

Patterns of Inadvertent Privacy Violations from Volunteered Geographic Information (VGI) in the United States

Dara Seidl

San Diego State University

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Background and Motivations

- Age of **big data**: personal location information in the form of text, geotag, photo, and video more widely available
- **Few real-world examples** of locational privacy infringement in literature
- Objective to provide taxonomy for **technology solutions**

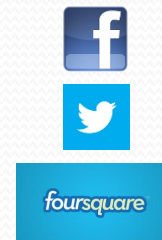


Overview

- Research Focus
- Definitions of Privacy
- Proposed Conceptualization
- Methods
- Case Studies
- Evaluation of Categorization
- Discussion of Solutions
- Conclusions

Research Focus

- Evaluate current legal conceptualization of privacy
- **Participatory** spatial data: departs from traditional forms of surveillance (Shilton 2012)
- **Inadvertent** privacy violations
- Physical or psychological **harm**





Legal Tradition

- “the right of the individual to be *let alone*” and “the right to *one’s personality*” (Warren and Brandeis 1890)
- “the right of the individual to control the *disclosure of personal information*” (Rotenberg 1991, 80)



Geography Tradition

- the unnecessary or unjust revelation of individual *identity* through the release of *personal records* (Goss 1995)
- **Locational privacy:** the right of individuals to determine how and the extent to which their location information is shared with other parties (Elwood and Leszczynski 2011; Krumm 2009)
- **Cybercasing:** the planning of physical attacks relying on online geotagged data (Friedland and Sommer 2010)

Conceptualization

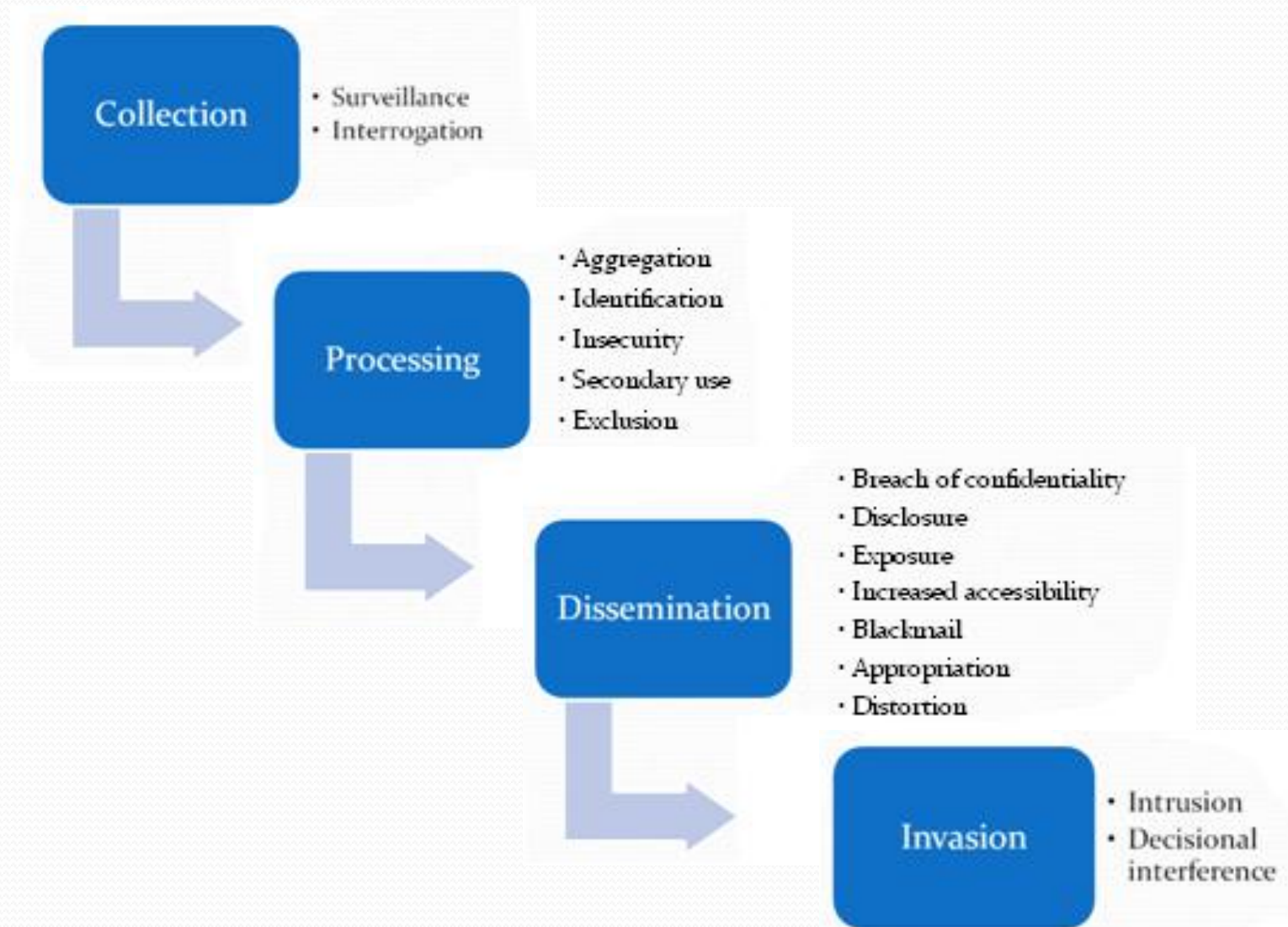
**“I’VE GOT NOTHING TO
HIDE” AND OTHER
MISUNDERSTANDINGS
OF PRIVACY**

by
Daniel J. Solove

privacy = set of “family resemblances” of persons
and information

Solove (2007, 11)

Privacy Relationships



Methods

Search Term Combinations

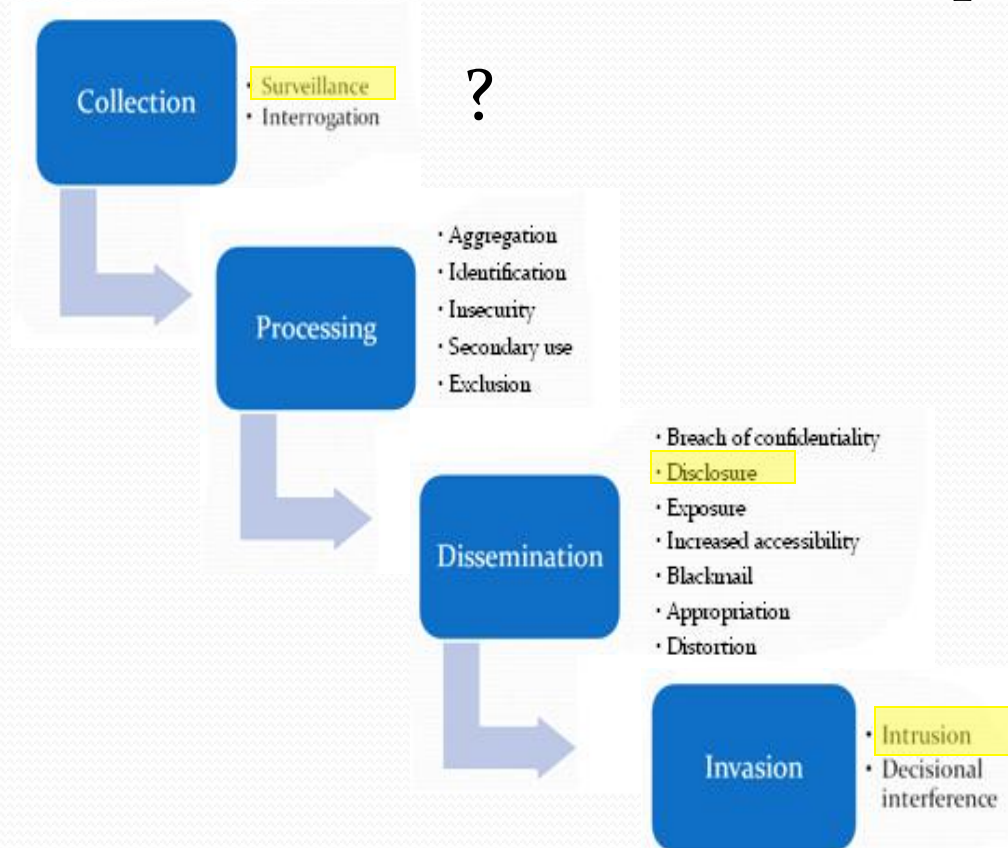
- Review of
 - Legal records
 - News articles
 - Websites
 - Journal articles

1	2	3	4
volunteered geographic information/VGI	attack	locational privacy	infringement
social media	burglary	privacy	breach
facebook	harass	information privacy	violation
foursquare	harm	home	identification
twitter	victim		

- Application of Solove's (2007) legal categorization

Case Study: Facebook burglary ring

- September 2010: Burglary ring in Nashua, NH used Facebook vacation status updates

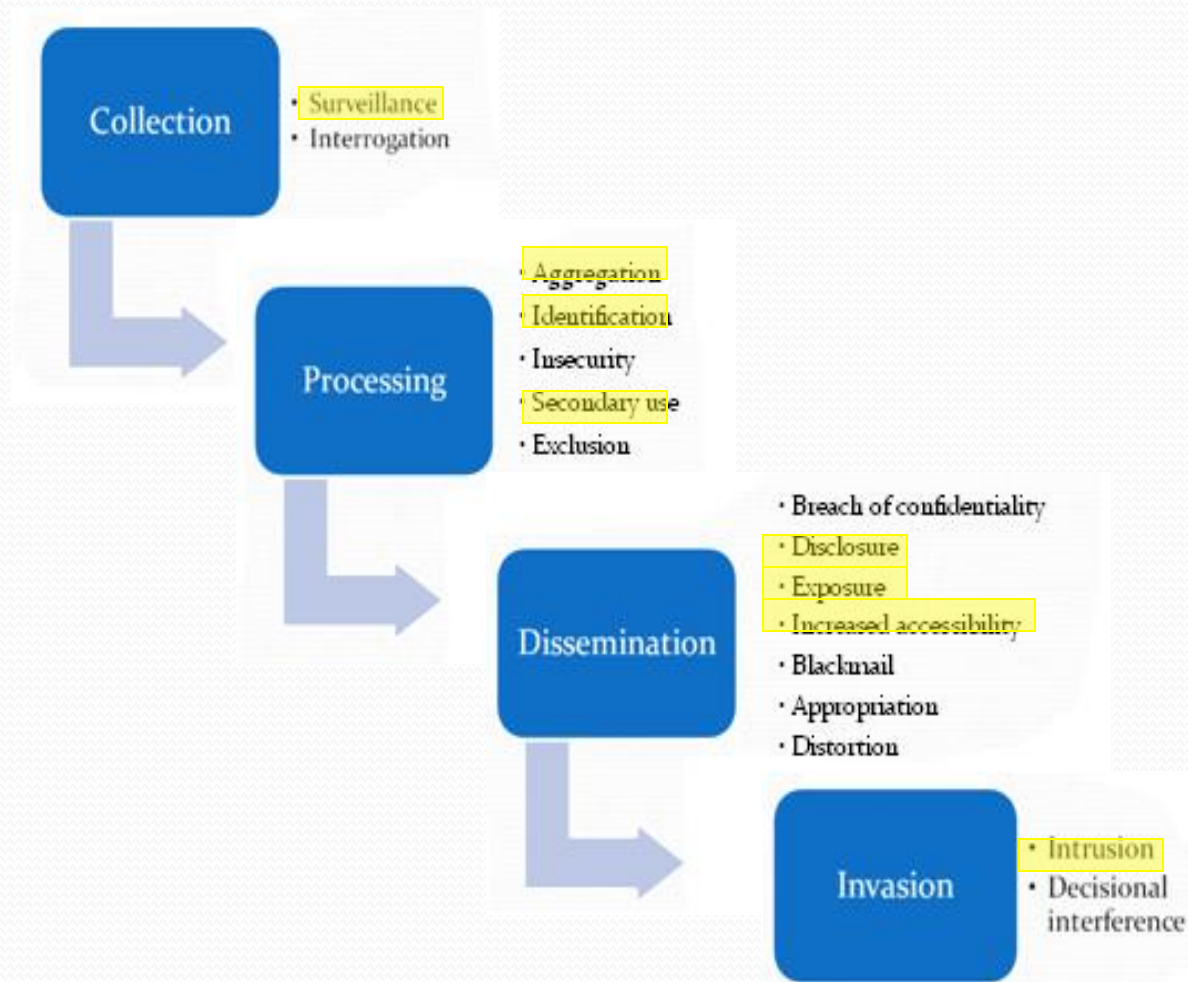


Case Study: Privacy “awareness” sites

- Use Facebook, Twitter APIs to access check-ins, location data
- Using pleaserobme.com, person made harrassing calls to victims at restaurants, events of check-ins

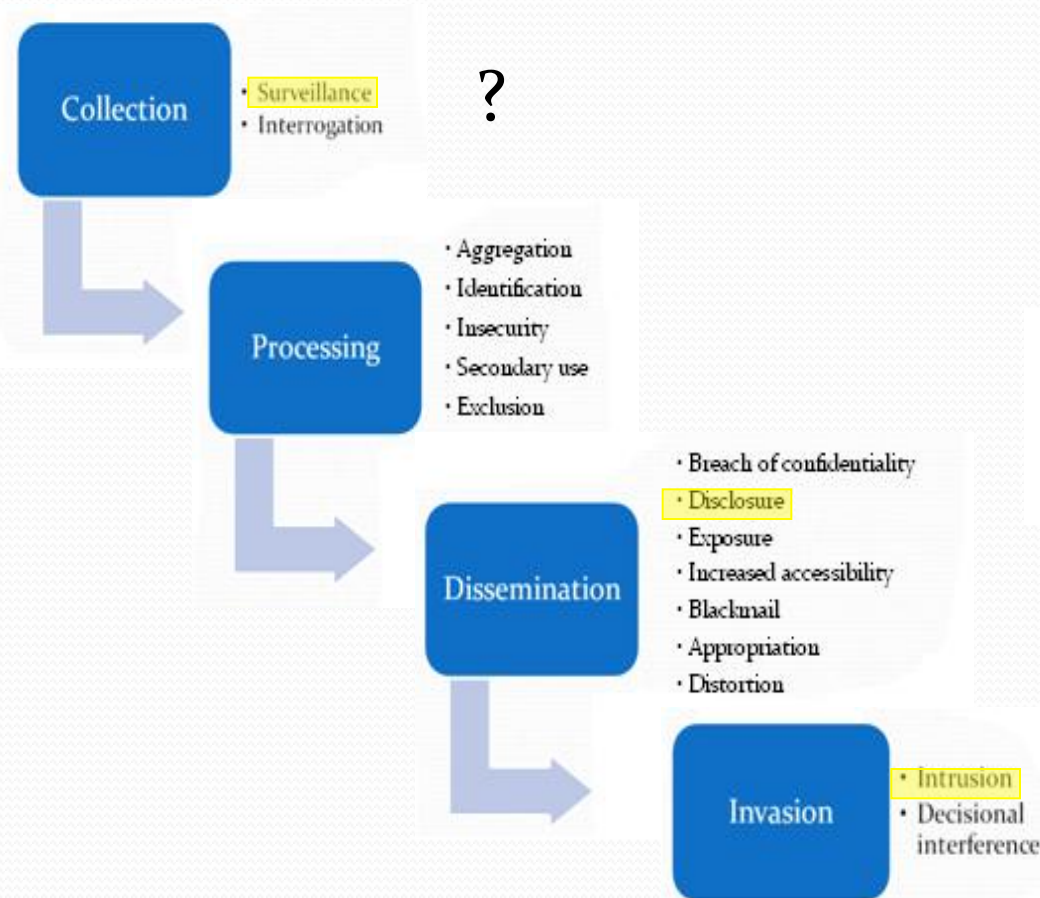


Case Study: Privacy “awareness” sites



Case Study: Lil JoJo

- Tweeted location before fatally shot near 69th St on Chicago's South Side, September 2012



#OsoarrogantENT
@OsoArrogantJoJo

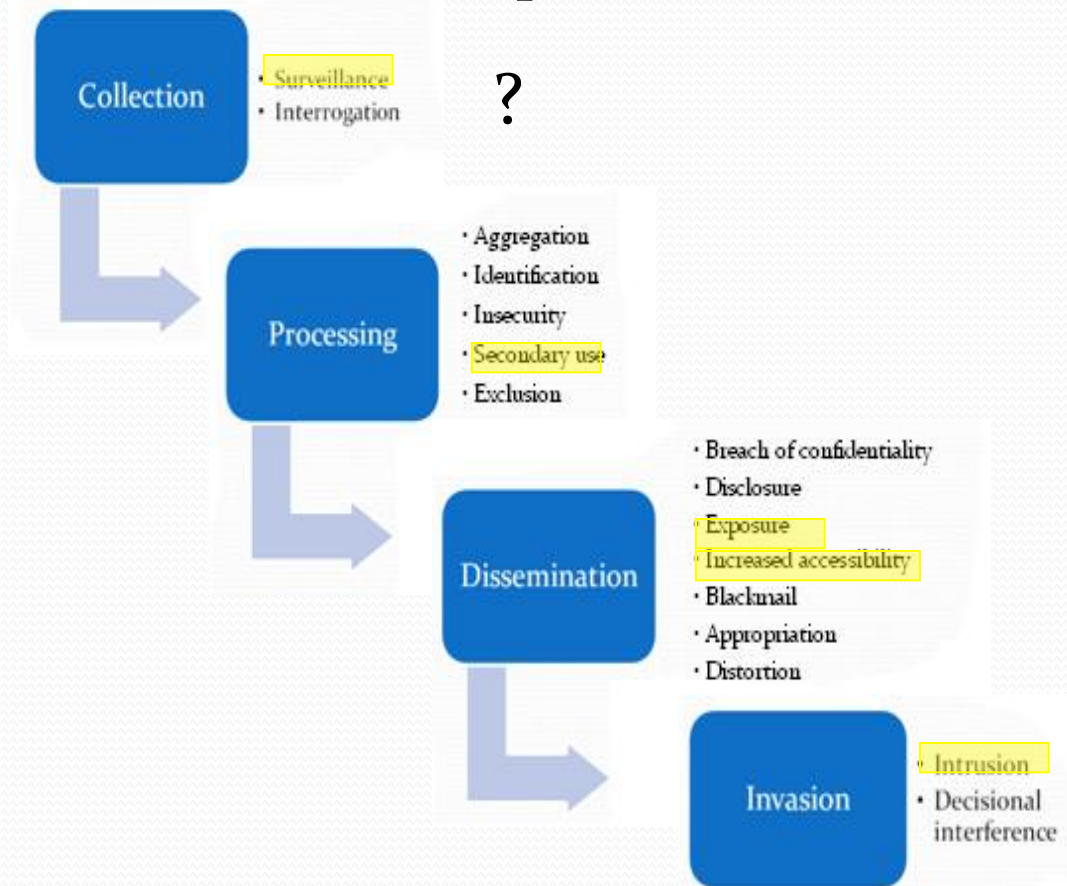
Follow

Im on #069 Im Out Here

Reply Retweet Favorite

Case Study: Zimmerman couple

- March 2012: LA man tweets (incorrect) address of George Zimmerman, Spike Lee retweets
- Address belongs to different couple, forced to relocate



Proposed Reclassification

- Breach of confidentiality
- Disclosure
- Exposure
- Increased accessibility
- Blackmail
- Appropriation
- Distortion

Dissemination

Processing

- Aggregation
- Identification
- Insecurity
- Secondary use
- Exclusion

Surveillance

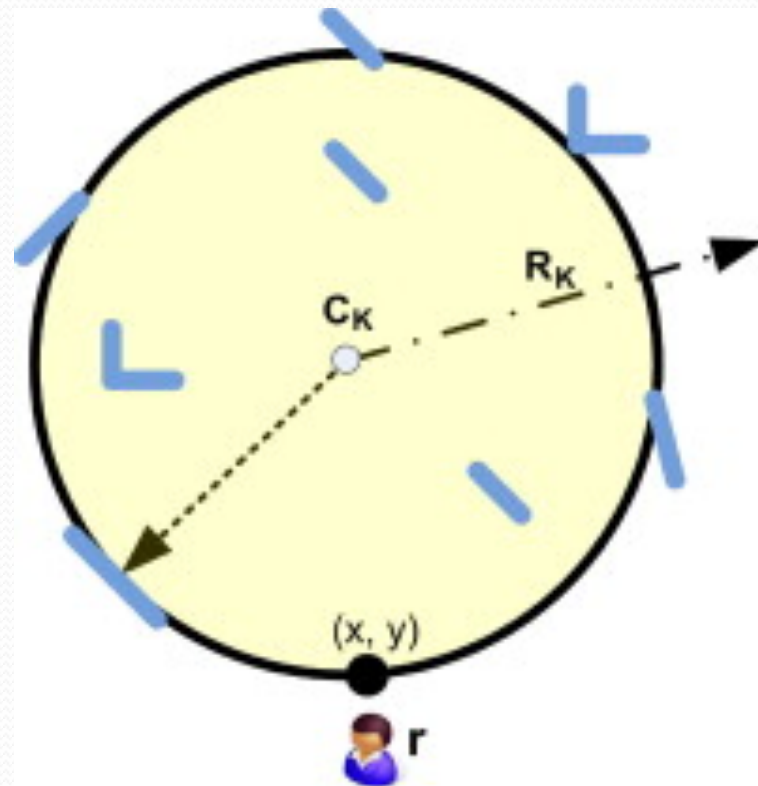
Invasion

- Intrusion
- Decisional interference

Solutions

- Regulation
- Technology
 - Anonymity
 - Obfuscation
 - Inaccuracy
 - Imprecision
 - Vagueness

Example: k-anonymity



Gkoulalas-Divanis (2009)



Conclusions

- Legal conceptualizations of privacy must be updated for social media
- Categorization of social media privacy infringements can help focus development of technological solutions
- Further research would collect more examples of locational privacy violations
- Some categories may require regulation until technology solutions are reached



References

- Elwood, S., and A. Leszczynski. 2011. Privacy, reconsidered: New representations, data practices, and the geoweb. *Geoforum* 42 (1):6-15.
- Friedland, G. and Sommer, R. 2010. Cybercasing the joint: On the privacy implications of geotagging. 5th Usenix Hot Topics in Security Workshop (HotSec2010), Washington DC.
- Goss, J. 1995. We know who you are and we know where you live - the instrumental rationality of geodemographic systems. *Economic Geography* 71 (2):171-188.
- Krumm, J. 2009. A survey of computational location privacy. *Personal and Ubiquitous Computing* 13 (6):391-399.
- Rotenburg, M. 1991. In support of a data protection board in the United States. *Government Information Quarterly* 8(1): 79-81.
- Solove, D.J. 2007. 'I've got nothing to hide' and other misunderstandings of privacy. *San Diego Law Review* 44: 745-772.
- Warren, S.D. and Brandeis, L. 1890. The Right to privacy. *Harvard Law Review* 4(5): 193-220.