Cultural and Linguistic Influences on Sociotechnical Space: Some General Challenges and Opportunities

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Laura Steckman, Ph.D.
The MITRE Corporation[1]

The rising acceptance and adoption of mass electronic telecommunications worldwide has implications for US national security. Over half the world's population now has access to the internet, and many of them now access social media platforms and social networking sites in multiple languages. First, "a matchup between the federal government and the new media [requires] strategic thinking, training, and critical analysis" (Dale, 2009), and, second, this requires approaches to explore new virtual terrain, the sociotechnical space that encompasses the platforms, tools, and publicly-available information (PAI) varying across populations due to cultural and societal norms. Because peoples' thoughts and behaviors translate to the sociotechnical terrain, to quickly and accurately analyze and interpret the vast amounts of online data in the new virtual terrain, national security researchers must place more emphasis on how culture and language influence peoples' choices regarding communications and technology usage. Increased emphasis on and investment in examining the role that culture and language play in the internet environment will ultimately lead to improved intelligence collection and analysis, strategic communications, and operational planning.

Culture influences how people use technology; it influences the devices that a person uses as well as why and how they select the most appropriate communications channels. Communication on the internet is not immune from cultural influences, though research on the ways that culture impacts the cognitive processes involved in making these choices is little understood. For example, a 2008 study on internet usage in Bangladesh discussed perceptions of the internet when the medium was relatively new to the country, noting that a popular view was that the internet was "a form of American temptation or a means to disseminate the American ways of life" that would influence others to appropriate American identity to the exclusion of their Bengali identity (Miah, 2008, p. 8). In the Bangladesh case, people's views of the computer as an American tool changed how they used the device, whether they avoid it or decide to use it to spread anti-American sentiment (Steckman, 2014). The beliefs that people hold about technology and its origin provide explanations as to how they use technologies. These insights better inform

[1] The author's affiliation with The MITRE Corporation is provided for identification purposes only, and is not intended to convey or imply MITRE's concurrence with, or support for, the positions, opinions or viewpoints expressed by the author.

analysts about the cultural context behind technologically-based choices, allowing policy and decision makers greater precision over decisions regarding technological investments.

Culture influences the design of technological devices. User interfaces too often are designed irrespective of culture, mimicking the one-size-fits-all T-shirts that are often given away as prizes. In a 2015 study, Saudi Arabians voiced their difficulties with Facebook's Arabic language interface. Study participants disliked the site's overall layout, the navigation design, and felt that privacy settings were too challenging (Almakky, Sahandi, & Taylor, 2015). Culturally-specific user interfaces, or lack thereof, may drive people toward certain online sites over others. Arabic speakers who fall out of favor with Facebook will seek other social media and social networking alternatives, and this tendency is not limited to a single language or culture. Once the cultural preferences for communications channels or access are better understood, analysts will improve anticipatory intelligence and monitoring strategies in the information space.

The impact of culture on technology expands beyond computers to newer, mobile technologies. Bina and Giaglis (2007) surveyed Greek and Korean mobile device users to determine which services they used. Their research applied statistical methods that revealed several differences between the groups; Greek users preferred pay-as-you-go mobile plans, Koreans chose monthly subscription services (Bina & Giagus, 2007). Mobile technologies are particularly popular in societies that have had high barriers to internet access. Mobiles are easy to carry and utilize, and often cheaper than landline-based communications. As technologies become more integrated into daily life worldwide, cultural preferences for technologies acquire greater significance. Public affairs officials, as well as strategic communications professionals, benefit from enhanced knowledge of these cultural preferences when developing information and influence campaigns.

PAI, of which social media is a subset, constitutes another critical region of the sociotechnical terrain. PAI encompasses all the data related to a person or event online that is published on open sites that are not password protected. Cultural and personal questions regarding PAI remain unaddressed and may become more significant in the future. Privacy laws and rights, which vary across the world, as well as the attitudes that people hold about online privacy, guide how people share information. In some cultures, especially those who do not have massive amounts of personally-identifying information (PII) online, are often more open to providing sensitive information online because it does not affect their personal lives if the information is shared. In contrast, many European countries have strict laws regarding internet privacy. The amount and quality of personal information available, and perceptions about online privacy, offer important information for analysts tailoring information programs and influence methods to suit the local sociotechnical terrain.

Online media and the sociotechnical space often have an important cultural impact: they create subcultures that are bounded by like interests and disengaged from traditional geographic borders. Kahn and Kellner (2003) assert that "[i]nternet subcultures have taken up the questions of local and global politics and are attempting to construct answers both locally and globally as a response." The sociotechnical space creates new identities for willing followers that can be used as recruitment channels by adversarial groups. Social activists, criminal groups, gangs, hackers,

and violent extremists attract people by creating online communities and spreading news and ideology. Da'esh, also known as the Islamic State, extensively uses social media to recruit foreign fighters. Many radical and terrorist groups have experimented with online communications since the invention of the internet (Conway, 2005; Steckman, 2017). The internet generates new cultural identities, and groups build these identities for vulnerable or like-minded individuals, then attract and recruit them. This cycle needs greater study. Social science and communications methods can reveal the mechanisms these groups have used "successfully," as well as those that have failed.

Culture and language are closely intertwined. Languages shape how people think and communicate. The same holds true for online spaces, places that encourage linguistic diversity due to technological constraints, language assimilation, and cultural assimilation.

Language. Cameron and Panovic (2014) discuss how technological constraints initially required Egyptian Arabic speakers to use Romanized Arabic online because early devices could not accommodate the Perso-Arabic script. To send short-messaging service (SMS) messages, Egyptians used Franco, a version of Arabic transliterated into Roman characters to accommodate the phones, which only accepted American Standard Code for Information Interchange (ASCII) code; later, to supplement the twenty-six-letter alphabet used by English speakers, they added numbers to Franco (p. 53). Over time, the use of Franco became popular for the younger generation.

Myanmar, a country that primarily uses Burmese with a complex Brahmic script, received its first Burmese language social media platform, MySQUAR in 2013 after substantial changes to the country's telecommunications infrastructure went into effect (MySQUAR, 2017). Almost thirty years after the world began utilizing online communications, locals in Myanmar can communicate online in their national language, making it possible for non-elites to exchange information and opening the country to outside ideas. The results have not all been positive, as the country has experienced high levels of hate speech on Facebook and will continue to work through the challenges of previously prohibitive online communications (Steckman, 2017b). Technological constraints on communications change how people speak and signal to one another.

Cultural and historical realities shape the development of language use online. Kamanga (2015) explores the usage of Chibrazi in Malawi, a mixed language that is actively used on social media, including Twitter, Facebook, and WhatsApp. Loewen (2008) discusses the uneven, often unique, alternative spellings and abbreviations that Russian language speakers use online. Koskensalo (2015) describes how criminal and terrorist groups have developed new languages, often based on cryptography, to communicate and thwart detection from law enforcement. Sociolinguistic context determines how people utilize language to communicate, and these choices also manifest on the internet. Online, code-mixing, inventing new terminology, and deciding among multiple scripts or transliteration techniques represent some of the linguistic styling that obscures a person's location and identity. Deep cultural knowledge is required to understand, and often even to locate, online communications in areas where populations mix or interchange languages. Most current tools for identifying languages do not perform well on mixed-language or multi-scripted

environments (Cardoso & Roy, 2016; Barman, Das, Wagner, & Foster, 2014; Das & Gambäck, 2014). New approaches to language use are required to identify potential national security threats and monitor changes within relevant populations.

Culture and language both influence and limit the extent to which people utilize technology, which in turn shapes online behaviors and activities. Understanding these nuances poses both challenges and opportunities for national security. Culture and language reveal additional information about relevant groups of people and have implications for policy, operations, and strategy. To harness them, the government needs to invest resources in understanding the role culture and language plays in sociotechnical terrain. It should invest in a robust research program that addresses the influence of culture, language, and emerging technologies on the cognitive processes of people inhabiting areas of concern, and develop training programs for policy and military professionals who counter the malign influences of adversarial groups to apply the research results to develop more efficient, and targeted, programming. Examining the internet environment opens avenues for improved intelligence collection and analysis, strategic communications, and operational planning. Over the next ten years, social science research should consider emphasizing the role that culture and language play in emerging technologies and communications.

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