

FEATURE

## Copyright Independence

by CORILEE CHRISTOU

In July 1870, the copyright activities of deposit and registration were centralized in the Library of Congress (LC), but it wasn't until February 1897 that the U.S. Copyright Office was established as a separate department of the LC, and the position of register of copyrights was established primarily for ministerial duties over copyright registration activities.

Beginning with the 1976 revision of the copyright law, all registrations of works for copyright purposes required two copies of a work to be submitted as part of the mandatory deposit program. The reason for the mandatory deposit law was to ensure that the LC had two cop-



ies of every published work in the U.S in its collection and may therefore acquire these works at a minimal cost.

The Copyright Act of 1976 has weathered most storms until recently. The perfect storm—comprising digital content and distribution;

the rise of new, enabling technologies; and, of course, the largest and most powerful network of all: the internet—arose within a relatively short time frame, capturing and connecting the hearts and minds of

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## The IoT Space: New Ways to Connect People and Things

by BRANDI SCARDILLI

In June 2014, *Information Today* covered the best practices for securing the Internet of Things (IoT)—the idea that everyday objects can be imbued with computing power in order

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## The Information Society at the Crossroads

Text and photos by EMIL LEVINE

The “quantitative precision (of information) and its breadth of ap-

plication have come at a cost,” said Terrence W. Deacon, professor of anthropology and neuroscience at the University of California–Berkeley (UC–Berkeley), at the ISIS (International Society for Information Studies) Summit Vienna 2015. “[I]t has impeded its usefulness in fields such as evolutionary biology, cognitive neuroscience, the social sciences, and even the humanities ... in order to provide the foundation for a theory of information that is sufficiently precise and formal ... it

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## The Information Society at the Crossroads

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is necessary to expand and slightly reformulate the technical concept of information in a way that accounts for these properties,” Deacon concluded during his presentation, “How Information Lost Its Meaning (And How to Recover It).” The theme of the summit, which was held June 3–7 at the Austria University of Technology, was The Information Society at the Crossroads: Response and Responsibility of the Sciences of Information.

Deacon noted that Claude E. Shannon’s pioneer work (“A Mathematical Theory of Communication,” written in 1948) concerned communications, and not information, and he quoted Warren Weaver, who wrote in 1949, “Information has ‘nothing to do with meaning,’ although it does describe a ‘pattern.’” He also quoted R. Fano, who said, “I didn’t like the term Information Theory. ... You see, the term ‘information theory’ suggests that it is a theory about information—but it’s not. It’s the transmission of information, not information.”

After describing a mathematical theory of communication, Deacon said the “redefinition of information” was something that became precisely measurable in “bits.” He discussed the impact of entropy (quoting Shannon and John von Neumann) to measure a medium’s capacity to carry information and quoted Gregory Bateson’s introduction of redundancy on this capacity. He cited Norbert Wiener’s com-

ment that “Information is negative entropy.” Deacon’s presentation abstract stated, “In order to provide the foundation for a theory of information that is sufficiently precise and formal to serve these needs it is necessary to expand and slightly reformulate the technical concept of information in a way that accounts for these properties. ...”

The multiple tracks in the summit’s “transdisciplinarity” program included social, cultural, economic, ecological, and technological information processes as well as music (information and symmetry), the global brain, cyberwar, and information ethics. Topics such as Edward Snowden, Shannon, information scalping, security, and social media added to the diversity of the conference. The summit brought together different communities that research information (which is understood by the society as a generic term for cognition, communication, cooperation, data, knowledge, wisdom, intelligence, and the whole diversity of related terms). About 350 people, including 90 students from 200 institutions and 45 countries, attended, and 273 papers were presented.

Outgoing ISIS president Wolfgang Hofkirchner (associate professor at the Vienna University of Technology’s faculty of informatics) opened the meeting by discussing information for a global, sustainable information society. He presented a view of information based

on systems thinking (the Unified Theory of Information).

### Unpacking Shannon

Shannon, Wiener, and Bateson were also cited by Yixin Zhong (founding professor of the Research Center for Information and Intelligence Science at Beijing University of Posts and Telecommunications) in his three presentations, “Methodology Shift in Information Studies,” “The Law of Information Conversion and Intelligence Creation,” and “On Definitions of Information.” Zhong formulated his Comprehensive Theory of Information in 1986, expanding Shannon’s theory to include syntactic, semantic, and pragmatic components. His book, *Principles of Information Science*, has been published (only in Chinese) in five editions.

He noted that Shannon’s statement, “Information is something for uncertainty removal,” concerned “the statistically syntactic information, but it ignores semantic and pragmatic information.” He added that only humans have the pragmatic ability of abstraction.

Quoting Wiener’s statement, “Information is neither matter, nor energy,” Zhong said, “This is an expression about ontological information,” and noted, “Wiener does not say what information is.” Discussing Bateson and his statement, “Information is the difference that makes difference,” he commented that “‘no difference’ is also a piece of information,” and that Bateson “did not distinguish between ontological and epistemological information.”

“Frontiers of Science of Information” was presented by Wojciech Szpankowski, director of Purdue University’s Center for Science of Information. This National Science Foundation Science and Technology Center coordinates the research of scholars to collectively develop a comprehensive science on how information is extracted, manipulated, and exchanged. The center builds on Shannon’s legacy and principles to address key challenges in understanding information that today is not only communicated but acquired, curated, organized, managed, processed, analyzed, secured, and used in various scientific, engineer-

ing, and socioeconomic processes. Its work includes time and representation, semantics, and Big Data. It advances the next generation of information theory through collaborative research and teaching. The center’s partners include MIT, Stanford University, Texas A&M University, Bryn Mawr College, Princeton University, the University of Illinois, UC–Berkeley, Howard University, and UC–San Diego.

### Social Media and Politics

Asli Tunc (a professor at Istanbul Bilgi University’s faculty of communications) presented “Circumventing and Succumbing to Media Control in Turkey: Social Media as a Sphere of Struggle,” a case study on the use of social media, primarily Twitter, in Turkey. Citing Freedom House (an independent watchdog organization dedicated to the expansion of freedom around the world) reports on Turkey that evaluated the country’s websites and news media as “Not Free” and declining over the past 5 years, Tunc showed the impact and control implemented on radio, television, and social media.

Turkey, with a population of 77 million, has nearly 36.5 million internet users, including 33 million on Facebook. It has 13 million Twitter users, an increase from 7.2 million in 2012. In 2015, 8 million tweets a day are sent, about 92 per second. Fifty-two percent of citizens are active social media users. It was during the Gezi Park protests in May and June 2013 that Twitter became the widely accepted source of news for the Turkish public. For example, on May 31, a day of violent events, 15.2 million tweets were sent, rising from an average of 9 to 11 million. The number of tweets doubled hours after Twitter was banned in 2014.

While this ban was overturned by Turkey’s Supreme Court, the current regime now has the legal right to remove content and restrict access to the internet for internal security, the prevention of crime, public order, general health, and the prevention of defamation. This was exercised more than 65,000 times in 2014, increasing each year since 2008.



Terrence W. Deacon



Wolfgang Hofkirchner

### Information Scalping

Showing photos of patients—many with children—queuing in front of a Beijing hospital in a line perhaps 50 meters long while waiting to see a doctor, Chen Li (of Beijing International Studies University) presented “The Role of Online Booking Systems (Gua Hao Wang) in Transforming Patient Experience and China’s Healthcare Reform,” a paper co-authored with Ying Hua (of Beijing’s Capital University of Economics and Business) that described the impact of IT on healthcare. The patients began arriving well before daylight and had to wait several hours. If “arriving at 8 a.m., you may have the luck to get treated around noon or later,” one stated. When an online booking system was implemented, it allowed patients to make appointments using home computers, cellphones, telephones, or special devices resembling ATMs.

The system spawned a new industry—information scalping—as fake reservations were made by scalpers and then sold to individuals needing immediate care. Following implementation of the system, a survey revealed how the online booking system changed patients’ perception, behavior, and constraints. The reaction was overwhelmingly positive. Even scalping was accepted by many, as this provided immediate appointments, particularly with specialists.

### Snowden

Edward Snowden was featured in several sessions. John Cheney-

Lippold (assistant professor at the University of Michigan’s department of American culture) presented “*Jus Algoritmi: How the NSA Remade Citizenship.*” After explaining *jus sanguinis*, or citizenship by blood, and *jus soli*, citizenship by landed birth, he detailed how the National Security Agency (NSA) determined the citizenship of an intercepted communication, based on the classified information disclosed by Snowden.

“How could the NSA know, in exacting fashion, who was and was not a U.S. citizen? The technicality of this is impossible. But rather than limit the scope of surveillance to acknowledge this impossibility, the NSA had a better idea: Why not create a new conception of citizen?” said Cheney-Lippold. “And that’s what they did. The NSA decided to implement an algorithmic assessment that assigned foreignness (and by corollary, citizenship) on targeted internet traffic, enabling legal surveillance if a data subject was deemed to be at least 51 percent foreigner.”

Cheney-Lippold displayed slides of the NSA’s PRISM program (which was revealed by Snowden) that described what happens when an NSA analyst “tasks” the system for information about a new surveillance target. The request to add a new target is passed automatically to a supervisor who reviews the “selectors,” or search terms. The supervisor must endorse the analyst’s “reasonable belief,” defined as 51% confidence, that the specified target is a foreign national

who was overseas at the time of collection.

Thus, Cheney-Lippold claims, the target becomes what he calls *jus algoritmi*, which, unlike *jus soli* and *jus sanguinis*, is not ordained and stable. It’s a relationship to citizenship that is temporal and constantly evaluated. One day you might be a “citizen” of the U.S.; another day you might be a “foreigner.” It is a categorical assessment based on an interpretation of your data, not your lineage, birth certificate, or passport. He cited an example: “A U.S. person might be courtesy-copied on an email to or from a legitimate foreign target, or a person in the U.S. might be in contact with a known terrorist target.”

“Let’s Clear Up the Debris—What the Snowden Leaks Mean for Our IT Security” was presented by consultant Sylvia Johnnigk, who provided a rough overview of the Snowden leaks, a threat analysis and assessment, and the consequences for IT security and privacy

behavior. Based on leaked material, she stated that the NSA had alliances with more than 80 major global corporations to support its intercept operations. This included compromising products with intentional weakness that allowed penetration.

How strong are encryption-processing devices? Johnnigk stated that mobile phones using iOS and Android are compromised and suggested using good crypto as often as possible. But she said that there are many ways to circumvent good crypto. She claimed, “There is no secure communication channel left ... due to these activities.”

ISIS was founded in August 2010 at the Fourth International Conference on the Foundations of Information Science in Beijing. Its purpose is to “advance global and collaborative studies in the sciences of information, information technology and information society.” The next ISIS summit will be held in 2017 in Gothenburg, Sweden.

Emil Levine is an American library and information science consultant living in Vienna. Send your comments about this article to [itletters@infotoday.com](mailto:itletters@infotoday.com).

## WORDS at WORK

If you take care of business without ever seeing a person, you might be a cellphone manager.



**legacy business:** A traditional brick-and-mortar firm. Accurate or not, anything characterized as “legacy” is perceived to be old or outdated.

**cellphone manager:** Someone who spends the majority of the time on his or her cellphone making business calls

**media fusion:** The melding of technology and media. Media fusion involves the convergence of many communication platforms, in combination with the internet.

**fat binary:** A download or program labeled “fat binary” means that it is a little larger than a regular application.

**meeting specialist:** Someone who spends more time going to meetings than doing actual work

**gingerbread house (aka youth grinder):** A company that hires new college graduates and places them in high-pressure positions, but pays only minimal compensation. This commonly happens in small companies with a long history of no growth, engineering design firms, and commercial art firms.

**mystery house:** A high-profile dot-com startup that seemingly has no announced products. This term also refers to office layouts that are difficult to navigate due to haphazardly placed cubes and partitions.

Source: NetLingo ([netlingo.com](http://netlingo.com))