

The Evolving Role of Security, Privacy and Trust in a Digitized World

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Recently spam was unleashed that offered a novel possibility- "new software [that] lets you find out almost anything about anyone." By "harnessing the power of the internet," one could find long-lost friends and family, collect detailed financial information on entertainers, learn "the truth" about one's spouse's fidelity, or determine the sexual proclivities of politicians. And all for the remarkably low price of \$29.95.

Although digging up dirt on others may be the true oldest profession, the claims made by the spam suggest that the methods available have greatly increased in their power and ease of use. Additionally, the spam implies that these methods are somehow intrinsic to the Web. When it comes to the central defining concept of the Internet, a dystopic "ubiquitous spying" competes with the utopian "ubiquitous computing" for dominance in the public mind, and for good reason. In a sense, they are the two sides of the HCI coin. If the network is everywhere, then not only are we as individuals everywhere, but, simultaneously, everyone else is everywhere too, including in "our" files, if they choose to be.

If the concept behind the spam is correct, then the implications are enormous. Concepts like "security," "privacy" and "trust" may be severely challenged. Because these concepts operate at the heart of our economy, governance, and interactions, technologies that threaten their operation are, by definition, revolutionary in their potential impact. While a kind of "salvation of the world" remains a central feature of the techno-elite's sense of self, few of the pioneers of HCI ever imagined that digital networks would force a radical re-envisioning of the central political concept of our age, "individuality," and all that flows from that concept. However, that may be a fundamental result of their innovations.

The Idea of "Individuality"

If we want to make sense of the challenges digital technology make to many of our central organizing concepts, perhaps the best place to start is to delve deeply into the nature of them, starting with the idea of "individuality." The American Heritage Dictionary defines "individuality" as "a single, distinct entity." In modern, western parlance, however, the word has taken on additional meaning. For example, in the United States, the idea serves as a central organizing principle in ideologies seeking to determine the ideal functioning of

society. More Cartesian theorists, particularly classical Liberals and Libertarians, see "the person," and his freedom from governmental interference, as a necessary precondition to a well-run society. Thinkers on the liberal Left also stress the primacy of "the person," though much of their efforts focus on freedom from corporate interference and domination.

It's important to note that the idea of "individuality" has always been a universal human concept. The main bone of contention has concerned what the unit of measurement should be for determining the "distinct entity" of greatest concern. That entity can just as easily be "the family," "the clan," "the corporation" or "the nation" as "the person."

The victory in the West of free-market liberal democracy, for the most part, can be seen as the triumph of the Liberal/Libertarian strains of thinking about individualism, over more collectively-oriented ideologies such as Communism and Fascism. Since the end of the Cold War, the more person-oriented ideologies have increasingly operated center stage in the emerging world system. Still, more traditional cultures, whether in the developing world or inside the boundaries of the more developed nations, continue to hold to more collectivist notions. This has major ramifications for their response to the Web, relative to the individualists.

Scientific thinking has also bolstered the ideas behind person-centered individuality. Evolutionary theory, for instance, has tended to focus on individual members of species, and their particular survival strategies. Psychology, too, has played a role here, developing person-centered therapeutic strategies, and by developing a conceptual framework centered on ideas such as "the ego," as the unit of individualism in modern culture. The idea that humans instinctively protect their individual existence against threats to it remains a powerful ideological support for the concept of the person as the indivisible, and most significant, unit of autonomous action in society.

The Institutional Supports of Individualism

In order to support the institution of "the person," many governments around the world have developed legal and other socially-supported protections. These protections are designed to maintain the primacy of the person within society, and come in three distinct classes.

First and foremost is the protection of persons' bodies from interference by other persons or institutions. These rights take two forms. The more developed of the two protects persons from physical attack from other persons. The other, somewhat less explicitly protected right, at least in the U.S. Constitution, seeks to maintain the physical autonomy of individual persons. Laws against slavery and in support of abortion freedoms fall under this category.

Second are civil rights, such as freedom of speech, religion, and voting rights as well. These rights are designed to make it possible for persons to act as political beings with a minimum of interference by larger entities.

Third, and most important for this discussion, are property rights. Protection of property represents an extension of civil rights and bodily integrity rights, in that the ownership and free use of property makes more effective personal control of one's immediate environment possible. The general idea is that private property makes the other two categories of freedoms possible.

The Case of Business Rights

In many societies, at least some of the institutional protections for individuals have been extended to corporations. For example, the U.S. Supreme Court has ruled that corporations are to be treated, for many legal purposes, as "persons." Although citizenship, bodily and voting rights weren't extended, property and speech rights were. As a result, the range of concerns individual persons face vis a vis the web, for the most part, also apply to corporations.

Where Security, Privacy and Trust Come In

In order for the institutional protections of individualism to meet their goals, certain operational concepts are required.

Security

First and foremost among these concepts is "security." Institutionally, "security" refers to the range of functional supports of civil, bodily, and property rights, including the police, the rule of law, the right to bear arms, etc. From an emotional standpoint, "security" also refers to the sensation that one's rights are protected, and, therefore, one's individuality can remain intact. Individual persons, in this society at least, seem to possess an intuitive understanding of when the supports of their individuality are under threat.

This understanding generally kicks in at the bodily level first. For instance, a person walking into a "dangerous" neighborhood generally pays great attention to the sensory cues that tell them when other individuals may not respect their bodily rights. Without that fundamental respect, individual personhood is impossible.

Many people see property rights as the next most fundamental right to secure. Security of property, particularly in more developed societies, rarely will be forgotten, perhaps because the dynamism of modern capitalism results in a constantly shifting economic environment that requires constant attention to navigate successfully. In developing societies, in contrast, property rights are generally less secure, but the general thrust of public policy, worldwide, is to ensure greater property protections.

In Western societies, not only does a huge governmental apparatus exist to support property rights, but large portions of "civil society" also function to enhance these rights. The daily functioning of corporations, worldwide, provides considerable influence to ensure that property rights serve as the bedrock concept underlying transactions.

Tactics to Secure Property Rights

The tactics utilized by many governments and societies to manage and secure property rights, typically flow from two essential concepts, labeling and privacy. As we will see, digital technology threatens the smooth functioning of these techniques. Each is discussed below.

Security of Labels of Individual Identity

One tactic that most governments employ to protect property rights is to establish a set of labels that are legally attached to property, to determine which individuals own it. These labels, such as names and numerical equivalents, such as social security numbers used in the United States, provide the primary basis for determining which person or corporation owns specific property. If the right to control the use of one's labels of identity isn't maintained, then other individuals might be able to access one's property. Labels are at the heart of the security of property.

"Branding" in the marketing realm is a significant use of this concept. Corporations need to retain control of their brands, just as individuals need to control their names, in order to maintain positive reputations. Reputation, in a fundamental sense, is as valuable a property right as ownership of land or stock, and most governmental systems seeks to protect this right by upholding the security of labels.

The Special Tactic of "Privacy"

In addition to governmental coercion and the support of civil society, the three classes of rights described above also depend on "privacy." Privacy, which the American Heritage Dictionary defines as "secluded from the sight, presence, or intrusion of others," and "of or confined to one person," operates as a vital tactic in the support of security.

With privacy in place, all three classes of rights can more effectively function. For instance, in the bodily rights area, privacy makes it possible for individuals to make whatever use they want of their own bodies without interference of others. In the area of property rights, shielding others from knowledge of our assets and how to access them serves to secure those rights. And, in the case of civil rights, the privacy of the ballot makes a free voting choice, unaffected by the preferences of those more powerful than ourselves, much more likely.

As in the case of security in general, most persons intuitively grasp the power of privacy to support the exercise of their rights. Privacy may be the most powerful technique of all, because it's effective even when governmental or civil supports weaken or fail. Consequently, it's a technique that individuals greatly appreciate. When they feel its absence, they understand that the exercise of their rights is at great risk.

Most contemporary rights theorists seem to believe that privacy is an essential, indispensable technique in the securing of individuality. Privacy as a support to security can be a double-edged sword, however; it can act to prevent all actions from scrutiny, even when those actions can have as their goal the subversion of other's rights. Consequently, a certain vagueness as to the limits of privacy suits the needs of those seeking to secure individual rights. Privacy must

function in some form in order for individuals to exist. Consequently, the tension between privacy as guarantor and privacy as subverter of rights will also continue to exist as long as the individual as a concept exists. Finally, privacy will be a concern wherever individuals act, be it in the brick and mortar world, or cyberspace.

The Role of Trust

Although privacy and security secure the autonomy of persons and corporations, they don't provide the resources needed for such persons to actually function in the world. In order to obtain these resources, persons and corporations require some sort of mechanism that help them "let down the walls" of their solitude, selectively, to obtain what they need from others. The decision to engage in interactions with others, of course, is a necessity for all persons and corporations. The question then is, how do they get what they need, and retain their independent existence?

Two primary mechanisms provide this capability. The first is law, both criminal and civil. Persons and corporations assume, to varying degrees, that other persons and institutions will refrain from physically assaulting them, or stealing their property. The standard may be fairly low, as in contemporary Russia, or high, as in contemporary Japan. But in most societies, law does function to ease the risk of interactions between persons and companies.

The other primary mechanism, trust, is psychological in nature. "Trust," defined by the American Heritage Dictionary as a "firm reliance on the integrity, ability, or character of a person or thing," makes it possible, more than any other mechanism, for persons to let down their security systems and open themselves to the world. In order for digital networks to function in the context of an individualized world, trust must function there as well.

Trust and Risk

When a person or corporation considers lowering the walls to act in the world, they have historically faced six types of risk, four of which often involve direct economic transactions:

- financial (risk of losing money or paying too much);
 - functional (risk of receiving the wrong or a malfunctioning product);
 - social (risk of embarrassment); and
 - physical (risk that we might be physically harmed).
- In addition, engaging with the world puts us at risk in two other ways:
- emotional (risk that one might be emotionally hurt by an interaction); and
 - identity (risk that others may impersonate us for financial or other types of gain).

In order to effectively act, a person or corporation will engage in the process of developing trust, be it with other persons or corporations. At the heart of this process is the goal of risk reduction.

Trust as Process

First and foremost, it's important to keep in mind that "Trust" is a dynamic process. Trust deepens or retreats based on experience. The trusting process begins when an individual perceives indications - "forms" - that suggest a person or firm may be worthy of trust. These indications can include behaviors such as manners, professionalism and sensitivity.

Both persons and firms understand that these forms are designed to represent trustworthiness. These formal claims to trustworthiness become strengthened over time and are eventually transformed into "character traits," such as dependability, reliability and honesty.

As it becomes clear that "character" underlies the forms, one will be willing to participate in more informal transactions. When only forms are known, one is likely to prefer formal, written contracts with others. However, as one begins to rely on a sense that a "trustworthy character" underlies the other's behavior, one will require progressively less new information.

In a study conducted by Studio Archetype/Sapient (U.S. based design firm) and Cheskin (U.S. based research and consulting firm) in 1999, most respondents felt that commercial relationships require far less knowledge of trustworthiness than loving relationships. In large part, this is because trust in more intimate relationships involves more valued personal assets than money, such as self-respect, desirability and worthiness as a lover or spouse.

Because less valuable assets are at stake in a commercial relationship, consumers generally don't expect to ever know if a firm possesses the "character" that might make it worthy of deeper levels of trust. Still, experience over time in a commercial relationship is vitally important in making transactions smoother, simpler and more likely to become habitual.

The full text of this chapter is available in the book *The Human-Computer Interaction Handbook* available from the publisher.