

## 13. Reputation

All the identity technologies discussed previously assume you exist in some hierarchy. In fact, there are many hierarchies. Yet there are more social networks than hierarchies. Even within a hierarchy there can be putative authorities that are subservient to social networks. The classic example of this is the new minister in the established church. The minister leads the flock, but every party is aware that the established families determine if the flock follows.

Social identities online may exist simultaneously and exclusively. My role as a good neighbor is something of which I am proud, yet it can only be authenticated by my neighbors. The State of Indiana can authenticate my ownership of my home; but cannot comment on my quality as a neighbor. Yet my classification as a decent neighbor, who brings by cookies and invites everyone over for an annual party, is not something that can be centrally authenticated. My relative success in the endeavor of building a social network is a function of the community of neighbors. This community is disinterested in my reputation among my academic peers.

Similarly my standing in the academy is a function of the respect of my peers. Every workplace has some combination of hierarchy of official power and social awareness of competence.

### Proving Identity Through Social Networks

Social networks are powerful tool and can be used to enrich the online experience. Social networks can be used to create reputations. Reputations can be used to authenticate specific attributes or credentials.

Referrals made through an existing social network, such as friends or family, “are the primary means of disseminating market information when the services are particularly complex and difficult to evaluate ... this implies that if one gets positive word-of-mouth referrals on e-commerce from a person with strong personal ties, the consumer may establish higher levels of initial trust in e-commerce” (Granovetter, 2004). In 2001, PEW found that 56% of people surveyed said they email a family member or friend for advice (PEW 2002b).

Several commercial websites, such as Overstock.com and Netflix.com, utilize social networking and reputations. These sites have created mechanisms to enable users to share opinions, merchandise lists, and rating information. Using these mechanisms, Overstock.com attracted more than 25,000 listings in six months after the implementation of a friends list.

Public forums (perhaps on the vendor's site) and rating systems provide a natural incentive for merchants to act in an honorable manner or otherwise face economic and social consequences. The cost is greater if the sources of the reputation information are trusted. The opportunity for retaliation (through ratings or direct punishment) is an important predictor of behavior in repeated trust games, so venues where merchants cannot "punish" customers have advantages.

As has been demonstrated by game theoretic experiments, data provided from the FTC (FTC, 2005) and PEW (PEW 2002b) social constraints do not by any means guarantee trustworthy behavior. Yet reputations can be used to authenticate (sometimes weakly) specific practices or characteristics. Today reputation systems are used to support evaluation of vendors, users, products and web sites.

Reputation systems attempt to enforce cooperative behavior through explicit ratings. However the design of the reputation system is not trivial. If the reputation system itself is flawed it might inadvertently promote opportunistic behavior. Consider the case of cumulative ratings, as on eBay. On eBay, a vendor who has more than 13 transactions but cheats 25% of the time will have a higher rating than a vendor who has had only ten honest transactions. Vendors game the system by refusing to rate customers until the vendors themselves are rated, thus having the implicit threat of retaliation.

Reputation systems may be centralized, with a single authority ensuring the validity of the reputation, as with eBay. Reputation systems may be distributed, with multiple parties sharing their own reputation information. Like other identity systems, reputations provide weak or strong authentication. Reputation systems may be dedicated (e.g., eBay) or widely utilized (e.g., credit scores).

Reputation systems are community centered or peer produced identity systems. These systems are the result of the merger of two distinct computing traditions: the scientific and the corporate. The most common form of description of these systems is peer production or P2P. The more recent, and more broadly applicable description is peer production. Peer production includes blogs, file sharing, massively parallel community processing, and gaming.

People can come together and do amazing things with no centralized identifying authority. Reputation systems allow individuals to build verifiable records of reliable and trustworthy behavior over time. The American credit rating is an example of a hierarchical reputation system. The reputation of who is reliable in a pinch exists in every community. If you recall the opening chapter, identities were all once community-based. In general, community-based reputation failed to scale in the industrial revolution. The connectivity and communications of the information revolution enables utilizing the wisdom of neighbors.