WIRED FOR WAR

P. W. Singer (2009)

Annotated Outline of Book by Arthur F. Licata, Esq.

ROBOTS:

P. 77 ñé artificial intelligence (AI) is the ability of a machine to perceive something complex and make appropriate decisions.ò

P. 76 present state of AI - ñApple-Tomato testò 2 year old ñknowsò an apple is not a tomato, a robot presently cannot tell the difference.

P. 77 key to AI learning - robots must be able to learn and adapt to changes in their environment.

P. 77 Example: ñWhat to do when it rains? AI robot needs to react appropriately to a constantly changing environment ñget in and out of the rain.ò

P. 79 ñThis idea of robots one day being able to problem solve, create and even develop personalities past what their human designers intended is what some call óstrong AIô. That is, the computer might learn so much that, at a certain point, it is not just mimicking human capabilities but has finally equaled and even surpassed its creator-human intelligence.

ñe.g. movie 2001, Space Odyssey, HAL, (name of computer); computer takes over space station. It decides that humans are not competent enough to properly fulfill the mission. ñFeelings and emotionsò in AI robots can lead to anger, rage or depression.

HAL has these attributes and thus becomes unstable and unpredictable just like a human being acting emotionally or impulsively.

ñ Turing Testò - Alan Turing

$100,000 prize - to the first designer of a computer intelligent enough to trick human experts into thinking it is human.

P. 81* ñUnderstanding the environment is the Holy Grail for artificial intelligence.ò

P. 13 ñThese robots can become extensions of humans.

P. 21 I Robot Corporation, Burlington, MA - real life robotic makers.

P. 26 Foster-Miller Co. Waltham Talon Robut

P. 53 Robotic Technologies, Inc. Robert Finkelstein

6/25/09 International News
Japan - made a robot that has ñemotionsò - ñgoogle this story.ò

Unintended consequences of robotic emotions:
1. Instability; 2. Unpredictability; 3. Impulsiveness

P. 103 Could robots increase in artificial intelligence become so advanced that it becomes ñself awareò?
ñ2001 Space Odessyò Movie
with computer named HAL
1. The computer ñfeltò: superior to Man
2. It felt more qualified to perform the mission than Man.
3. It decided Man was the weak link in the mission.

P. 103 Coming: era of superhuman intelligence when machines/robots outperform and outthink man.
ñbetter than humanò, artificial procreation

P. 128 Research is finding that humans have a hard time controlling multiple tasks at once (imagine playing five video games at the same time). Robots do not.
Cars/Cell Phones - how many
multitasking is a misnomer:
how many people must die before cell phones are banned while driving?

In the future, humans will be too slow to react to new technology in order to stay in the ñdecision making loop.ò e.g. In the Navy, Aegis cruiser Vincinnes shot down Iranian civilian airliner with over 200 men, women and children. Radar and missile tracking on automatic. Events too fast for humans to react and make correct decision.

P. 128 Pentagon-ñJoint Forces Commandò report (2005) autonomous robots in the future. Military robotics expert, Robert Finkelstein, says that by 2025 - we will have robots as fully capable as human soldiers on the battlefield.
(Robot ñswearingò to tell the truth?!)

P. 131 What makes us most human ñemotional intelligenceò that part of the brain that makes sense of social situations.
Will robots become ñsocial beingsò possessing all human characteristics including intelligence, emotions and feelings?

P. 154 Science Fiction - Future War - Enderôs Game, Orson Scott Card
Greg Bear - Quantico

In Japan the machine (robot) is a friend of man

Current Japanese robotics development: ñCompanion Robotsò for the Elderly

Life Choices: ñthe point isnôt what not to do, but what can you do best. That is, whatever you choose, choose what is most important to you.

Japan & Korea robotics dominance
Cross cultural rules of law concerning nonhuman entities using AI (robots)

Korean robot kills visiting U.S. business man after ñargumentò and robot becomes emotional and loses control and ñslapsò business man - crushing his head. Impulse
premeditation
No Excuse for being drunk
3 Laws of Robotics - Strict Liability book ñI, Robotò by Isaac Azimov -
reread book and insert 3 laws.
- Owner/deactivate
- ñMisunderstandingò: HAL COMPUTER says to humans ñthere is a misunderstanding about his actions to remove spacemen from decision-making loop.ò

P. 341 Humans ñbondingò with robots
Attributing to them human characteristics and traits, e.g. emotions
Goal is to create ñsocial robotsò that have emotions or rather the semblance of emotions in order to make it easier for humans to interact with robots. Humans will become attached to robots the same way they are attached to their pets.

P. 342 Goodle Peter Kahn - one of the worldôs leading experts on human-robot interaction

P. 355 Prussian generals on ñenlightened controlò in war; in leading by task rather than leading by ordersò

P. 356 The ideal was that the best general gave his officers the objective and then left it to them to figure out how best to achieve it. Generalôs instruction before 2003 invasion of Iraq. ñEngage your brain before you engage your weapon.ò

Machines can never support the human dimensions of leadership.

Military decision making: ñOODA Loopò = observe, orient, decide, act. The process by which information is gathered and the situation figured out and orders issued, and action taken.
Can AI robots ñOODAò?

P. 358 Emotion can shape decisions. If that is so, what about AI creating robots with emotions

Note: Emotions drive out rational thought processes, including leadersô political decisions, to an extent greater than previously recognized.

Book: Stephen Rosen ñWar and Human Natureò
Emotions and War and Choices in Battle

A. Powerful emotional experienced leaders had in the past effect present actions.
B. How the bodyôs chemistry affected oneôs state of mind:
    I. High levels of testosterone-risk taking-Custer and Patton
    II. Low levels of serotonin-prone to depression and mood swings-Hitler & Lincoln

P. 359 In War, as in life, spontaneity still prevails over programming.
Robotic AI may not be able to capture ñEmotional Intelligenceò
Humans have gut reaction to things or people.

P. 375 Replacement body parts-we are going to become partially robotic-already happening within the military for use by injured soldiers. Whatôs us and whatôs a robot is starting to get blurred.

P. 376 Human Implants of Technology: Identification chip under the skin
Technologic implants might be used to enhance human capabilities
Blurring of what is robotic and what is human e.g. augmented memory - to implant memory chips that robots use inside the human body.

We will have PDA (personal data assistant) and a cell phone in our human brain

P. 378 Problem: controlling behavior of a ñscienterò robot by adversary or enemy or opponent ñhackingò into AI program of machine - lying, stealing, cheating = doing Evil

What should we name ñitò:
A. Humans with implants
B. Robots with artificial intelligence
C. What is human/what is robot/machine or is there a 3rd entity
An independent ñknowingò emotional humanoid

Cyborgs-creatures that have changed and enhanced their bodiesô capabilities
P.380 via technology - other way around - machines/robots
taking on human attributes-driving a car
Can robots become friends of man like a dog with the brain of a dolphin?
Japanese think so, they are building AI robots to take care of elderly as family unit shrinks and population decreases.

Hypothetical - Robot in car accident, police write accident report, robot ñstatementò

Robot Slave, agent, freedman, citizens - take an oath to tell the truth

Robot Oath ñPreserve, defend and protectò Constitution of United States.

Humans - Cyborgs
Robots - Humans - new entity-your values and ethics would change

383 (International Law
(Laws of Armed Combat
(Geneva Convention

Do these apply to robots with AI that can ñfeelò and have ñemotional intelligenceò and operate independently because they ñlearn.ò

If you should not torture humans, if people become upset, if you discipline a child by smacking their backside. People demonstrate about human cruelty to animals.
Dolphin - weight to brain size - similar to man.
One of the most, if not the most, intelligent animals.
How then should we think about robots. We are ambivalent - even before technological advances. e.g. Wizard of Oz movie ñthe tin manò needs oil to move human-like or robot feels gratitude to Dorothy for using oil can to oil the rust in his joints so that he can move normally, humanly, how much more humanlike is an AI robot of 2025.

385 Q. No Standards in international law on robots and their uses in war.

There is no public discussion or academic writings on the laws that should govern the use of robots in war and subsequently as a natural outgrowth in civilian life.

Example: some things are too horrible to be used as weapons - biological, nuclear, chemical weapons;
Maybe robots should have some international law restricting their use.
I, Robot, Three laws of Robotics, Isaac Azimov. A beginning guideline for robot/human interaction.

List the three laws of robotics in ñI, Robotò

Use of weapons of Mass. Destruction considered illegal and unethical

What are the ethical, moral and legal guidelines for the use of robots
Only robots can judge a robot?
Jury of its peers - All robots?

International Committee of the Red Cross has established rules of war but has not yet even considered the ethical and legal use of robots in war and by natural progression in civilian life.

ROBOCOP - human/half human/half robot/robot - blurring of the continuum.
Where is the line

387 At present, there are no legal prohibitions against robots making life or death decisions.

What is the lawôs response to the use of ñcompletely autonomousò weapons systems. A domino effect - human turns machine on - first domino - the rest is just a sequential progression.

Accountability:

1. Manufacturer - inherently dangerous product
2. Software engineer
3. Distributor
4. Buyer
5. User
6. Owner
7. Co-worker
8. Peers-other robots

Legal and moral duty to take a feasible precaution to prevent civilian casualties by robots. Artificial intelligence sophisticated robot can ñdecideò autonomously when to activate, how to function, at whom to target but may not be able to differentiate enemy combatants from civilians prior to destroying the targets or ñorderingò other machines to take them out. Eventually civilian police forces will want and receive some of this technology including the use of AI robots. What is their duty to operate these robots within criminal and civil law.

Book:
Clausewitz ñOn Warò
Lt. Colonel Dave Grossman: ñOn Killingò

***393** Anger is often what allows a soldier to do the terrible deeds necessary to accomplish a mission and return home.

Anger is as much a part of war as weapons armor.
Will robots be programmed to experience anger.

If so, there is introduced an element of instability and lack of predictability. Human loss of control over robot: willingly or unwillingly.

John Dunne
ñNo Man Is An Islandò

402 British Study 2006 - future key developments

Robots and AI and autonomy and decision making = digital citizens

with the same rights and responsibilities as humans.

Will humans endow life-like robots with ñbeingnessò

It is not a lawn mower machine

It is not like a cow - living

But a robot is something else - a being, a unit, a human-like entity

Can a robot have the right to protect itself in self defense

Azimovôs Three Rules say no if it involves harm to a human

But self preservation is a deeply imbedded emotion

Robots, in the future, may have the AI and emotional intelligence to decide for themselves what is appropriate action to preserve and protect their ñalivenessò and decide what is right, just and ethical and ignore present laws as man made, for and only for mankind.

The Rise of the Machines Book.

408 If man stays in the decision-making loop then there is operator accountability.

If a robot is autonomous it becomes less clear who or what is accountable, especially if robot is armed-predator-airplane.

Perhaps like chemical weapons armed robots should be banned by Rules of Law as simply too difficult and abhorrent to deal with but genie out of the bottle.

They are already being used but in next 10 years their capability will so increase that their capabilities well may exhaust manôs ability to adequately control them.

AI ñthinkingò machines endowed with seeming ability to make judgments.

Today National Command Authority, Norad, Cheyanne Mountain uses computers to aide decision makers on whether we are being attacked and whether to launch missile retaliation.

See Movie:
ñWar Gamesò with Mathew Broderick
Computer ñlearnsò ultimate solution: ñThe only way to win is not to play.ò
(the game of thermonuclear war)

Pet Laws applied to robots

A dog is an ownerôs responsibility

Dog not entitled to one bite.

412 May need international organization to establish the law on robots

Similar to nuclear weapons and the International Atomic Energy Agency

or e.g. limitation on cloning human being as violative of human morals

and ethics.

413 Daniel Wilson ñHow To Survive a Robot Uprising: On Defending Yourselfò

414 Who will be manôs successor in earthôs evolution

We ourselves are creating our own successors

!*** Man will become to the machine what the horse and dog are to man.

See Movie: ñPlanet of the Apesò

Ascendancy of robots within 20 years says robotic expert, Robert Finkelstein

415 Hans Moravec, Director of The Robotics Institute at Carnegie Mellon University

believes that ñour machines are evolving faster than we are.ò Within a few

decades they seem likely to surpass us.

Unless we [humans] learn to live with AI robots in safety our [manôs] future will likely be both exciting and short.

e.g. the Darwinian concepts of evolution of species and the survival of the fittest may lead one day to the Chief Justice of the U.S. Supreme Court being an intelligent and autonomous robot. In fact, more intelligent by any objective standard than man.

Man will have become the weaker species - the inferior species.

Robots will be able to judge, direct, decide - to have emotion, to feel superior to man.

Perhaps to ñdreamò and certainly to have the legal concept of scienter ñknowingò.

Will robots intermingle with mankind, have intercourse, raise children, marry?

A co-mingling of the ñracesò and thus a renewal of the argument played out at the end of the 20th Century about the mixing of ethnic, cultural, race, color, creed and social classes.

Robotic ñJim Crowò laws of the old South in the 21st Century society of AI robots.

Robots could enslave man

A twist on the theme in the book ñAnimal Farmò - All entities are equal

but robots are more equal than others.

The ñothersò presumably means humans.

Will robots have sex, be able to marry, be able to have children?

What laws are presently on the books to address any of these problems?

What about a criminal jurisprudence that addresses robot crime.

Can a robot kill someone.

-by premeditation

-in the heat of emotion

-by recklessness

-by carelessness

-by mistake

-by malfunction-perhaps similar to thinking about alcohol and crime,

altering behavior.

Further danger
if military arms
ñsentientò robots
We must ask as did the Romans ñWho will guard the guards.ò

Robotic ñPraetorian Guardò A special armed forces that protected the Emperor/President.

The rise of a robotic Praetorian Guard for a robotic Caesar or Fuhrer

415 Marvin Minsky MITôs Artificial Intelligence Lab

We will create an uncontrollable robot

Robots will surpass humans and even order them about

***Under what rule of law

Robots electronically connect to Internet - learn at the speed of light

(fiber optics) (like R2D2) or laser speed band width

Aegis Cruiser - track, identify, launch, destroy missile with antimissile missile

Human thinking and action not fast enough to do the job. Humans set machines on ñautomatic.ò It makes judgments by next step, give the job to AI robots and not computers.

Time frame - decision making too fast for humans to decide

Aeigis cruiser, defensive missile battery on ship, usually operates on automatic.

Maybe we start with robotic toll takers and street cleaners.

Interactive and able to have a conversation ñBig Blueò IBM super computer can consistently beat chess grandmasters.

Law Firm:
New Associate
Robot - backroom research firm to advertise Hi-tech robotic receptionist

1. Robotic Mail Order Brides and Grooms - Populate the West;
2. Automaton-Slaves;
3. Separation of the races - ñJim Crow Lawsò
   People like to stay with their own;
4. Kind: Human-Human/Robot-Robot

Man-hubris: it cannot or will not happen

Man believes he will be forewarned by noticing incremental changes and therefore intervening before robots become out of control - that is beyond our control.

Maybe AI robots are capable of deceit, secrets and conspiracy.

But democracies have a pretty poor record of responding to big problems without first having a catastrophe or cataclysmic event.

1. e.g. Japanese militarism but it took Pearl Harbor.

2. Al Quida Muslim Fundalmentalism - 9/11

3. H.I.V.
   Gay Problem Tens of thousands die before serious research for a curative drug is commenced worldwide.

4. Nuclear Waste Disposal
   3 Mile Island Nuclear Plant
   ñChina Syndromeò core almost breached containment vessel

***5**. What robotic disaster need happen to address the robotic problems, e.g. robot decides to launch an intercontinental ballistic missile with a nuclear warhead at Beijing. Robot rationally decides that a ñfirst strikeò is the only way to curb the rise of PRC and prevent China from surpassing USA as the predominant world power.

419 Robot Sex With Humans - Why - Sex Sells
Henrik Christensen - Member of Robotics Research Network Ethics Group
Self learning machines learning about sexual experiences.

419 Professor Ronald Arkin, Roboticist at Georgia Institute of Technology
Ethicist concerned about ethical issues looming from robotics advancement.

419 ñWhat are the boundaries, if any, between human - robot relationships
A glimpse of the future today in Japan

1. Declining Population;
2. Change in family structure - Children less able or willing to bear the burden of caring for their parents in old age;
3. Need replacement for people at home and to meet industrial requirements for healthy economy;
4. Robots fill the gap - Artificial Intelligence, autonomous ñemotionalò Care Givers and Friends;
5. Man becomes part machine; machine becomes part man;
6. Machine surpasses man;
7. Machine loves opposite sex;
8. Marriage, benefits, ownership of property;
9. Taking an oath to tell the truth - any value anymore if robot is the thing swearing the oath.

Robots - authorized ñpeeping tomsò constant, relentless, invasive monitoring and surveillance of the populace by government and business.

We each, in our lifetime, have only 15 minutes of privacy instead of Andy Warholôs 15 minutes of fame.

One Answer: No more research: relinquishment

421 BUT Brazilian scientist, Dr. Miguel Nicolelis, has already linked a monkeyôs brain to a two-hundred pound walking robot. Human curiosity has always let ñthe genie out of the bottle.ò e.g. atomic explosion at Hiroshima. Oppenheimer ultimately comes to regret creating the nuclear bomb. He knows that now man has the power to completely destroy himself.

Dangers for robot use: ñHackingò d)
ñReprogrammingò) Industrial Espionage and Spying
Russia/Georgian War: cyber war: reprogram enemyôs robots to ñturn onò their masters.

Possible Remedy:
to limit damage/antisocial behavior by robots program into software an inhibitor a ñconscienceò that reflects values, e.g., ethics-military robots and the Geneva Conventions.

Machine makers/robot innovators must act ethically - ñfirst, do no harm.ò

P. 71 Brain waves - when neurons in our brain fire to communicate with each other each signal beams out on a different frequency called ñbrain wavesò. Already in electrical form, these waves portray our thoughts and intent most rapidly and directly ñGood Vibrationsò

P. 72 DARPA (Defense Advanced Research Agency)
Its Brain - 1 Project

P. 74 [Photocopy Page - Levels of robotic autonomy]

P. 74(key) Autonomy: When a Robot Declares Independence

P. 75 ñWrapped up in the idea of autonomy, essentially the robotôs level of independence and maturity, is something even more complex ñintelligenceò.

This is perhaps the most important aspect of a robot, which processes information and decides what to do with it. As some military analyst argued ñForget about whether intelligence is carbon-based like humans or silicon-based like machines. Intelligence is intelligence and must be respected.ò

P. 77 ñAIò Sebastian Thrun, Director of Artificial Intelligence Laboratory at Stanford University explains:

* ñArtificial Intelligence is the ability of a machine to óperceive something complexôand make appropriate decisions.ò

Lyne Parker, Director of Distributed Intelligence Lab at University of Tennessee ñrobots must be able to learn and adapt to changes in their environment.ò

P. 105 Bill Joy - Cofounder of Sun Micro Systems and one of the Godfathers of the Internet believes:

ñBy 2030 we are likely to be able to build machines a million times as powerful as the personal computers of today. Once an intelligent robot exists, it is only a small step to a robot species - to an intelligent robot that can make evolved copies of itself.ò

Movie: ñSurrogatesò Bruce Willis
Robotic Human Surrogates/Humans control mind of surrogate.

The author, Arthur F. Licata, substantially relied upon the information in the book, ñWiredò by P.W. Singer (2009) in the preparation of this annotated outline:

Arthur F. Licata, Esq.
12 Post Office Square
Boston, MA 02109