau d'énergie des fréquences radios et électromagnétiques émanant de ces "compteurs intelligents" excède les niveaux sécuritaires pour la santé et polluent l'environnement énergétique et les milieux de vie des habitants, le tout étant confirmé par les études scientifiques.



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Bien que vous dites avoir fait faire des études, il est un fait nommé que de nombreuses études proposant des conclusions favorables à un produit sont payées par le fabricant, qui a intérêt à mousser et vendre son produit. On a même vu des situations où des scientifiques d'universités prestigieuses ont été soudoyés pour mettre leurs noms sur des papiers d'études bidons auxquelles ils n'avaient pas participé eux-mêmes, ou que les études n'avaient tout simplement pas été menées, le document ayant été composé de toutes pièces. Certains chercheurs, médecins universitaires américains notamment, ont effectivement été traduits devant les tribunaux pour ce genre de stratagème.

Il est donc très facile de faire produire des études bidons favorables à son produit lorsqu'on a les ressources financières et l'intérêt pour le faire. Je porte à votre attention le scandale du Vioxx, retiré du marché en 2004, après des décennies d'utilisation, ce médicament a fait plus de 55,000 morts aux États-Unis, et lorsque l'on sait que moins de 50% des effets secondaires des médicaments sont rapportés aux autorités, ... Un chiffre de 100,000 décès serait plus réaliste. Plusieurs de ces études bidons ou biaisées ont même été publiées dans des revues scientifiques prestigieuses comme le Journal of American Medical Association (JAMA) et le New England Journal of Medicine pour n'en nommer que quelques-uns. Pour plus de renseignements sur le sujet, vous pouvez consulter les sources au pied de cette lettre.

De plus, de par vos décisions unilatérales prises de mauvaise foi et sans le consentement exprès ou tacite des consommateurs, vous semblez contrevir aux articles 1375 et 1386 du Code Civil du Québec (selon les articles 1376 et 1377, ces règles s'appliqueraient dans le cas présent). Manifestement, vous avez violé la Charte des droits et libertés de la personne (L.R.Q., chapitre C-12) :

- article 7 : La demeure est inviolable.
- article 8 : Nul ne peut pénétrer chez autrui ni y prendre quoi que ce soit sans son consentement exprès ou tacite.

De par ses agissements, votre société enfreint plusieurs lois provinciales, notamment la loi sur la qualité de l'environnement (L.R.Q., chapitre Q-2). Cette loi confirme à l'article 1, alinéa 5, qu'une radiation est considérée comme étant un contaminant. À l'article 20 de la même loi, sous la rubrique PROTECTION DE L'ENVIRONNEMENT, il est strictement prohibé de procéder à l'émission, au dépôt, au dégagement ou au rejet de tout contaminant dont la présence est "susceptible" de porter atteinte à la vie, la santé, à la sécurité, au bien-être, ou au confort de l'être humain, de causer du dommage ou de porter autrement préjudice à la qualité du sol, à la végétation, à la faune ou aux biens.

Suite à ces énoncés, **J'INTERDIT, JE REFUSE et JE NE DONNE AUCUN CONSENTEMENT** pour effectuer toute installation ou utilisation de tout nouvel équipement dit "intelligent" soit les nouveaux compteurs proposés ou autres, sur ma propriété et/ou dans un entourage (environnement) de 3 kilomètres. Toute tentative d'installation d'un tel équipement sur ma propriété ou sur ma résidence et/ou dans un entourage (environnement) de 3 kilomètres sera considéré comme une violation de territoire, de l'écoute électronique, un acte de mise en danger de la santé des habitants de la résidence et sera passible de poursuite et d'amendes selon la loi des contrats privés et publics à travers les codes civils et criminels. Une amende de cinq millions de



COPY

dollars (\$5,000,000.00) sera alors applicable. Toute personne, agence gouvernementale ou organisation privée qui endosserait, exécuterait ou opérerait une installation de la nature de "compteur intelligent" sans avoir eu mon autorisation écrite sera complètement responsable - personnellement ou organisationnellement - autant que Hydro Québec des violations ci dessus mentionnées et sera passible de poursuite pour intrusion sur un territoire privé, dans la vie privée, que des dommages ou conséquences négatives soient justifiées pas la loi ou non et seront passibles de la même amende que ci haut mentionnée.

Ceci est une note légale. Après livraison, cette liste des responsabilités ci haut mentionnées s'applique à tous les partis énumérés et impliqués dans cette lettre. L'immunité et la protection pour des fonctionnaires ne s'applique pas à ces installations dû à la violation criminelle qu'elles représentent.

Veuillez donc considérer le présent document comme étant une confirmation écrite que vous n'avez certainement pas le consentement du soussigné pour changer le compteur analogique pour un compteur potentiellement dangereux qui émet des radiofréquences.

Le soussigné réitère que dans l'éventualité où vous ferez ce changement, il entreprendra des mesures légales et se réserve le droit de faire part de ses plans aux médias.



Rachel Pelletier, représentante autorisée
pour RACHEL PELLETIER, ens legis
Sans recours - tous droits réservés.
6495 St-Laurent, Lévis Qc, G6V 3N9



Le 15 février 2013

Rachel Pelletier
6195 rue Saint-Laurent
Lévis QC
G6V 3N9

Numéro de client :

Objet : Note de non-consentement d'installation de compteur intelligent

Madame, Monsieur,

Nous avons bien pris connaissance de la « *Note de non-consentement d'installation de compteur intelligent* » que vous nous avez fait parvenir.

En octobre dernier, la Régie de l'énergie a rendu deux décisions importantes à l'égard du déploiement des compteurs de nouvelle génération. Elle a d'abord autorisé le remplacement de tous les compteurs appartenant à Hydro-Québec par des compteurs de nouvelle génération. Elle a aussi autorisé une « option de retrait » de ces compteurs pour les clients qui le souhaitent, moyennant le paiement des frais encourus.

Lorsque viendra le temps de procéder à l'installation d'un nouveau compteur dans votre quartier, vous recevrez au préalable une lettre concernant le remplacement des compteurs. Après avoir reçu cette lettre, vous pourrez vous prévaloir de l'option de retrait autorisée par la Régie de l'énergie et nous faire part de votre refus d'un compteur de nouvelle génération. Un compteur non communicant, exigeant une relève manuelle, pourra alors être installé.

Vous remerciant de l'attention que vous porterez à la présente, nous vous prions de recevoir,
Madame, Monsieur, nos salutations distinguées.

Les services à la clientèle

Von NASA - The End of Mankind " pp .. The future is now"

PUBLIC DOMAIN / DOMAINE PUBLIC
LÉVIS CP MONT-MARIE
6700 Rue Sainte-Georges
LÉVIS G6V 4G0
TPS/GST#: 854697968
TVO/QST#: 1211735552

2012/05/27 05:52:35 henriette
CC/CC1022292 G/W1 TR252390

T/T 5%/9.5% 10\$1.29 \$1.29
Lettre (Autre)/Ltr other

Poids réel / Actual Weight 0.037kg

N° de suivi / Tracking #
RW 665 958 755 CA

additionnelle refusée
Additional declined

Le service de balance a été traité après
l'heure limite
Scale Service was processed after Mail
Cut-Off time

T/T 5% 10\$8.25 \$8.25
Recomm., Registered

T/T 5%/9.5% 20\$1.29 \$2.58
Lettre (Autre)/Ltr other

Poids réel / Actual weight 0.037kg

N° de suivi / Tracking #
RW 665 958 733 CA
RW 665 958 747 CA

additionnelle refusée
Additional declined

Le service de balance a été traité après
l'heure limite
Scale Service was processed after Mail
Cut-Off time

T/T 5%/9.5% 20\$8.25 \$16.50
Recomm./Registered

SOUS-TOTAL/SUBTL	\$28.62
TPS/GST	\$1.43
TVP/PST	\$2.85
TVH/HST	\$0.00
TOTAL/TOTAL	\$32.90

Carte de débit / Debit Card \$32.90
Numéro de carte / Card Number

MONNAIE / CASH \$0.00

Reçu requis pour tous les retours. Pour
consulter la politique de retour, visitez
le site Web.
Receipt required for all returns. To view
the return policy go to the website.



REGISTERED
DOMESTIC
CUSTOMER RECEIPT

RECOMMANDÉ
RÉGIME INTÉRIEUR
REÇU DU CLIENT



Nom / Name		Destinataire / Recipient	FOR DELIVERY CONFIRMATION	CONFIRMATION DE LA LIVRAISON
M. L. Turcotte Prix. CA HYDRO-Qc		75 Bl René Lévesque	City / Prov. / Postal Code	Ville / Prov. / Code postal
		MTL - Qc H2Z - 1A4		1 888 550-6333
			CPC Tracking Number	Numéro de repérage de la SCP
			RW 665 958 755 CA	
33-000-554 (11-04)				

RW 665 958 747 CA

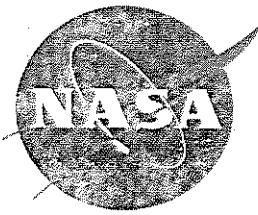
Nom / Name		Destinataire / Recipient	FOR DELIVERY CONFIRMATION	CONFIRMATION DE LA LIVRAISON
M. L. Turcotte Prix. CA HYDRO-Qc		75 Bl René Lévesque	City / Prov. / Postal Code	Ville / Prov. / Code postal
		MTL - Qc H2Z - 1A4		1 888 550-6333
			CPC Tracking Number	Numéro de repérage de la SCP
			RW 665 958 747 CA	
33-000-554 (11-04)				

REGISTRED
DOMESTIC
RECOMMANDÉ
RÉGIME INTÉRIEUR
REÇU DU CLIENT

Nom / Name		Destinataire / Recipient	FOR DELIVERY CONFIRMATION	CONFIRMATION DE LA LIVRAISON
L. Courville - Prix. HYDRO-Qc Distribut		75, Paul René Lévesque O.	City / Prov. / Postal Code	Ville / Prov. / Code postal
		MTL - Qc H2Z - 1A4		1 888 550-6333
			CPC Tracking Number	Numéro de repérage de la SCP
			RW 665 958 733 CA	
33-000-554 (11-04)				

REGISTERED
DOMESTIC
RECOMMANDÉ
RÉGIME INTÉRIEUR
REÇU DU CLIENT





Dennis M. Bushnell
Chief Scientist
NASA Langley Research Center

Future Strategic Issues/Future Warfare [Circa 2025]

The Future Is Now!



Dennis Bushnell, Chief Scientist - NASA Langley Research Center

WARFARE STRATEGY DOCUMENT - THE FUTURE IS NOW!

U.S. Air Force/DARPA/CIA/FBI/ Southern Command/Atlantic Command/Australian DOD and more

<http://www.stopthecrime.net/nasa.html>

Page 4

The presentation is based in all cases upon existing data/trends/ analyses/technologies (No PIXIE DUST)
Robots - Cyborgs and Humans

Page 93

Exploit "CNN" Syndrome
-- Sink Carrier(s) via "swarm attacks"
-- Capture/torture Americans in living color on prime time
- "Terror" attacks within CONUS (binary bio, critical infrastructure "takedown," IO/IW, EMP, RF against Brain, etc.)
-- Serious "Psywar" (collateral damage exploitation, etc.)

Page 9
Humans Have "Taken Over" and Vastly Shortened "Evolution"
-- "Directed Evolution"

Page 14
KEY "FUTURE TECHNOLOGIES"
-- Automatic/robotic "everything"
-- Genetic engineering before birth

Page 66
Increasingly Critical Human Limitations/
Downsides
-- Large
-- Heavy
-- Tender
-- Slow (physically, mentally)
-- Require Huge Logistic Train(s) i.e., Humans have rapidly decreasing-to-negative "Value Added"

Page 67
ROBOTICS "IN THE LARGE"
(saves lives, enhances affordability, redefines risk/threat environment, enhances effectiveness)

Page 35
Examples: Confluence of IT/Bio/Nano
-- Brain of a sea lamprey inserted/connected to body of a robotic fish (an initial cyborg)
-- "Chew-Chew" -- a flesh/plant eating robot that hunts/bio-digests "natural foods" to "live off the land"
(Chew-Chew robot inventor: Stuart Wilkinson expresses concern about the dangers of the robots eating humans)

Page 43
Micro Dust Weaponry
-- A Mechanical Analog to Bio, Micron sized mechanized "dust" which is distributed as an aerosol and inhaled into the lungs. Dust mechanically bores into lung tissue and executes various "Pathological Missions."
-- A Wholly "New" class of Weaponry which is legal.

Page 45
Beam Weapons Increasingly Prevalent

Page 50
EFFECTS OF LOW POWER MICROWAVES (U.S. ARMY, SRI, WALTER REED)
-- Behavioral performance decrements

-- Seizures
-- Gross alteration in brain function
-- 30% to 100% increases in brain blood flow
-- Lethality
-- Interactions between low power (microwatts per sq. cm./4 to 3 GHz) MW and brain function

Page 55
What Is Apparently "Legal"
-- Microwave/RF Anti-Functional and Anti-Personnel Weaponry
-- Chemical Anti-Functional Weaponry
-- Chemical "Psychological Effects" via Sensory Organs Weaponry (e.g. smell)
-- Chemical Personnel Incapacitation Weaponry ["Non-Warfare" (e.g. Hostage Terrorism) only]
-- PSYWAR
-- Acoustic Weaponry
-- Mechanical Micro Dust

THESE ARE JUST A FEW EXAMPLES OF WHAT IS IN THE N.A.S.A. DOCUMENT THAT ARE HAPPENING NOW !

www.StopTheCrime.net/nasa.html

www.StopTheCrime.net

Dennis M. Bushnell
Chief Scientist
NASA Langley Research Center

Future Strategic Issues/Future Warfare [Circa 2025]

- Capabilities of the “Enemy After Next”
 - Ongoing Worldwide Technological Revolutions
 - Economic Trends
- Potential Nature of Farther Term Warfare

The 'Bots, 'Borgs,' & Humans
Welcome You to
2025 A.D.





THIS PRESENTATION BASED ON “FUTURES” WORK FOR/WITH

- USAF NWV
- USAF 2025
- National Research Council
- Army After Next
- ACOM Joint Futures
- SSG of the CNO
- Australian DOD
- NRO, DSB
- DARPA, SBCCOM
- DIA, AFSOC, EB, AU
- CIA, STIC, L-M, IDA
- APL, ONA, SEALS
- ONI, FBI, AWC/SSI
- NSAP, SOCOM, CNO
- MSIC, TRADOC, QDR
- NGIC, JWAC, NAIC
- JFCOM, TACOM
- SACLAINT, OOTW



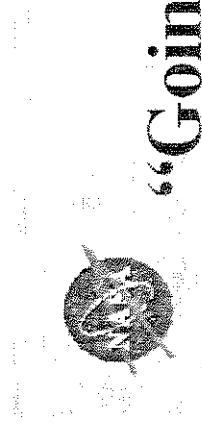
THIS PRESENTATION

- IS meant to incite thought/ discussion
- IS based in all cases upon existing data/trends/analyses/technologies (e.g., NO PIXIE DUST!)
- Provides in some cases a somewhat broader view of prospective developments and issues



Utilization/Application of 2025+ Projections

- Inputs to Future Warfighting Concepts Development(s) (Enemy After Next & Blue)
- Inputs to New Procurement Decision (15+ years to Produce, 40+ years in Inventory
 - “Heads Up” for Intel Community (“Watches and Warnings”)
- Inputs to DOD R&D Planning



“Going In” Assumptions

- Politics can/does change “overnight” (e.g. Russia, Iran, Iraq, Pakistan, etc.) Potential CAPABILITIES is the future warfare issue, not Who but WHAT



Need to Plan ‘Differently’

- WORLD is in the throes of triple/exponential (IT/Bio/Nano) Technological Revolutions
- Changes occurring at scales of months (instead of decades)
- Zeroth order potential effects upon Defense/Offense equipment/comops/threat

Image: Strategic Forces [201]



“SPACESHIP EARTH”

The crew are:

- Plundering the ship's supplies
- Tinkering with the temperature and life-support controls
- Still looking for the instruction manual
- Engaging in bloody skirmishes in every corner of the vessel
- Increasing the size of the crew by 2 million PER WEEK

P. Creola



Humans Have “Taken Over” and Vastly Shortened “Evolution”

- Of the Planet
 - Global Warming/Pollution/Deforestation
 - Huge “Public Work” (e.g. 3 Gorges Dam)
- Of the Human Species
 - Genomic Design and Repair
 - “Mild Children” (Moravec)
- Products/Life Forms
 - Cross Species Molecular Breeding
 - “Directed Evolution” (Maxygen etc.)



CURRENTLY

- Order of 70% of Worlds Research conducted outside of U.S. (to first order, a % of GDP, U.S. produces order of 18% of worlds GDP)
- Order of 70% of U.S. Research now “Commercial” (as opposed to Government sponsored)



NanoTechnology Research

- 29% in Europe
- 28% in Japan
- 27% in U.S.
- 16% "Other(s)"

Source: STTC, 2002



Technological Ages of Humankind

- Hunter/Killer groups [Million BC~10K BC]
- Agriculture [10K BC~1800 AD]
- Industrial [1800~1950]
- IT [1950~2020]
- Bio/NANO [2020-?]
- Virtual

- Hunter-Gatherer - “Nature Provided”
- Agriculture - Controlled Nature
(Plants/Animals)
- Industrial - Mechanized Agriculture
- IT/BIO/Nano - Automating
Industry/Agriculture
- Virtual - Robotization of
IT/Bio/Nano/Industry/Agriculture





KEY "FUTURE TECHNOLOGIES"

*(all highly synergistic/at the frontiers of the small,
in a "feeding frenzy" off each other)*

- * IT
 - Silicon/bio/optical/photon/nano computing ("no end in sight," another 10^6 +)
 - (Virtual reality/holographic) immersive ubiquitous commun., hyperspectral sensors, "virtual presence"
 - Automatic/robotic "everything"
 - Huge cost reductions

- * Bio
 - Life span doubling
 - Genetic engineering before birth
 - Plants irrigated by seawater (food, petro-chem feed stock, minerals, terraforming)

- * Nano
 - Carbon nanotubes (600X strength-to-weight of steel)
 - "Assemblers"/"living factories"
 - Huge cost reductions

Source: Strategic Foresight, 2004



Worldwide IT Revolution

- Comms/Computing/Sensors/Electronics
- U.S. Commercial IT R&D ~ \$100B/yr.
- Factor of 1 Million further improvement [Silicon,Molecular,Quantum,Bio,Optical]
- Beyond Human AI?
 - Automatics/Robotics “in the large”
 - Immersive multi-sensory VR/Holodecks”
- Ubiquitous multi physics/hyperspectral sensors [land/sea/air/space]
- Micro/Nano sats/GNC/sensors,etc.

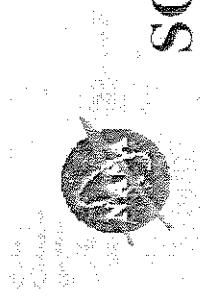
[Worldwide] Impacts of Ongoing IT Revolution Upon Society

- Tele-commuting
- Tele-shopping
- Tele-entertainment
- Tele-travel
- Tele-Education
- Tele-medicine
- Tele-commerce
- Tele-politics
- Tele-socialization



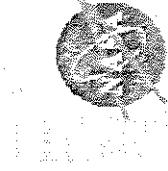
IT Status

- 10^6 improvements in Computing since '59,
 10^8 further possible next 30 years
(10^3 provides "better than Human" capabilities)
- 100 Million Telecomputers Worldwide NOW
(expected to at least double in 15 years)
- India graduates three times more software engineers than the U.S., More software written in Bangalore than Southern CA
- IW effectively constitutes a 4th WMD



SOME IT 'PREDICTIONS'

- Quantum computing initially available in 5 years
- 15% of all power today is used by computers, will reach 60% by 2010
- Wearable/implantable (on-person) electronics--comms, computing, sensory augmentation, health monitoring, brain stimulation



AI (AND BEYOND) COMPUTING

Human Brain Characteristics/Capabilities

- 100 billion neurons
- 100 trillion connections
- 200 calculations/second, (slow) speed of neural circuitry
- 20 million billion calculations/second
- Excellent at (parallel-computing) pattern recognition, “poor” at sequential thinking
- Operates via “random tries”

Machine Capabilities

- Currently, 10,000 billion calculations/second; 100,000 billion by 2004
- By 2010, 20 million billion is available (by 2025, on a PC)
- By 2030, PC has collective computing power of a town full of human minds



U.S. "HUMAN BRAIN PROJECT"

- Begun in early 90's, funded by 16 organizations across 5 agencies (NIH, NSF, DOD, NASA, DOE)
- AKA "Neuroinformatics" (intersection of neuroscience and informatics)
- "Exploding field;" 10,000 individual presentations at annual meeting of Society for Neuroscience (from molecular geneticists to cognitive psychologists)
- Determining detailed neuroanatomy of human brain ("digital brain atlas")

Use of IT to study brain, use of brain info to aid IT/AI



THE “IMAGINATION ENGINE” *aka “Creativity Machine,”* *aka “Creative Agent”*

- Current AI “best bet,” not a rule based/expert system
- GENERATES new ideas/concepts via starving a trained neural net of meaningful inputs, forcing it to “dream”//“cavitate,” create new concepts, etc. An attendant neural net used to capture/record/evaluate and report on these “writings.”

from: Strategic Poetry, 2013

 In this [Worldwide] economy our ability to create wealth is not bounded by physical

limits/resources but by our ability to come up with new ideas”

[However, even “universal wealth” will not obviate the other causes of warfare which include Politics, ‘Face’, Religion,

Megalomania and Territorial Disputes]

Global Problems/“Solutions”

- (Serious) Problems
 - Energy (2)
 - Water (2)
 - Food (2)
 - Land (2)
 - Population Growth (1)
 - Wealth Generation (1)
- “Killer Ap Solutions”
 - (1) Motivational/inexpensive Web-based Asynchronous “Distance Learning”
 - (2) Bio mass/food via seawater irrigation in current “wastelands”

High Stakes lesson, 1991



Inexpensive Motivational Asynchronous Web-Based Distance Education Enables:

- Demise of the U.S. “underclasses”
- Wealth Creation from enabled “Invention”
- Stabilization of World Population
- [Even More] Rapid Technology Diffusion
- Equalization of “Haves” and “Have-nots”
- Altered Political/military outlooks Worldwide
- I.E. Changes “Everything”

“The Internet has created a new kind of world, one that is more open, more interconnected, and more democratic. It has given us the tools to connect with people from all over the globe, to share ideas and information, and to work together towards common goals. This is a world where anyone can have a voice, and where we can all benefit from the knowledge and experience of others. The Internet has changed the way we live, work, and communicate, and it will continue to do so for years to come.”
– Trent Schmitz, 2011



- Motivational learner/web-based asynchronous
distance learning ~~appears~~ only method of providing
prerequisite/improved educational
– BREADTH
– DEPTH
– QUALITY
– RESPONSIVENESS to shifting global
economic welfare requirements/ accelerated
increase in knowledge

At orders of magnitude

- (1) reduced societal/individual cost
(2) increased convenience/accessibility



By ~2025, 40% of Private and 15% of Public Colleges and Universities are Expected to Close Due to Web-Based Competition

A Northern VA Business man
recently donated ~ \$100M to set up a
FREE Ivy League Class On-Line
University



The ‘Ultimate’ Education Approach - Plug and Play

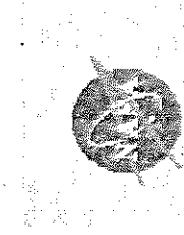
Direct Silicon (or other such) device
connection to brain, (very rapid)
uploads, Education in minutes
instead of (many) years

“*...the brain can be directly connected to a computer, so that it can receive information and store it without the need for an intermediate stage of writing it down on paper or entering it into a keyboard.*”



Advantages of Shallow Sea/Desert Production of Biomass (Via Seawater Irrigation)

- Closed CO₂ Cycle (Obviates Global Warming)
- Food
- Petro-chemical feedstock
 - Materials/clothing, etc.
 - ENERGY (end reliance on Middle East)
- Terraforming, alter desertification etc.
- Preservation/Production of Fresh Water
- Rich Mineral source (Seawater)
- Utilization of “Wastelands” (Sahara, etc.)



Probable Circa 2025 Societal Changes

- (Much) Increased Life Span (Bio)
- “Solution” to Energy/Water/“Warming” (Bio)
- (Far More) Global Distribution of Technology, Education, Economics, Wealth (IT)
- (Tremendous) Increases in Capability of Automatic/Robotic “Everything” (IT/Bio/Nano)
 - Resulting in Reduced Tensions Associated with “Have/Have Nots” and Historical/Religious Issues
 - Also Resulting in (Greatly) Increased Individual/Collective Power (Bio, IW, etc.) and General Societal Disaffection WRT “Machines”



Major Emerging Law Enforcement "Issues"

- Privacy (Ubiquitous micro/nano sensors)
- IT/Net Crime (wide spectrum)
- Bio Crime (binary pathogens, genetics)
- Protection of Human Electronic Implants
- Protection of CONUS (Beyond Terrorism)
- Societal Disaffection/Upheaval Caused by Rapid Technological Change(s) (Road/Air Rage, Psychosomatic Illnesses, Withdrawal)

Of Particular Concern



- Uncontrolled/Uncontrollable
- SELF-REPLICATION
- Of
- Brilliant Robots (IT)
- Nano-Replicators (Nano)
- Rampant Recombinant Bio

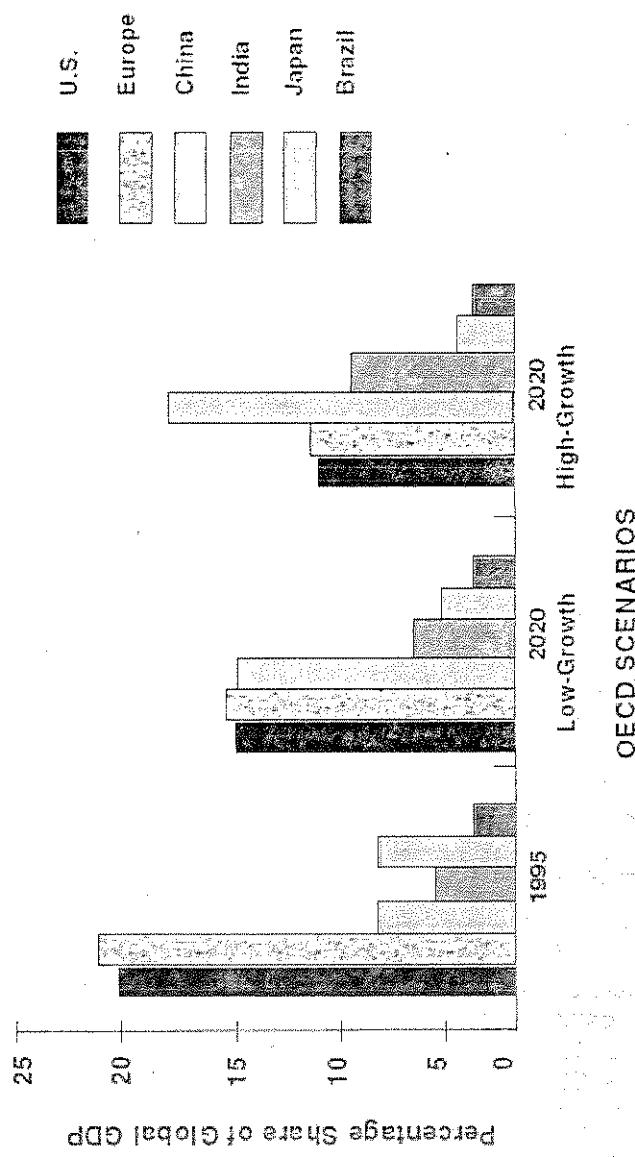


Current Competitive Landscape

- U.S. produces only 18% of World's GDP
- ~70% of Research conducted offshore
- \$400B/yr trade deficit
- 32 other nations devote a larger % of their GDP to Research
- 5th in No of R&D personnel/labor unit
- 3% savings rate vs. 30% in Asia
- 13th out of 30 - Student Math/Science Scores



AN EMERGING MULTIPOLAR ECONOMIC WORLD



Source: OECD, *The World in 2020*, p. 92

Notes:
1. Based on 1995 prices.
2. Based on 1995 prices.



Bio Revolution Applications

- "Pharm Animals" [drugs, spare parts]
- Fast Growing plants on/near sea surface & sea water irrigated plants for biomass energy/closed CO₂ cycle
- Polymer growing plants
 - Spider genes in goats allow spider silk spinning from goat milk for "BioSteel", 3.5X strength of aramid fibers for Armor
- Binary Bio-weaponry

bio-
war
tech
from
Santek
2001



Examples

Confluence of IT/Bio/Nano

- Brain of a sea lamprey inserted/connected to body of a robotic fish (an initial cyborg)
- “Chew-Chew” - a flesh/plant eating robot that hunts/bio-digests “natural foods” to “live off the land”



Carbon Nanotubes

- C1,000,000, Buckminster Fullerene Carbon
- 100X strength, 1/6 weight of steel
- 8X better Armor
- Low energy Molecular/Petaflop Computing (10^{-4} En. Usage)
- Ultra Capacitor/High Temperature SC



Revolutionary Power Generation/Storage Opportunities

- Ultracapacitors
- C-Nanotube storage of H₂ (non-cryo)?
- Adv. Fuel Cells (e.g. Lithium/water/air)
- Offshore Methane Hydrate
- HEDM (e.g. Solid H₂, Isomers, antimatter, etc.)
- Black light power?
- LENR
- Adv. PV (50%?)
- ZPE
- Room Temperature SC/SMEs



Free Form Fabrication

- Powder/Wire Metallurgy using robotic magnetically steered electron beams to create accreting local melts - GROW instead of CUIT
- No fasteners, no strong backs for fasteners
- Nearly infinite fatigue life, excellent metallurgy
- (Repairable) metals at lower weight than far more expensive composites



Aluminum/Vortex Combustor

- Micro powdered Aluminum fed into a Vortex combustor ‘burns’ SEA WATER
- Provides AIP with high energy density/efficiency for:
 - inexpensive SS with “near SSN” perf.
 - Transoceanic UUV’s
- Would allow “Enemy After Next” to AFFORDABLY Threaten CONUS via Multitudinous in-shore short-time-of-flight “popup”



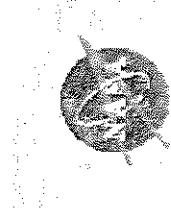
(Sample) New(er) Sensors

- Lidar w/ 50% efficiency via S-C optical Amplifiers, Also Femto-second Lasers
- Molec./Bio Sensors
- Nanotags
- Smart Card Sensors
- Sensors implanted during Manuf./Servicing
- Nano IR (10E-6 Sensitivity)
- Smart Dust



Some Sensor "Swarms"

- SMART DUST
 - Cubic mm or less
 - Combined sensors, comms and power supply
 - Floats in air currents
- NANOTAGS
 - Placed on everything/everywhere
 - Identification and Status Info
- Co-opted INSECTS



Some "Explosive" Smart Dust Opportunities

- Optimal Positioning of Explosive Dust -
Dust/Air Explosives
- Formation of "Explosive Lenses"
- Infiltration of Deeply Buried/other such
targets



Micro Dust Weaponry

A Mechanical Analog to Bio, Micron sized mechanized “dust” which is distributed as an aerosol and inhaled into the lungs. Dust mechanically bores into lung tissue and executes various “Pathological Missions.”

A Wholly “New” class of Weaponry
which is legal.



“Givens” (Now-to-“Soon”)

- Gb data transfer rates, optical comms
- Petaflop + computing
- Exceptional AI (from Bioinformatics, biomimetics)
- Wonderous/Ubiquitous land/sea/air/space multiphysics/hyperspectral sensor swarms (military/commercial/scientific)
- Survival requires dispersion/size reduction and concealment
- Robotic/swarm technologies primarily commercial/endemic worldwide



(Agreed Upon) Assumptions, Combat in 2025

- Proliferation of TBM's, IT, Precision strike/targeting, ubiquitous micro sensors, camo/spoofing, robotics, bio/chem munitions
- Logistic assets highly vulnerable in or out of theater
- In and near theater ports/airfields possibly unusable
- Beam weapons increasingly prevalent



Cruise Missiles (Current Status)

- Range/payload similar to TBM at fraction of the cost and far greater accuracy
- 75,000 in inventory of 75 countries, 130 different versions produced in 19 countries (10 "exporting" countries)
- German V-1 cruise killed 5,000; injured 40,000
- LO, launchable "anywhere/from anything," highly maneuverable
- "Then Year" costs potentially reduced to 10K - 25K
- Warhead(s) de jour/de hour (HE/carbon fibers/EMIP/sub munitions/CNIB/volumetric)



Cruise Missiles (Potential Outlook)

- Any RPV/UAV (or UUV) is a potential “cruise missile” (50 countries have UAV’s!)
 - Low cost and “ready availability” of requisite technology/components essentially ensure the “Enemy after Next” will have/inventory/field “hordes” of very capable/easily concealed/very difficult (and expensive) to counter/accurate cruise “missiles” with a potential “devil’s brew” of warheads.



“Volumetric” Weaponry

[Alternatives to HE]

- EMP
- Info/Net/Psy warfare
- Miniature brilliant sensor/mine combo's
- Fuel/air & dust/air/thermobarics
- RF
- Chem/bio Antifunctionals/antifauna
- Isomers, Strained Bond Energy Release, etc.
- Carbon fibers and “Blades,” Acoustics etc.



Antipersonnel MW/RF Weaponry

- Heating [High Power Requirements(s)]
- Surface Effects
- Brain Interactions [Low Frequency Modulation]



EFFECTS OF LOW POWER MICROWAVES (U.S. ARMY, SRI, WALTER REED)

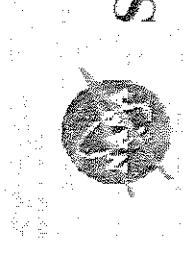
- Behavioral performance decrements
- Seizures
- Gross alteration in brain function
- 30 % to 100 % increases in brain blood flow
- Lethality
 - Interactions between low power (microwatts per sq. cm./.4 to 3 GHz) MW and brain function



Often “Fingerprintless” Bio Archipelago

- Bacteriological
 - Viruses
 - Prions
 - Parasites
 - Fungi
 - Carcinogens
 - Toxins
- Fatal-to-disabling
 - Short-to-long time scales
- Anti-flora/fauna/functional
 - Direct and (undetectable) Binary
- Natural, Genomic
 - Hormones/Regulators
- Bio-Hacking

Figure S3c, K. Israels, '23



Some Interesting "Then Year" BW Possibilities

- Aflatoxin - ("natural," parts-per-billion, carcinogen)
- Airborne varieties of Ebola, Lassa, etc.
- Binary agents distributed via imported products (Vitamins, Clothing, Food)
- Genomically (individual/societal) targeted pathogens
- Long term/fingerprintless campaign (as opposed to "shock and awe" BW)



An Existing Bio Calmative - VEE (Venezuelan Equine Encephalitis)

- Ideal Incap. BW Agent
- Weaponized by U.S. & USSR in 50's/60's
- Easily transmitted via Aerosol
- Highly infectious, Low Fatality Rate
- 1 to 5 day incubation, 3 week recovery
- Tested on Humans (Operation Whitecoat)
- **No Treatment Available**



Frontiers of (Rapidly Growing/Genomic/In situ) “Bio on the Battlefield”

- Sustainment:
 - Food
 - Water (soil/air/purif.)
 - Energy (HC, H2, PV)
 - Meds/“Health”
 - Computing, Clothing
 - Lethality:
 - Capabilities Enhancement
 - Armor
 - Concealment (living camo)
 - Sensors, FOF ID
 - Bio-weapons (anti-personnel/functional, bio-virus into bio computer)
 - Explosives (e.g. N2 fixation, grow overnite)
- GREATLY REDUCES**
“LOGISTICS TAIL” &
ENHANCES CAPABILITIES

Frontiers of
(Rapidly Growing/Genomic/In situ)
“Bio on the Battlefield”



What is Apparently "Legal"

- Microwave/RF Anti-Functional and Anti-Personnel Weaponry
- Chemical Anti-Functional Weaponry
- Chemical "Psychological Effects" via Sensory Organs Weaponry (e.g. smell)
- Chemical Personnel Incapacitation Weaponry ["Non-Warfare" (e.g. Hostage/Terrorism) only]
- PSYWAR
 - Acoustic Weaponry
 - Mechanical Micro Dust

James Sargent Report, 1991



(FUTURE) NON-NUCLEAR EXPLOSIVES FOR "VOLUMETRIC"/ WEAPONS OF "MASS EFFECT"

- Metastable interstitial composite (MIC/Cubanes)
 - Order of 6 x TNT
- Fuel-air/dust-air explosives
 - Order of 15 x TNT
- Strain-bond energy release (SBER)
 - Order of 100 x TNT
- Hafnium (metastable) isomers
 - Order of 1,000 to 100,000 x TNT
- Atomic boron, carbon, hydrogen



High Energy Density Materials (HEDM) (Power, Explosives, Propellants)

- Tetrahedral N (Isp \rightarrow 600+ sec)
- Atomic Born, C, H (Isp \rightarrow 600+ sec)
- Metastable He (Isp \rightarrow 1500 sec)
- Metallic Hz (Isp \rightarrow 2000 sec)
- ISOMERS (\rightarrow $10^5 \times$ TNT)
- Anti-matter, LENR's



Transoceanic UAV'S

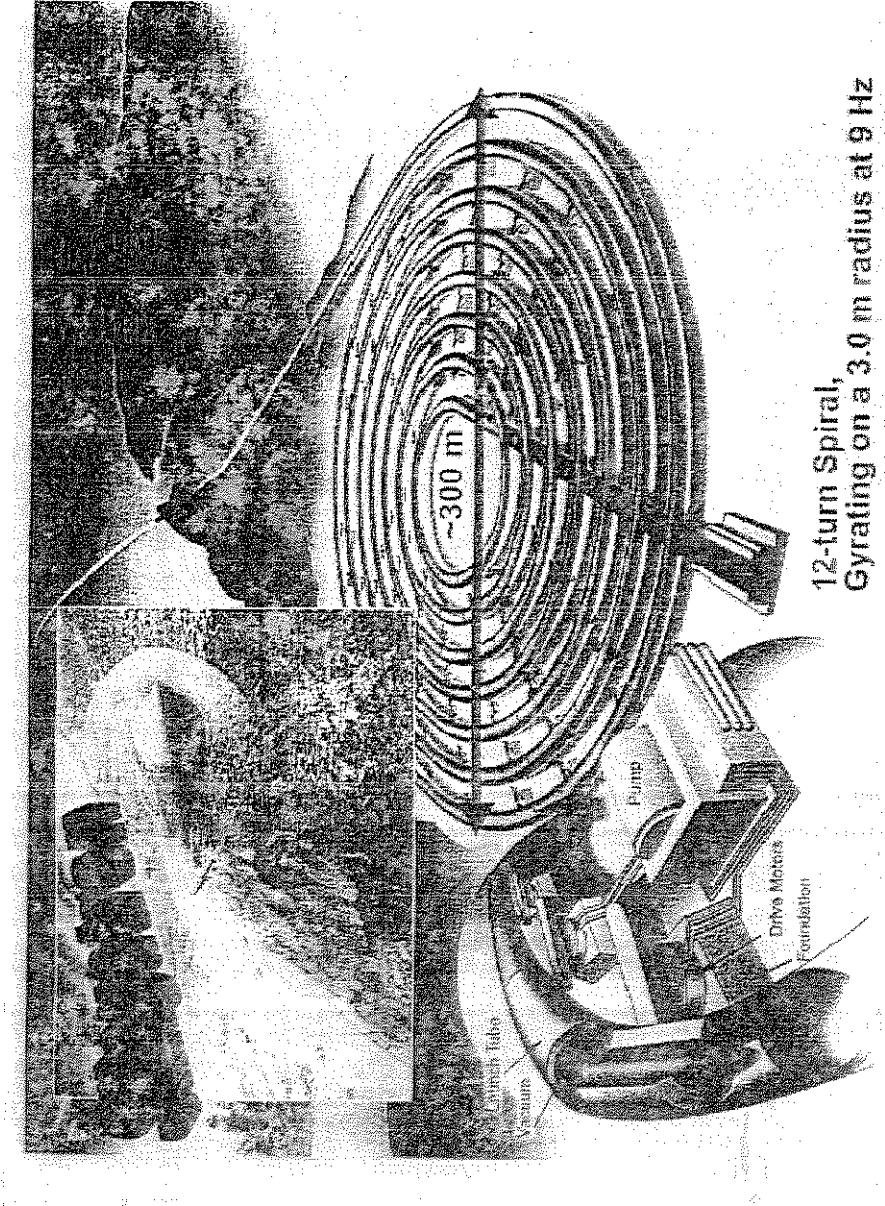
- Current Capability - (.98 - .29 lbs, 2000 mi., 1.5 gals. Fuel; '01 - Transpac, 5000 mi.)
- Provides Capability for Undetectable Ultra-inexpensive Swarms Against CONUS
- Interesting (Precision) "Payloads"
 - ISR
 - Smart Dust/Explosive
 - Target/explode Hazmat Trucks, Chem. Plants, Oil Storage/Refineries, etc.
 - Bio Dispensers (Anti-People, Things, Plants)
 - IW/EMI
 - Brilliant/Miniature sensor/Mine Combos
 - CNT's (Power Lines, "Wire Blade")

RIGHT SOURCE: SOURCE UNKNOWN



Blast Wave Accelerator

- Global Precision Strike ‘On the Cheap’
- No barrel, ~200 ft. notched rails, sequentially detonated Distributed HIE
- Mach 21 or less as desired, up to 3000 lb
- Base anywhere, ~\$200/lb of projectile
- Excellent stealth [no plume], affordability, ferocity, reaction time, survivability, recallability, effectiveness
- Being worked at Aberdeen and NASA MSFC for lofting of Fuel and Nanosats



60



“Slingatron” for Global Precision Strike

- 10Kg projectiles, up to thousands/minute
- Global, or less, range
- \$20M/device, 80m diameter
- Mechanical “on-the-ground” propulsion via Gyrating Spiral Guide Tube (a multiple “hula hoop”
- “Poor Mans” Global Precision Strike/Takedown Weapon”



Then Year Targeting/ Connectivity etc.

- MILITARY overheads/systems
- Ubiquitous COMMERCIAL overheads/systems
- SCIENTIFIC overheads/systems

IN the context of:

- Inexp. Reconstitution via micro/nano sats
- Optical comms/GPS etc.

Ubiquitous inexp. UAV/HALE adjuncts

from: Strategic Review, 2011



EXAMPLE: POTENTIAL "COMPETITOR" MILITARY
(SURVEILLANCE/INTELLIGENCE/TARGETING/DAMAGE ASSESSMENT)
UTILIZATION OF INTERNATIONAL SCIENTIFIC "GLOBAL CHANGE"
PROGRAMS/ASSETS

- * Extensive/increasing international assets (land-based, ship, aircraft (conventional/HALE), spacecraft) dedicated to measuring, on a global scale, details of land, atmospheric, ice, ocean, biota status/dynamics (to understand total Earth "system" and effects of humans on the global environment)
- * Extensive/magnificent/often redundant wide coverage and detailed instrumentation suite(s) (imaging radars/SARs/LIDARS/radar altimeters/laser altimeters/radiometers/scatterometers/spectrometers/R sensors/ magnetometers/etc.
- * Terrabytes+ of data archived/readily/publicly available increasingly in near real time
- * Sample measurements include: OH, O₃, HCl, NO, NO_x, N₂O, CO, CH₄, HNO₃, CO₂, H₂O, aerosols, wind speed/vector/profile(s), vegetation type, temperature profile(s), humidity profile(s), soil moisture/composition, snow cover/depth/moisture content, cloud/surface reflectance, sea ice type/coverage/temperature, ocean temperature(s)/sediments/topography/salinity/currents, magnetic field(s), surface emissivities/reflectance, leaf area index, land topography/fuse/temperature/cover, ice sheet elevation/topography, gravity field/gradients, fires extension/temperature, 3-D cloud distributions/temperatures/ice content, pressure distribution(s), ocean wave heights/period(s)/direction(s)



Then Year, Global Targeting Capabilities are a Given - Major Issue is "Legs"/Range for Increasingly Miniaturized Affordable Payloads/Systems

- Range Enhancement Approaches:
 - Airbreathing or "water breathing," to first order doubles range
 - Initial boost for cruise (ala Blast Wave Accelerator)
 - HEDM Fuels [Atomic Boron, Carbon, Isomers, etc.]
 - Drag Reduction (Wave/Friction/Drag-due-to-lift, Increased Dia.)

Hypersonic Maneuvering Boost-Glide

Source: Sanger, 1991



Summary - Major Influences of IT/Bio/Nano Upon Future Warfare

- Ubiquitous miniaturized/networked multi-physics/hyperspectral sensors
 - Robotics/Automatics “in the large”
 - Long range precision strike/targeting
 - Info/net Warfare
- Mini/micro/nano Sats, Cruise, UAV’s
 - Binary Bio Weaponry
 - Miniature/ubiquitous “smart mines”



Increasingly Critical Human Limitations/Downsides

- Large
- Heavy
- Tender
- Slow (Physically, Mentally)
- Require Huge Logistic Train(s)
i.e. Humans have rapidly decreasing-to-negative "Value Added"

© 2009, Tugan Sprecher, Fosses, 2009



ROBOTICS "IN THE LARGE" (*saves lives, enhances affordability, redefines risk/threat environment, enhances effectiveness*)

- Logistics
 - Spoofing/obscurants
 - RSTA (including NBC)
 - Defense (across the board including counter recon/ambush)
 - Offense
 - Obstacle breaching
 - "The Shooter" (especially Mout)
 - Mine Clearing
- Munitions
 - Sensors
 - Platforms
 - Air (UAV's)
 - Sea (UUV's)
 - Land (UGV's)
- "Unattended"



Emerging Characteristics of Robotic Systems

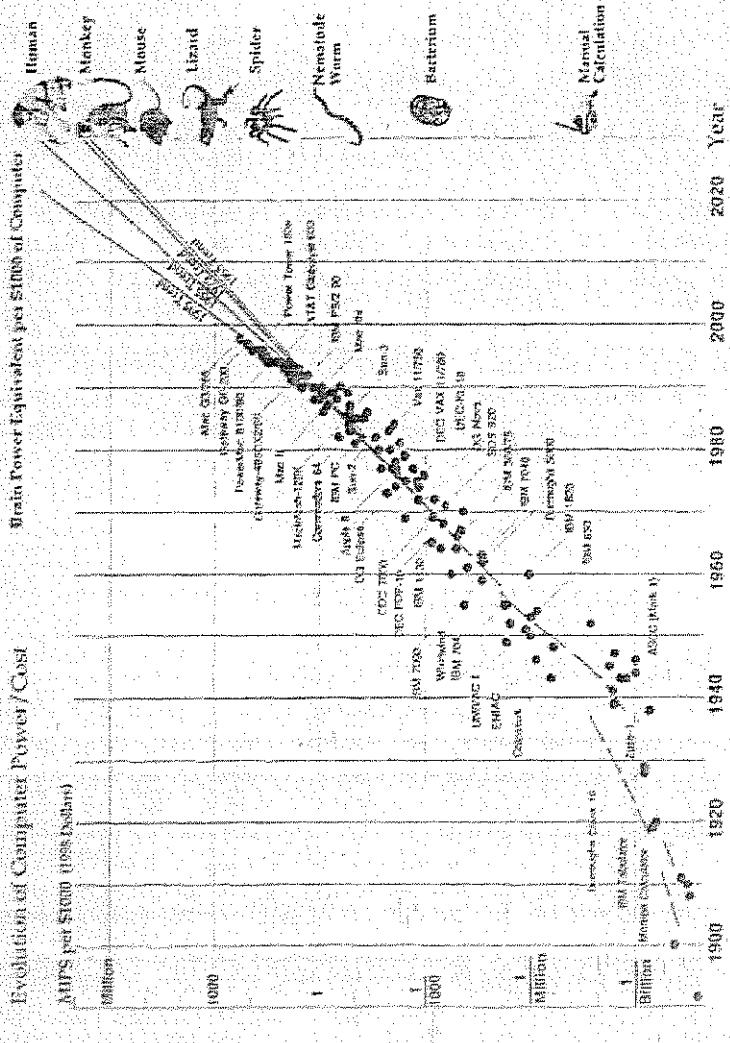
(Enabled by Ongoing III Revolutions- Comms/Sensors/Computation/Miniaturization

- * From expert systems toward AI and beyond
- * Much more reactive than humans, greatly increased tempo
- * Greatly improved hyperspectral sensors/data fusion
- * Greatly improved accuracy and lethality
- * Greatly improved affordability/miniaturization
- * Redefines “risk,” minimal casualties, salutes CNN syndrome
- * Greatly reduced logistics



Robotic Intelligence

- Two "flavors"
 - Traditional AI - Rule Based
 - Experiential - Behavior Based (Neural Nets/other "Soft Computing")
- Combination of these is current "best bet" (per Moravec) to produce artificial/cyber "life" which will possibly-to-probably be sentient but will not be anthropomorphic



LITERATURSKRIFTEN



WHAT IS BEYOND ROBOTIC SYSTEMS (SENSORS/PLATFORMS/WEAPONS/ MUNITIONS)

- Robotic/automatic → autonomous warfare?
 - Computer capability will exist (beyond terra flos) to do “AI” (or better?).
required connectivity is a “given”
 - Competitor capabilities/tempo sidelines the innate inadequacies of
human interactions/education/conscious decision timelines
 - Little-to-no “troops” → “Acme warfare Ltd.”
 - Flat hierarchy → demise of “man in the chair”
 - High level/“soft sciences” human aspects “boundary conditions”
 - Sociological/humanitarian
 - Political
 - Environmental
 - Religious
 - Psychological
 - Economics
 - Etc.
- Extent/scale, projected effects/
Damage(s), personnel attrition
(general-to-specific)



“Non-Explosive Warfare”

- IW/IO
- PSYWAR “In-the-Large”
- Anti-Functionals
 - MW
 - Chem
 - Bio
 - Micro-Mechanical
- Anti-Personnel MW/RF, Micro-Mechanical

“Natural Warfare”



- Sensors:
 - Utilize insitu plants/animals/insects as sensor platforms/instruments to indicate presence/movement/characteristics
- Weapons/Munitions:
 - Utilize animals (e.g. urban rats)/insects as “delivery systems”/munitions (“feeding,” swarming, biting, poisoning)
 - Utilize insitu explosive/destructive capability (e.g. offshore Methane Hydrate, Dams, etc.)



Characteristics - Future/Emerging Sensors/Munitions/Weapons/Platforms

- Inexpensive
- Numerous-to-Hordes/Clouds/Swarms
- Small/light/ubiquitous
- Readily Available (Largely Comm. Tech.)
- Long Range
- “Volumetric” or “Precise”
- Both “Explosive” and “Non-Explosive”
- Smart-to-Brilliant

- 
- Potential Future “Orders of Magnitude” Increases in Overall Weapon Effectiveness/Availability at Orders of Magnitude Reduced Cost(s)
- Bio/Chem/Molec./Nano Computing - (E6)
 - Ubiquitous Optical Comm - (E4)
 - Micro/Nano/Ubiquitous Sensors - (E4)
 - BioWeapony - (EN)
 - Co-operative Swarms of Cheap/Small Weapons/Sensors - (E4)
 - Volumetric Weapony - (E4)
 - Cyber/Artificial Life (Beyond AI) - (E?)



Major (Anti-U.S.) Asymmetries

- Long increasingly vulnerable logistics chain
- Long, “undefendable” coastline (esp. against underwater threats)
- Sensitivity to casualties (greatly enhanced by the “CNN syndrome”)
- Vulnerabilities to “terrorism” (esp. IT, bio)
- Increasing over reliance upon vulnerable “overhead” assets

Walt Stroger, Boston, 2001



Potential En-route

Logistic Vulnerabilities

Logistic surface ships and aircraft are non-LO and undefended, could be targeted and attrited inside the continental shelf by:

- “Eggs” [subsurface floating encapsulated missiles implanted by freighters/SS/air]
- SS [torps/missiles/subsam]
- Transoceanic UUV’s, UAV’s, USV’s
- Blast wave accelerator
- Cruise, TBM’s
- MINES

Source: Strategic Forces [39]



Fundamental Problem With Future U.S. Power Projection

- “EAN” can have “country sized magazines” filled with hordes of inexpensive Precision strike “Munitions” - Area Denial
- U.S. Forces run out of “bullets” and die [Beam weapons not panacea, inexpensive workarounds available]
- Deep Water Subs with large loadout/“swimmin” Weaponry only survivable “Close-in” platform



Sampling of TBMI/Cruise Missile "Penails" (Derived from Extensive Worldwide ICBM/IIRBM RV Cold War Defensive/Offensive Studies Over Some Three Decades

- Decoys (anti-sensor)
- Ablative/subliming coatings (thermal [laser/mw] protection)
- Fluid injection (laser protection)
- Wake modification(s) (anti-sensor)
- Electronic/optical "shielding" (MW protection)
- RAM/RAS/shaping (anti-sensor)

e.g., current efforts involving beam weapons (laser, MW)
"kills" of undefended"/"unpenailed"/"dumb" incoming

NOT REALISTIC



Potential "Workarounds" for Beam Weapon Effects on Missile Sensors/Comms

- Off board sensors
(networked, everywhere, on everything)
- Optical Comms
- Optical/Fluidic Computing
- Optical GPS

Peter Shaffek Lesser, 5/01

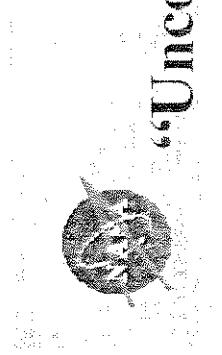


Example ‘Then Year’ Direct Conus Attack Capabilities

[~80% of CONUS population/infrastructure
Within ~ 50 Miles of a “coastline”]

- Inexp. Transoceanic UUV’s/UAV’s/Cruise
- Inexp. Blast Wave Accelerators
- Inexp. Info/Net/Psywar
- Inexp. Inshore AIP SS [mines/torps/SLCM]
- Inexp. Binary Bio into Food Supply
- Inexp. Semi-submerged Missile “eggs”
- Inexp. ‘Trojan Horse’ ‘civilian’ systems

[Above in addition to ICBM/TBM]



“Unconventional” Nuc Delivery

- Sink a ship offshore, detonate to produce Tidal Waves with Radioactive spine
 - Transcontinental UAV's, UUV's (nano, AI)
 - Balloons with GPS sport 'chutes
 - Ganged Micro Rockets (ala MIT)
 - Trojan Horse Everything (ships, boats, planes, cars, trucks, packages, cargo, containers)
- Targeted “Effects” include Tidal Waves, EMP, Earthquakes, Radiation, Blast

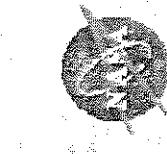


(Civilian) IW Examples/CONUS

- (National) Banking System Computers
 - 3 sites/nodes - HIE/EMIP/IW/C/B (attack buildings, power, software, hardware)
 - Interruptions in National/International Payments system irrecoverable
- Railroads
 - 4 sites, attack options as above
 - All freight cars networked, "everyone" on "just in time," no reserves/stockpiles

"Takes down Auto Industry, power grid, chicken farms, all movements of 'War Materials,' ETC!!!"

from: Strategic Issues, 2001



The Revolutionary Size/Capability/Cost Warfighting Spiral

- 1 Commercial electronics/GNC/Comms/Sensors (Much smaller/cheaper/better - Allows:
 - 2 LO and “Precision” - Reduces Reqd. munition size and Numbers much-Leads to:
 - 3 Small/Light/Deadly/Inexpensive Munitions -
 - 4 Which Reduces requisite Platform size/cost -
 - 5 Which is reduced still further by (also enabled)
“Automatics/Robotics” - Uninhabited
 - 6 Combined with Much lighter/cheaper Revol.
Materials/Fabrication for structure and energetics
(propul./warhead) - Yields “Cheap Warfare”

And Then There Is NANO ...



Future Warfare “On The Cheap”

- Info/net warfare
- Binary bio [anti-functional/fauna]
- Non-lethals
- Miniature brilliant sensor-mines
- Micro/Nano Sats
- LO/Long leg/precision UUV's/UAV's/Cruise
- Inexp/Superb/survivability ISR/comms
- Blast wave accelerator



“Then Year” “Peer Competitors”

Peer Competitor no longer defined by “megatonnage” of obsolescent Industrial age steel and aluminum Artifacts. The Drastically reduced entry investment enabled by “Warfare on the Cheap” ensures almost any nation or sizable organization can be a very worrisome Military “peer.”

Figure Strategic Assets: [H]



• SOME INTERESTING POSSIBILITIES

- Surreptitious nano “tagging” (with MW interrogation) of “everything/everyone” (imprinted during manufacture/maintenance etc.)
- Detonation of offshore seabed methane hydrate deposits to produce tactical/strategic level tidal waves against littoral regions
- Demise of “stealth” via ubiquitous multi-static, multi-physics sensors operated on “take-a-vote”



“Anti-Access”

- MINES
- Hordes/Swarms (country-sized/dispersed magazines) of small/inexpensive/brilliant cruise/UAVs, micro rockets, BW/A/slingatron projectiles, UUVs (e.g. RPGs on jet skis)
- Tyvek nets
- Attrite/“take out”/threaten APODS/SPODS
- EMP, IW/IO
- TBMs/Cruise/HPM/Lasers
- “The Sensor Web”



Counters to U.S. "Information Dominance"

- EMP ("conventional," Isomers/other HEDM, Nuc.)
- Jammers "in the Large"
- "Fry" (MW, Lasers), "Blowup"
- Anti-Sensor (various, include D&D)
- "Software"
(subvert/deception/decimation/Trojan Horse/viruses/etc., other IO/IW)
- "Chaos" (Excite circuit nonlinearitys)
- PSYWAR

FBI/CIA book, 1981



Counter U.S. Logistics

- Take out pre-positioned everything
- Ubiquitous nano multiphysics,
- Hyperspectral land/sea/air/space military, scientific, commercial sensors; Nano tags (aka "The Sensor Web")
- Target/attrite logistic air/sea lift over continental shelf via Brilliant mines, cruise, UAVs, UUVs, TBMs, Micro missiles, prepositioned semi-submerged missile "eggs," AI/vortex SS weaponry (include Subsam), BWA, slingatron, Automatic MANPADS in CONUS (via Blast/EMP etc.)
- Small number of military ports/airfields in CONUS; C-17/S/141, Ro-Ro/other ships, trains inside CONUS are non LO, undefended

From Strategic Images, 101



Anti-U.S. RMA "Strategies/Tactics"

- Threaten Bio to force "suit-up"/degrade effectiveness
- Keep forces beyond range of short-legged fighters
- Attrite JSTARS/AWACS/ABL/Visionary "cows" etc. platforms
- Miniaturize/Disperse EVERYTHING - no large/massed/interesting targets
- Use "Hard to Degrade"/Jam optical Comms/GPS
- Operate out of cities/International Commercial Entities
- Degrade U.S. Info Dominance
 - Machine Intell. "automatic warfare," (much) tighter OUDA loop (faster than Human ops)



Exploit “CNN Syndrome”

- Sink Carrier(s) via “swarm attacks”
- Capture/torture Americans in living color on prime time
- “Terror” attacks within CONUS (binary bio, critical infrastructure ‘stakedown,’ IO/IW, EMP, RF against Brain, etc.)
- Serious “Psywar” (collateral damage exploitation, etc.)



The Key Technologies

- * Free form/“point of use” fabrication
- * Beyond silicon computing (quantum, optical, bio, nano, molec.)
- * Optical commms/nav
- * Nano sensors/tags/materials/bots/GNC
- * HEDM explosives and propellants (NANO POWDERS, CUBANES, SBER, ISOMERS, LENR, THERMOBARICS, F-S LASERS/4TH GEN NUCS)
- * Anti-personnel/material (Binary) Bio, MW
- * Robotics/Machine Intelligence
- * Miniaturized/brilliant/lightweight/low-power/inexpensive swarms of everything (SATS, weapons, robots, sensors, mines, etc.)



Fundamental Military Issues/Metrics

- Affordability [“Warfare on the Cheap”]
- Survivability [“Can see everything,
Anything you can see you can kill”]
- Effectiveness [Lethality of Precision and
Volumetric weaponry]

I.E. Simultaneous ongoing Revolutions in
all three of the major Warfare Metrics



Given the Superb/Ubiqitous World
Wide Sensor Suites and Precision
Strike Capabilities "Then Year" the
Following WILL NOT BE SURVIVABLE

- APODS/SPODS
 - Runways
 - Surface Ships
 - Manned (logistic/combat) Aircraft
 - Manned (logistic/combat) Ground Vehicles
- Due to their size & (multi-physics)
signatures



CONCERNING (CURRENT) FARTHER TERM (U.S.) DEFENSE "STRATEGIC STUDIES"

- Almost wholly dedicated to/concentrated on offensive operations (DOO?)
 - Across the board (Army, Navy, Air Force, Marines, OSD)
- (Apparent) wholly inadequate consideration of defense
 - Defense of Conus, especially from short time of flight inshore undersea attack
 - Defense of the offensive forces [especially in terms of the "enemy after next" capabilities definitization and response(s) thereto]
 - Defense of the logistics assets, especially "out of theater"

House Strategic Studies, 1981



**Typical Scenario - “Takedown”
of U.S. by 10 People and <\$10M**

- Binary Bio [via (imported Vitamins/Clothing, etc, food supply(s)]
- Terror Bio (e.g. Aflatoxin)
- IW (“usual” plus physical against key nodes such as Railroads - take down the economy)
- Selective anti-personnel RF/MW (Towers)
- Water Supply Contamination via Intercontinental UAV’s

Accompanied by SERIOUS ‘PSYWAR’



Trends Summary

- Tele-everything
- U.S. just “one of the crowd” economically
- “Warfare on the cheap,” many potential “peers”
- Warfare Increasingly Robotic
- Survivable/Affordable power projection via deep water subs and Blast Wave Accelerators
- CONUS and Logistics Defense increasingly worrisome



FROM U.S. COMMISSION ON NATIONAL SECURITY/21ST CENTURY

- It will soon be possible to connect human brain cells to silicon chips
- Due to IT technology we will witness the “death of distance”
- More than 2/3rds of the satellites are foreign owned
- Large scale missile attacks will be able to overwhelm defensive systems
- Development of genetically engineered pathogens that will thwart our bio detection/defense measures/cycles

Printed September 2001



“Circa 2025”

- Machines as creative/“smart” as humans
“Robotics” the “norm”
- Zeroth order “warstopper” - Binary bio into nation’s agric./food distrib. system (every home/fox hole)
- Next level of concern: Ubiquitous/Cheap micro-to-nano EVERYTHING (sensors, munitions, weapons swarms/hordes)
- Battlefield attrition/CNN syndrome forces U.S. Army to look/act like SOCOM



(Suggested) Major U.S. Future (2025) Warfare Issues

- CONUS Defense (Requirement(s) for, potential approaches)
- Logistics Defense/Protection (in/out of theater)
- Survivability/Effectiveness of U.S. Forces on/near the “Killing Ground” in an era of affordable ubiquitous multiphysics hyperspectral sensors, precision strike, volumetric weaponry, “swarms” and hardened munitions



- “Non-explosive Warfare” (psywar, biowar IT/net war, “anti-operability war,” Beam weaponry including RF, Spoofing/Cammo

- Robotic Warfare “in the large”/better than human AI/“Cyber life”
- Alternative Power Projection Approaches (e.g. Deep Water depth/death sphere, blast wave accelerator, etc.)



FUTURE "POWER PROJECTION"?

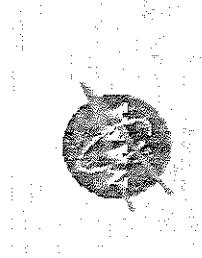
- Humans "hold" instead of "take" ground
(go in after "Sanitization")
- Sanitization via:
 - IW/PSYwar
 - Global Reach "Guns" (BWA/Slingatron)
 - Deep water/large loadout Subs w/"swimmers"
 - "Robotic Everything" w/Volumetric weaponry, non-explosive warfare



Future(s) of SOF

- Becomes THE (only survivable) HUMAN Strike Force (Army/Marines forced to become "SOF-Like")
- Increasingly THE "Overseas FBI" to counter the increasingly capable (IO/Bio WMD) & horrific destructive power of INDIVIDUALS and Groups
- Ops involve increasingly difficult-to-deal-with omnipresent/omni-physics sensor/ID suites, Few-to-No exploitable Interstices for Covert/Clandestine "work" - THE Challenge

Future Strategic Forces 7/01



Future “Warfare”

- “Defense” against the “then year” multitudinous conventional and unconventional delivery methods for volumetric and precision munitions is essentially neither doable nor affordable.
- Suggested National Defense Approaches:
 - Work Technology, Intel, Diplomacy, SOCOM for detection/interdiction/deflection of the “pre-delivery” phases (causes of war, motivational and decision processes, design and construction, test)
 - Work and ADVERTISE a REALLY EFFECTIVE RETRIBUTION to deter delivery (ala MAD)



Changing Nature of Warfare

Hunter/ Gatherer	<i>Hunting Gathering</i>	<i>Hand Hand Thrown</i>
Agricultural Farmers	<i>Prof. Arm's</i>	<i>Hand Hand Thrown</i>
Industrial Reserves	<i>Mass Proc.</i>	<i>Mech/Ch an.</i>
IT/Bio/Nano	<i>Social Disruptor</i>	<i>IT/Bio/Bots</i>

From: Strategic Issues, 2010



RMA Planning “Shortfalls” (NPS)

- “Indications of the innovative paths adversaries might take or how they might adapt technologies from the civilian world”
- Being worked in the “Technical War Games”
- “The path from todays systems and capabilities to those hypothesized for the future (2020+)”



What is needed is a “Then Year” (~2030)
Serious/Holistic Vision of Warfare Changes
Resulting from the On-going
IW/Bio/Nano/Virtual Technological Revolutions

- Such does not exist, “bumper sticker” attempts extant.
- All are agreed, warfare will become increasingly robotic and probably more affordable, swarms of sensors/shooters are a given.
- A longer term “Vision” of these changes would enable “mapping” from the present, NOT AT ALL CLEAR HOW TO “Get There From Here” as do not know where “there” is!



"War between mass armies weighed down with baroque equipment has become a third world sport. The advanced world, too vulnerable to survive a war of attrition or mass destruction, must learn to conduct its affairs by the Rapier--by the threat or use of small specialized forces exploiting high tempo and strategic surprise"

R. E. Simpkin, "Race to the Swift: 1985

Front Stark book 191



In the second half of the 1900's
Nuclear/Bio Warfare was
“Unthinkable”

In the first half of the 2000's
“conventional” warfare may
become so deadly/effective as to
become “Unthinkable” (“Killer
Aps”, available to mitigate the
“Causes of War”)



Approaches to Countering Group/Individual Deployment of IO/Bio WMD

PREVENTION -

- Universal inexpensive Web based educ.
- Biomass via sea water irrigation

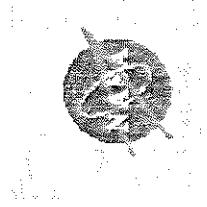
DISCOVERY -

- All Source Intel/Fusion/AI Analysis

PREEMPTION/RETRIBUTION -

SOF (Foreign)

Source: Strategic Forces, 1991



(Usual) Reactions to this Presentation

- Is in the "Too Hard Box"
- Not being done yet by anyone, therefore, will not be done
- They would not do that
- We have to Hope they would not do that
- Why go there, cannot defend against it
- Some Disbelief, but agreement there is too much there to disregard