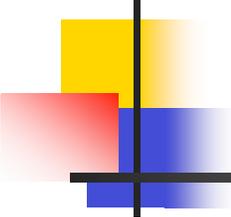


Paying for Privacy: Consumers & Infrastructures

Adam Shostack

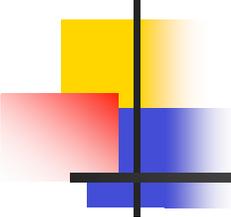
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Presented at 2nd Workshop on Security and Economics
Maryland, May 2003



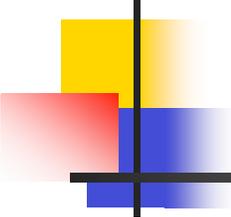
Privacy: Two Intertwined Views

- Consumers and Privacy
 - What consumers want
- Identity Infrastructures
 - What governments want
- What we all get



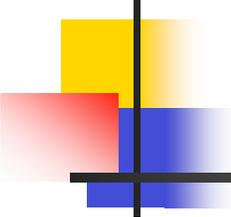
Does Privacy Matter to People?

- Polls say that it does
- Media reports pay it huge attention
- People seem to care quite deeply



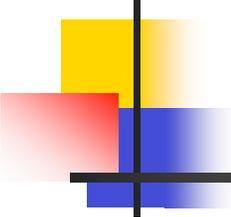
They don't act that way

- Tell strangers all sorts of things
- Don't object to intrusive searches
- Trade DNA for a Big Mac
- Don't buy privacy products in great bulk
- Author worked for Zero-Knowledge for three years
 - Still in business, not ruling the world.
- “People won't pay for privacy”



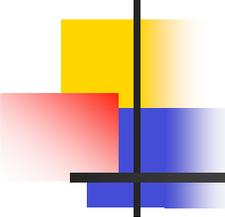
People Won't Pay for Privacy

- Wrong Conclusion
- People won't pay for things they don't understand:
 - The problem a product solves
 - The way it solves it
- Freedom Network had both those issues
 - People were amazingly excited by the idea



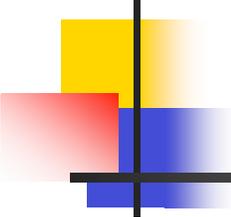
Quick Review Freedom Net

- Zero Knowledge's Anonymous IP net
 - Real time
 - Email, web, chat
 - No single trust point
 - Very expensive to operate (ZKS paid)
- No longer in operation



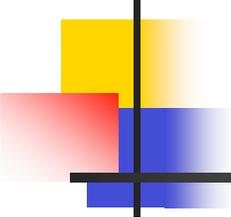
What is Privacy?

Confusing!



Privacy means too much

- The word has too many meanings
- People use it sloppily
- The result is confusion over what people want and will pay for
- Privacy from the perspective of buyers
 - Important to answering the question “Will people pay?”



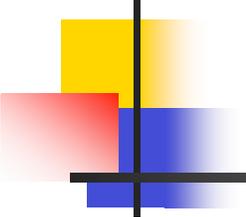
Privacy is Many Things

- Spam, telemarketers
- ID theft, CC theft
- Cookies
- Total Information Awareness
- CAPPS II
- Do Not Call lists
- Abortion

- Unobservability
- Untracability
- Cryptography
- Blinding

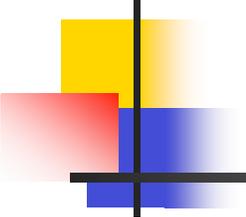
- Gut feelings
- Curtains & Venetian Blinds
- Unlisted Phone #s
- Swiss bank accounts

- Right to be left alone
- Fair Information Practices and Data Protection Laws
- Informational self-determination
- “Lie and get away with it”



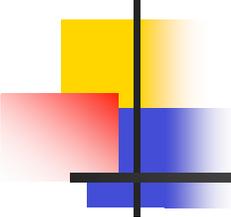
Broad Set of “Privacy Tools” That Sell

- Cash and banks
 - Athenian banks and taxation
 - (See Edward Cohen, *Athenian Economy and Society, A Banking Perspective*, Princeton University Press, 1992)
- Remailers
- Novelty ID/2nd Passports
- Curtains
- Anti-spyware



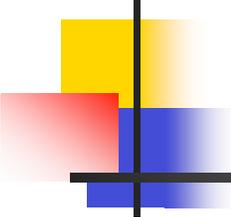
Tools Don't Address All Problems

- Maybe the law can help?
- Almost all built on Fair Information Practices
- Tradeoff between
 - “You must give us this data”
 - “We’ll treat it fairly”
 - Mandatory tradeoff (one size fits all)



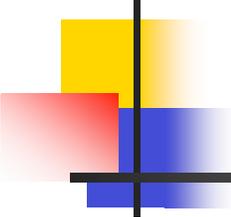
Is Pollution a Good Analogy?

- Balancing Diverse Interests
 - Production, health, transaction costs
 - Different levels of tolerance for, utility from production and health
- Clean air markets exist now
 - Consumers marginally involved



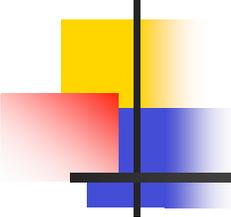
Externalities

- A situation in which someone's well-being is affected by another's action, and they have no control of, or involvement in that action
- Pollution is a classic example



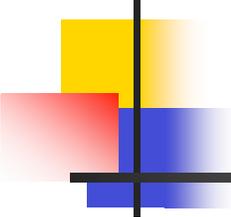
Looking at the Externality

- Storage of data creates privacy hazard
- (Computer security stinks)
- Users can't insure privacy
 - Hard to measure value
 - Hard to measure risk
 - Risk is a likelihood of a hazard leading to damage
 - ID Theft insurance available
- May lead to tort claims



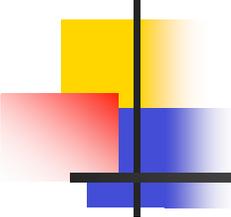
Risk & Externality

- *Business are not motivated to protect data as well as the individual who will be hurt by its release*
- e.g., AIDS patient lists
- Many people not comfortable with this tradeoff
 - “Privacy Extremists”



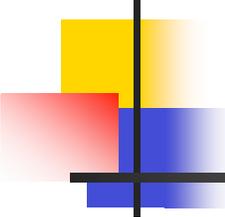
Both Sides Are Rational

- Business needs certain data to function
- Customer doesn't trust the business
- Lets not even talk about secondary uses or default states



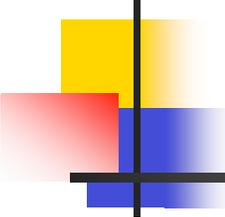
Both Sides Are Emotional

- People are tired of privacy invasions
 - Ask the travel business about CAPPS II
- Businesses are tired of privacy complaints
 - Ask your HR person for privacy problem stories...but only over beer.



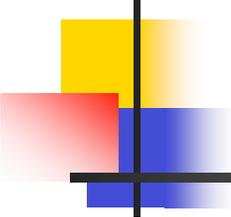
Zero-Knowledge Analysis

- It didn't do well in the market
- What can we learn from this?
- NOT: "People won't pay for privacy"
- Service didn't meet a meaningful threat that the users cared about



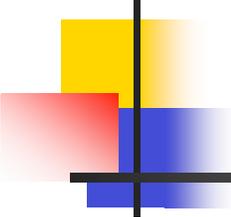
Overview

- ✓ Consumers and Privacy
- Identity and Infrastructure, or
We're from the government and we're here to help someone pretend to be you.



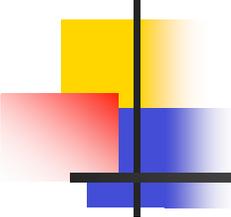
Identity

- *What's in a name? A rose by any other name would smell as sweet...*
- But try getting a new ID for Ms. Capulet
- Common law
 - Use any name you want as long as your intent is not to deceive or defraud



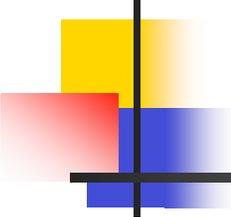
Modern State

- Welfare systems
- Immigration problems
- Require an identity infrastructure
 - Unique identifiers
 - Some biometrics



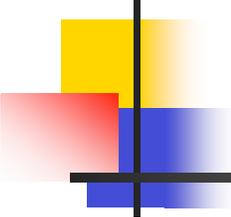
Identity Infrastructures

- Hard to build without coercion
 - Diffuse benefits to me of an ID card
 - See Public Key Infrastructure (PKI) “industry”
- Businesses can use
 - At least in USA
 - US SSN, no restrictions
 - Dutch passports, illegal to copy
 - German ID cards, # changes every 5 years



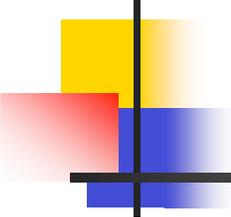
Risk Assignment

- Easy to demand ID
 - Everyone has one
- Hard not to demand ID
 - If problem, need to justify
 - Hard to check ID carefully
 - Expensive
 - Excludes customers whose money you want



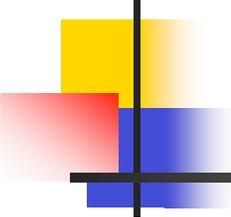
Fake IDs

- Market driven by ease of demand, problems with checking
 - Drinking laws
 - Employment/Immigration laws



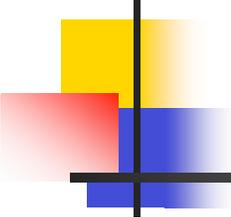
Banks and ID Risk

- Banks check ID to issue mortgage
 - Rather than meet in the property
 - Reasonable cost/risk tradeoff (for the bank)
- Banks don't check ID to issue credit cards
 - Consumer credit is useful
 - Reasonable cost/risk tradeoff (for the bank)
- Rising costs of ID theft



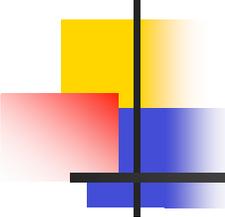
High security ID cards

- Reduce forgery
- Increase value of issuance fraud
- Ignore privacy problems



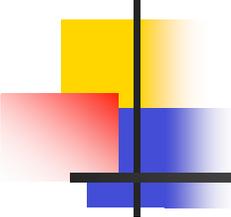
Forbid non-gov use

- Aggressive solution
- Requires explicit cost/benefit analysis
- Bars hire police to check IDs?
 - “Society pays” for benefits of stopping underage drinking (or)
 - Tax bars so drinkers pay



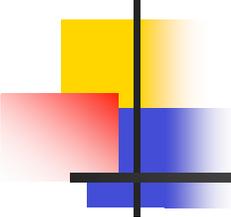
Air Travel Security

- TSA could check ID
- Other measures more effective?
 - Cockpit doors/tunnels
 - Air Marshals?
- Focus on threat, not ID checking
 - ID checking seems free
 - Imposes societal privacy cost as ID becomes mandatory



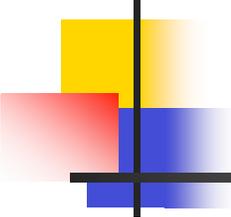
Hard to Forbid ID use

- US Legal traditions
 - Free speech
 - Free association
 - Free to demand ID
- Classify ID cards?
 - Exemption for card holder
 - Requires government agencies to treat data carefully
 - Prevents others from using it



Hard to Forbid ID use (2)

- Liability for storing information insecurely
 - Hard for consumer to find where problem happened
- Liability for government decision makers?
- Tax on ID requirement to discourage?



Conclusions

- ID theft as risk distribution
- Free riding
- Inappropriate distribution of risk
- Possible solutions
- More work could be interesting