Communicating Risk Perceptions Through Batik Art

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Effective communication of scientific findings to the general public is vital in the field of public health. It improves understanding of health risks to enable the public to make informed decisions to mitigate risk. We designed a batik art installation illustrating risk-related topics in the media and literature over the past 200 years.

The data and methods underlying the project are detailed in the eMethods in the Supplement. Briefly, we used methods of computational linguistics to analyze the Corpus of Historical American English, a 475 million-word database containing more than 150,000 texts from newspapers, magazines, fiction, and nonfiction published between 1810 and 2009. We identified mentions of the term “risk” and the words that frequently co-occurred with it, also known as collocates. Latent Dirichlet Allocation—a natural language processing method used for topic modeling—was employed to assign words to different topics, enabling the formation of clusters comprising words that frequently co-occurred with the word “risk.” We identified 4 main categories and selected the 5 most frequently used terms related to each category that appeared in at least 2 decades from the 1810s to the 2000s: health-related (heart, cancer, neck, diabetes, HIV/AIDS); non–health-related (nuclear, starvation, life, capital, reputation); risk action–related (reduce, discovery, assessment, calculate, insurance); and risk concept–related (imminent, uncertainty, exposure, foolish, adventure).

In collaboration with a team of Southeast Asian artists, we translated the findings into a batik art installation titled Risk-Talk. The batik process involves hand-application of a wax design to fabric, typically cotton or silk. The fabric is dyed, with the waxed areas remaining un colored. Afterwards, the wax is removed and the process is repeated until the artists’ intended designs or images emerge.

Using a combination of techniques, including hand-drawn batik (batik tulis), hand-stamped batik (batik cap), and hand-screened batik, we created batik strips displaying motifs developed for each of the 20 risk-related terms.
The risk of heart disease was represented by an image of the heart and the risk of cancer was represented by a spiky cell. The strips were color-coded to correspond to the 4 risk-related categories: red for health risks, blue for non-health risks, green for risk actions, and yellow for risk concepts. The length of each strip was proportional to the frequency of the risk-related terms in each decade (eTable in eMethods in the Supplement). We marked each strip with the name of the topic, a numbering indicating the rank of the topic by prevalence, and the decade in which the topic appeared. We then hung the strips from a grid of metal cables held up by structural supports 6.5 feet (1.95 m) tall to create an installation 16 feet (4.8 m) wide and 10 (3 m) feet deep. A timeline along the width noted every decade from 1810 to 2009. The strips were ordered front to back within each decade in order of topic prevalence, for a maximum depth of 12 strips. Consequently, the installation served as a human-scale representation of trends in the frequency of various risk-related topics over time (Video). Perhaps the most notable trends were the initial presence and disappearance of the term neck—presumably related at least in part to horse-riding accidents associated with preautomotive transportation, freight haulage, and mechanical power in the 19th century—as well as the rise of conventional medical terms such as cancer, heart, diabetes, and HIV/AIDS in the mid-20th century through 2009 (eTable in the Supplement).

The structure was first displayed at the launch of the Institute for the Public Understanding of Risk at the National University of Singapore from mid-April to mid-June 2019. It was then presented at a 2-day conference on risk and safety in London in the fall of 2019. Subsequently, it was relocated to Innovation 4.0 at the National University of Singapore (a hub for the university’s strategic capabilities in artificial intelligence and data science) where it has since remained. Audiences are welcome to walk into and through the display and surround themselves with society’s evolving perceptions of risk. The aim of the installation is simple and encapsulated in the title RiskTalk: to get members of the public to talk about risk, an aim deemed successful from casual observations. In addition to simplifying complex research findings into a digestible and accessible format, the batik pieces allow for visual and tactile engagement. We are hopeful that this will in turn facilitate cognitive and affective processing that conventional infographics, scientific news articles, and blog posts often do not stimulate.

We are currently working on extending the data analysis and batik representation backward to 1500 and forward to 2019.

As society wrestles with the perennial challenge of relaying information during situations of chaos and disarray—especially apparent amid the COVID-19 pandemic—the union between art and science presents a powerful means for public health risk communication.

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The Arts and Medicine

The RiskTalk batik art installation.