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Aware of the Situation

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Situational awareness draws upon ideas and applications that have permeated computing technology from its very inception.

To Jorge, the problem was real and the solution was obvious, even though it required him to lie to his GPS app. Software is much like a small child. It will tolerate lies for a short time, especially if it finds the results cute, funny, or shocking. Eventually, though, both software and child tire of the lies and are offended by the liar.

Jorge's lies were somewhat complex. He was trying to convince a specific GPS app that our neighborhood was a terrible place to drive through. According to him, this app had been claiming that our neighborhood was a convenient shortcut between the suburbs and downtown. As a result, the traffic on our streets had substantially increased.

This particular app isn't merely a navigation tool. It's part of a growing number of applications that help us understand and make choices within a specific environment—a process called "situational awareness." This term came into common usage in the mid-1990s, after military planners started using it to describe how information technology changed the role of battlefield decisions. Commanders who were fully aware of their situation would know the location of the enemy, the weapons deployed by the enemy, the possible actions to counter the enemy, and the likely effectiveness of those actions. As one assessment of the 1991 Gulf War argued, "Situational awareness—rather than skill, technology, or interactions between the two" came to dominate the tactical outcomes of that war.

Since 2000, the term has been applied to the management of complex systems. We now speak of situational awareness in the context of power grids, disaster relief efforts, and even satellite debris. Situational awareness involves three different activities: data collection, data processing, and action coordination. It gathers large amounts of data across time and space, fits that data into a complex structure or ontology, and guides the use of the data through an action that requires the coordination of many complex steps.

Like many information technology applications, situational awareness breaks hierarchies. The users of these systems no longer have to rely on large human organizations to gather data, draw conclusions, or take action. By weakening hierarchies, such tools have brought substantial benefits to our economy and our society. Yet, they've also weakened society by empowering the individual. While we applaud individual action and welcome individual insight, we're often reminded that the goals of an individual can be narrow and selfish. The ability to act isn't a guarantee that the action will benefit all.

Jorge's battle with situational awareness was short-lived. He shunned the traditional approach, which would have rallied the neighborhood to demand limits on traffic. With little effort, he could have received support for speed bumps, one-way streets, and threatening signs. Instead, he decided to generate data that would make our streets seem less appealing to those who wanted a fast route to the city. Using the app, he drove slowly through the neighborhood to suggest that traffic was congested. He falsely reported accidents and speed traps to the app, hoping that this information would discourage drivers. Initially, the app makers were delighted with Jorge and commended him for taking situational awareness seriously. However, within a few days, they realized that no one else was supporting Jorge or verifying his reports. After 10 days, he was banned from using the app.

Situational awareness might eventually come to be viewed as the fundamental application for computing technology. It draws upon ideas and applications that have permeated this technology from its very inception. Furthermore, it exposes the foundational issue for any society—how we balance the goals of society with the aspirations of the individual.

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