

Therac-25 Causal Factors:

- Overconfidence in Software
- Inadequate SW Engineering Practices
- Inadequate Investigation/Follow-Up on Accidents
- Software Reuse Naivety

- Confusing reliability with safety
- Lack of defensive design
- Failure to eliminate root causes
- Complacency
- Unrealistic Risk Assessments
- Safe vs Friendly UI
- User/Government Oversight

Do Artifacts have Politics:

- **Politics**: Arrangements of Power and Authority in human associations as well as the activities that take place within those arrangements
- **Technologies**: Small or large pieces/systems of hardware (through which we build order in the world). Two main types:
 - **Authoritarian**: System centered and powerful but inherently unstable
 - **Democratic**: Human centered and relatively weak but resourceful and durable
- Social Determination of Technology: The social/economic context which technology is used determines its significance (not necessarily the technical features)
- Theory of Technological Politics: We should pay attention to the characteristics of technical objects and their meaning
- Ways that Technology has politics:
 - By Decision (intentional): The technology is used to settle affairs in a community and is designed with that intent in mind (design influences society)
 - Example: Buildings, Sidewalks, Benches, etc. Designed specifically such that they cannot be used by the homeless to sleep on etc. (an intentional decision of the architect to repel them).
 - By Necessity (unintentional): Inherently Political Technologies. When certain technologies are compatible with specific political relationships.
 - Example: Nuclear power assumes requires a strong central power that can prevent it from falling into the wrong hands.
- The Patriot Act was passed after 9/11 and gave the government the authority to spy on and conduct more intensive background checks on ordinary Americans ==> dangerous technology can lead to need for more security (sacrifice of civil liberties)

Classical Ethics:

- Two main ways to view the world:
 - Selfish Point of View: Consider only yourself and your values
 - Ethical Point of View: Respect others and their core values
- Ethical Relativism: There are no universal standards for right and wrong
 - Subjective Relativism: Each person decides right and wrong themselves. However, since decisions may not be based on reason, this is not a workable ethical theory.
 - Cultural Relativism: When a society decides what is right and wrong based on moral guidelines. May not be cultural norms or guarantee they are just, thus not a workable ethical theory.
- Workable Ethical Theories/Frameworks:
 - **Act Utilitarianism**: Prioritize the maximization of overall happiness for the greatest number of people. (Applied to individual actions).
 - Example: When building a highway, costs are 30 million dollars to taxpayers and construction costs. However, its construction will save 40 million in automobile costs. Thus, building it would bring the most good to the most people. Thus, we should build it.
 - Pros: Practical and comprehensive (applies to major and minor actions)
 - Cons: Unclear who gets included in the calculations. Takes a lot of work and we can't predict consequences of our actions with such certainty.
 - **Rule Utilitarianism**: Follow rules that, when universally applied, lead to the greatest overall happiness for society. (Applied to moral rules).
 - Example: A job offer requires you to collect user data without their permission. However, if everyone were to take this job, then there would be no respect for user privacy and applications would not be secure. Thus, we should not take the job.
 - Pros: Better alternative for performing utilitarian calculus. Appeals to large population "as long as no one gets hurt you can do anything"
 - **Kantianism**:
 - **Deontology**: Actions are good or bad according to a clear set of rules. Actions that adhere to them are good, those that don't are bad.
 - **1st Categorical Imperative**: Treat everyone else the way that you want to be treated.
 - **2nd Categorical Imperative**: Treat yourself and everyone as an end, not a means to an end.
 - **Anscombe's Argument**: When there are conflicts with rules and what is morally right, doesn't make sense to use kantianism (i.e. choose between boiling a baby and a disaster falling on many people)
 - Pros: Treats everyone as morally equal and holds them to the same standard, producing moral guidelines

- Cons: Sometimes there are no good rules to apply to a scenario or there are conflicts with rules. Kantianism must always fulfill perfect duties (obliged to fulfill that duty without exception).
- **Social Contract Theory**: Any rules or major actions that affect society should be decided upon through an implicit agreement between the individuals of that society.
 - **Veil of Ignorance**: To prevent people from acting out of self-interest, they must agree to rules of the society before being accepted in it.
 - **Principles of Justice**: Everyone should have the same number of basic rights and liberties. If there are any inequities, they must be associated with positions that everyone has an equal chance to achieve.
 - **Difference Principle**: Inequities should be of the greatest advantage to the most disadvantaged members of society (i.e. higher tax on the wealthy)
 - Pros: Framed in language of rights and provides a context for government issues (rights and laws etc.)
 - Cons: No one explicitly signed or agreed to a social contract and there may be conflicting rights
- **Virtue Ethics**: Ethical behavior should be measured by trait-based characteristics, such as honesty and integrity. Not just judging based on how a person acts but also on how they feel and are compelled to act a certain way (moral virtue) vs knowing what the right thing to do is (intellectual virtue).
 - Pros: Also takes into account emotion rather than just obligation of actions
 - Cons: Cannot use virtue ethics to guide government policy, undermines efforts to hold people accountable for their actions.

Kohlberg & Gilligan:

- 3 levels of moral development & 6 stages. Stages develop as a child matures into an adult
- Gilligan countered Kohlberg with a study which revealed that boys prioritize justice while girls prioritized interpersonal relationships

Freedom of Speech and Network Communication:

- Mill's Principle of Harm
 - Power can only be exercised over an individual against his own will in order to prevent harm to others, not for "his own good" --> censorship not a good reason
- Censorship: An attempt to suppress or regulate public access to material considered harmful or offensive (usually exercised by governments and religious institutions).
 - Direct Censorship: Government monopolizes media outlets and reviews media before it gets distributed (i.e. China blocking internet at times of unrest, north koreans can't access the internet)
 - Self-Censorship: Group decides not to publish something for themselves (to avoid persecution, maintain good relationships with government officials, etc.)
 - Internet poses problems, it is huge, global (extends beyond national borders), and it is hard to verify user's true identity

- CIPA: Child Internet Protection Act, a department that uses federal networking funds to filter out pages containing child pornography. Different frameworks evaluated this differently
- COPPA: Children's Online Privacy Protection Act, cannot collect personal information from kids under 13 without parental consent, can't require them to provide information to play a game
- Identity Theft: When a person misuses another's identity (i.e. credit card information)
- Section 230: Allows web operators to moderate user speech and content as they see fit (twitter)

Professional Ethics:

- Components of a Fully Developed Profession
 - Initial professional education
 - Accreditation
 - Skills Development
 - Certification & licensing
 - Professional Development
 - Code of Ethics
 - Professional Society
- **Whistleblowing**: Going outside the system to make an unauthorized disclosure of information to prevent harm (after internal attempts have failed).
 - Causes harm to the organization and the whistleblower (organizational failure)
 - Thus, always try to resolve within the system first (report to superiors, etc.)
 - Whistleblower Protection Act: Protections for current and federal employees who whistleblow
 - De Georga Criteria for Whistleblowing:
 - Problem would bring harm to the public
 - Have already reported to manager
 - Internal channels have not worked
 - Documentation that your view is correct
 - Reason to believe that bringing the issue to the public could help resolve the issue or call for action

Privacy:

- Pros: Allows us to be ourselves and remove our public persona (promotes individuality and freedom)
- Cons: Can cover up illegal or immoral actions, outcasts can have too much privacy, and makes it difficult to stop family violence
- Privacy is not a natural right, but it is a prudential right
- Public Records
 - Information reported to the government for the purpose of informing the public

- i.e. credit card purchases, posts to social media, etc.
- Data Mining
 - Searching records in one or more databases to find patterns or relationships (can be used to create profiles of users)
 - Opt-in vs Opt-out:
 - Consumer Protection View of Privacy (opt-in)
 - By default data collection is not allowed unless explicitly granted by the person whose information is being collected
 - Beliefs: privacy is a positive right, people don't understand its implications, too hard to negotiate with a business, often there are no alternative services, etc.
 - Free market to use information (opt-out)
 - By default data is collected, and the user can request that their data not be collected

Privacy and Government:

- Information collected by the Government
 - Census
 - IRS
 - FBI Crime Information
 - CCTV cameras
 - License plate scanners
 - Police drones, etc.
- Wiretapping
 - Wiretapping and bugging requires a search warrant
 - NSA can wiretap international phone calls and emails initiated by people inside of the US
 - Example: foiled 2 al-Qaeda plots
- US Patriot Act
 - Passed after 9/11, granted police authority to monitor communications and gave greater permission to wiretap and monitor regular citizens to prevent terrorism. Some say it violates fourth amendment
- Code of Fair Info Practices
 - No secret databases
 - People should have access to personal information in databases
 - Organizations cannot change how information is used without consent
 - People should be able to correct or amend records
 - Database owners and users are responsible for the reliability of the data and preventing its misuse
- Privacy Act of 1974
 - Applies only to government databases and only covers data records indexed by a personal ID

- No federal employees are responsible for enforcing the privacy act provisions, which allows agencies to share records with other agencies
- National ID Cards
 - SSN is not unique, rarely checked, and has no error-checking capabilities
 - Using national ID cards would reduce illegal immigration
 - However, no evidence it would reduce crime
- GDPR (General Data Protection Regulation)
 - Creates consistent protection of consumer and personal data across the EU nations
 - Requires consent for data processing (opt-in)
 - Anonymizes collected data to protect privacy
 - Provides data breach notifications
 - Requires data protection officer for certain companies