The cultural power metric: Toward a reputational analysis of China's soft power in the Asia-Pacific

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Abstract

The advent of new media technologies has changed how people watch, engage with, and share digital media. Conventionally, audiences were surveyed selectively, and the results were collated by professional agencies and often kept confidential. However, the conspicuous ratings given to

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media and cultural products outside their country of origin and their very public success and failure raises questions about the validity of such methods, particularly at a time when media and cultural products are used as proxies for cultural "soft power." This term, first used by Joseph Nye in a political context, evokes reputational impact: a particular nation's cultural and media products can "go global" if they prove sufficiently popular, reflecting positively on the originating nation. This article examines the various methods used to evaluate China's "cultural power." It notes the current weighting given to the humanities and social sciences. By applying some basic big data analysis and machine-learning techniques, the authors build on previous studies by offering new insights into the rise of "Digital China" and China's digital and Internet trailblazers. The authors consider two major international metrics, as well as China's early experimental attempts at devising its own standard, before introducing an alternative model, the cultural power metric.

Keywords

Cultural power, Digital China, digital research methods, media analytics, platforms, soft power

Introduction

Scholars, politicians, and industry representatives have long sought robust statistical indices to quantify "national power," as well as to explain the appeal of a country's "brand image" (Anholt, 2005). Early contributions to this endeavor include Quincy Wright's (1955) *A Study of International Relations*. This was followed by a "world power index" (German, 1960) and a "composite index of national capability" (Singer, 1963). In the late 1980s, the Chinese government unveiled the concept of "comprehensive national power" (*zonghe guoli*), a composite of various attributes contributing to the nation's strength (A. Hu & Men, 2004; Huang, 1992; Zhang, 2010). At around the same time, the term "soft power" (Nye, 1990, 2004) was being used in discussions of international relations, and the expression was adopted in China in the mid-2000s (known as *ruanshili* in Chinese). In media and communications research, the analysis of soft power in the East Asian region is weighted toward "pop" culture such as anime, manga, and mass-audience TV dramas (Chua, 2012; Chua & Iwabuchi, 2008; Fung, 2013; Lee & Nornes, 2015). During the 2010s, the term "strong cultural power" (*wenhua qiang guo*) gained currency in Chinese policy circles as an alternative characterization of China's cultural soft power (Keane & Chen, 2017; Shen, 2017).

However, the validity and application of both terms, "soft power" and "cultural power," as well as the ways in which they facilitate audience engagement, including interaction and participation, remain the subject of debate. Articles and reports often cite and prioritize cultural outputs in terms of quantity, for instance: how many products are distributed abroad, streamed, or downloaded on platforms; which countries have the largest number of international collaborations; and the number of TV channels hosted by a particular country (Bioglio & Pensa, 2018; Gilardi et al., 2018; Motion Picture Association of America, 2016). Most journalistic reports rely on industry data, such as box office revenues, audience figures, or numbers of hits on online sites and mobile apps. However, despite this plethora of conspicuous statistics, there is a lack of detail about consumer impact—how long users spend on such platforms, what they do there, and how their geo-locations and demographics differ. In other words, existing reports have little to say about the identities of audiences and users and how they engage with cultural products—let alone their impact on the products they consume and the attitudinal changes they inspire (Rawnsley, 2012, p. 123).

In order to address this significant omission, this study explores the question of cultural power, China's latest policy articulation, its relevance, validity, and measurement. We propose a "cultural power metric" (hereafter CPM), an analytic tool and methodology that captures part of the live and evolving dimensions of a nation's cultural reputation on demand, predominantly from data published on online media sources and social media, as well as describing how both are used. In his study of big data and digital research methods, Lev Manovich (2018, p. 476) describes how we are witnessing a new era of data and media analytics, resulting from digital technologies and infrastructure, that is radically transforming our everyday cultural experiences—particularly via the Internet and data on demand. In this article, we attempt to build upon Manovich's insights, as well as consider existing indexes such as the Portland Soft Power 30 Index and the Lowy Asia Power Index (Lowy Institute, 2018).

Our chief concern here is the question of reputation—specifically, the attitudes of consumers in various geographical locations to the influence of Chinese culture and the search terms and media content that is proving more relevant to them over time. In the current stage of our research, we are investigating the CPM's Asia-Pacific context. Putting this into a broader perspective, we are seeking to both reference and reconceptualize a nuanced concept of "Digital China"—an expression that will be explored in more depth below.

In 2019, China is more connected than ever before, as people are exchanging ideas more rapidly, and the government is pouring massive investment into digital innovation. This is most evident in the trailblazing presence of Chinese digital and telecommunications companies in the domestic market and also abroad; Tencent, Alibaba, Huawei, TikTok, and ZTE are some of the leading players. We ask the obvious question: how are online platforms contributing to China's cultural presence in the world? At the same time, we are mindful of the fact that China's influence is problematical in some parts of the world. China's cultural reputation obviously extends beyond the Chinese mainland but is less "powerful" globally than other nations' cultures, particularly the United States and South Korea (Yecies, 2016; Yecies & Shim, 2019). Despite this lack of global cachet, China is viewed as a rising force in Asian popular culture, endowing our CPM with great potential. Specifically, the CPM's emphasis on impact—a factor which is privileged over outputs—repositions China's "going out" momentum alongside other globally significant soft power forces such as the Korean Wave, Japanese cool, and Bollywood cinema.

In the section "Culture and power" below, we explore the concept of power and its relationship to culture. We briefly consider the term "soft power" and explain how the term entered popular discourse in China, as well as its antecedent expression, "comprehensive national power." We also consider the links between cultural power and industrial development and innovation. In the section "Creative and digital power", we investigate the rise of creative power, noting the continuing ascendency of Western technological innovation—most notably Silicon Valley—and Western entertainment industries (dominated by Hollywood). In the section "Power indexes", we examine a number of well-known indexes and approaches relevant to assessing this type of cultural power: the Portland Soft Power 30 Index, the Lowy Asia Power Index, and indexes developed by Chinese researchers. Collectively, albeit in uneven ways, these and other tools (such as Australian Strategic Policy Institute's "Mapping China's Tech Giants", available at:https://chinatechmap.aspi.org.au/#/splash/), have begun to trace the social and cultural impacts of digital innovation. Finally, the article concludes by introducing the CPM, discussing its development and functioning as well as its utility as a research tool.

Culture and power

Despite China's ubiquitous economic presence, and its considerable political clout in the United Nations, Western political scientists are divided on the question of China's "global power." Susan

Shirk (2008) has called China a "fragile superpower," while David Shambaugh (2013) opts for the expression "partial power." In a collection of essays on China's rise to power, Jae Ho Chung (2015) has identified three positions: the Confident School (China's rise is irreversible), the Pessimist School (China is likely to falter), and the Not yet/Uncertain School (too early to say). At this juncture, it is worth noting that such analyses are devised from the vantage point of the West. As Paolo Urio (2018) reminds us, quoting the sinologist Francois Jullien, when it comes to China, Europeans usually perform a kind of "outsider thinking" that privileges "being"; rather, he says, it is necessary to consider the idea of "becoming." Thus, we pose the question, "what kind of power is China becoming?"

In China itself, the dominant theorists of power in the pre-reform era was Mao Zedong, for whom "power came from the barrel of a gun" and from the dynamics of class struggle according to Marxism. More recently, President Xi Jinping has articulated a powerful guiding vision for national development, the enormously ambitious Belt and Road Initiative. However, the "great rejuvenation" of China is not a new idea—the cause of national rejuvenation extends back to the revolutionary period (1930–1949). Economic renewal became a reality under Deng Xiaoping. The concept was extended to the cultural realm under the leadership of Jiang Zemin and Hu Jintao, coinciding with the 11th (2006–2010), 12th (2011–2015), and 13th (2016–2020) Five-Year Plans. By the early 1990s, the term "comprehensive national power" (*zonghe guoli*) was being used in Chinese policy circles to refer to a composite entity that included economic, cultural, and military power (A. Hu & Men, 2004; Huang, 1992).

By the end of the 1990s, the slogan "go global" was being increasingly used in the rhetoric of development. In 2005, government political advisor Zheng Bijian (2005) wrote of China's "rise to great power status." The term "soft power" entered China's policy lexicon in 2007, including a prominent role for culture. At the 17th National Congress held in October 2007, President Hu Jintao emphasized the need for China to increase its efforts to extend its soft power. In his summary report to the Congress, Hu introduced the term "cultural soft power," declaring,

> We must stimulate the cultural creativity of the whole nation and enhance culture as part of the soft power of our country to better guarantee the people's basic cultural rights and interests, enrich the cultural life in Chinese society and inspire the enthusiasm of the people for progress. (J. T. Hu, 2007)

The priority placed on culture in such statements is worth noting. In China, power is strongly associated with ideology, which is underpinned by disseminating "correct" representations of the nation and national life, or at least representations that are approved by senior leaders and officials. As Weihong Zhang (2010) observes, soft power is understood in terms of existing resources that needed to be cultivated and accumulated. The soft power strategies that followed in the 2000s have sought to advance China's international interests and tell China's story to the world—for example, through overseas news and television channels such as *People's Daily, Global Times*, and China Global Television Network (CGTN). By the 13th Five-Year Plan, cultural power was frequently referenced in party communications. In the introduction to a party document entitled *The Chinese Logic of the Construction of Cultural Power*, the author refers to the auspicious moment when Xi Jinping "utilized a series of new values, new ideology, new judgements, to further respond to the question confronting the Chinese people at this point in history: why and how to construct a strong socialist form of cultural power" (Shen, 2017, p. 1).

What then is cultural power? Does such a concept make sense in today's hyper-connected digital world? Cultural power has a long legacy. Before we look more closely at China, however, let us

consider some of its attributes. First, considering cultural power raises the question of "cultures" in the plural. However, there are problematic aspects to this association. For example, evolutionary theory plays into the hands of social Darwinists, exacerbating racist stereotypes of supposedly stronger and weaker cultures. While the world might be increasingly cosmopolitan, it is equally a dangerous place for those living in racial conflict zones or members of a cultural minority deemed inferior by the dominant group. Moreover, people globally tend to be both territorial and ethnocentric—my land, my culture, and my race are better than yours. While some societies are more open, and others are more collective, there is no real value in taking such a detour. Cultural relativism—for example, the "Asian values" debate that occurred in the early 2000s—valorizes uniqueness. However, this is again problematic: cultures borrow from each other—they are "artefacts, created and recreated" (Jones, 2006, p. 8).

Again, it is impossible to speak of a monolithic world culture (Lechner & Boli, 2005), unless we are referring to norms and "rules of the game" that are recognized on the global stage, such as those pertaining to the Olympic Games or the International Monetary Fund. However, as we shall see, the point of constructing indexes is to identify degrees of commensurability. It is in this area that many of the issues pertaining to "index credibility" lie. Indexes compiled in liberal democracies, such as those derived from Nye's soft power, do not do China any favors. On the Portland Soft Power 30 Index, for example, China languishes near the bottom in 27th position. While it is indisputable that China dispenses a great deal of foreign aid, the cultural indexes utilized by Western researchers place considerable value on pluralism. The World Press Freedom Index compiled by the non-governmental organization (NGO) Reporters Without Borders, for example, ranks China (annually between 2015 and 2018) at 176 out of 180.

The city, and the urban milieu more generally, is conventionally associated with culture. Athens enjoyed the social and cultural power of the agora; throughout European history, a number of other cities were centers of cultural production and innovation: Barcelona, Paris, Milan, Vienna, Venice, London, and, later in the New World, New York and Los Angeles. Here, the association is with Western modernity, a European model of enlightenment largely based on the autonomous individual. European civilization, as we know it today, grew out of its rich heritage of arts and culture, signposted by the individual achievements of figures such as Leonardo, Shakespeare, Cervantes, and Tolstoy. It is little wonder that the UK's official 1997 definition of creative industries celebrated "individual creativity" and "intellectual property" (Department of Media Culture and Sport (DCMS), 1998/2001). However, as Howard Gardner (1993) has shown in his study of seminal artists and thinkers of the modern age, the milieu in which they develop is critical. Our historical knowledge of great cultural centers comes primarily from the output of "great" creative lives. While many great writers and artists were born in cosmopolitan cities, many others moved to large urban centers, where they worked and furthered their reputations. Thus, throughout history, cities have been more closely associated with cultural power than the regions. The work of their talented sons and daughters, recorded for posterity in archives and educational curricula, constitutes the metric of cultural power of the pre-digital era.

Indexes have hence been compiled to assess reputations of cities. Such indexes have become a means for governments to make decisions about infrastructure and for urban planners to promote reputational excellence with respect to particular living and working environments. Richard Florida (2002), for example, has quantified the reputations of cities based on their creative human capital, which he broadly calls "talent"—one of his three T's, talent, technology, and tolerance. One of the more provocative descriptors relating to Florida's analysis of tolerance is a "gay index," signifying

a high proportion of creative types. The Canadian-based Martin Prosperity Institute headed by Florida offers a range of suggestions for assessing the creativity of Chinese cities (Florida, Mellander, & Qian, 2012), using a "hukou index" (aka household registration quotient) as an alternative indicator of openness to the "gay index" (for a critique, see Dai, Zhou, Keane, & Huang, 2012).

In the indexes compiled in liberal democracies, historical context and projection are not given adequate consideration. This is particularly salient in the Asia-Pacific, where cultural power is placed in a historical context. In this article, we use the term very broadly to include the Middle East, South Asia and East Asia, and possibly Oceania (Khanna, 2019), as well as the territory often characterized as the Silk Road. Centers of advanced civilization in central Asia and the Middle East included Babylon, Constantinople, Alexandria, Baghdad, and Isfahan. Further east in the Middle Kingdom was Xi'an, and later Kaifeng, Hangzhou, and Beijing. The default metric here is "civilization," which is itself a problematic term and attracts claims of ethnocentrism. Records of a few great civilizations remain, but many have been lost: for example, in the Great Cultural Revolution in China (1966–1976) and in the looting and sacking carried out by supporters of Islamic State of Iraq and Syria (ISIS) in recent years.

The term civilization, however, has undergone something of a rhetorical return, with China in particular invoking the notion of civilization to justify its economic expansion into the territories once known as the Silk Road. The clash of civilizations that Samuel Huntingdon (1996) warned of is playing out in new ways as the Chinese government exhorts Asian and central Asian nation states to "reorient" their future. Nevertheless, here the model is less a "clash" of civilizations and more a "community of shared destiny." Does this mean, however, that Chinese culture will develop deeper roots in these territories, or does it suggest that new hybrid forms of pan-Asian cultural activity will emerge there?

Creative and digital power

Since the 1990s, we have witnessed a range of newly minted development concepts—including the creative economy (Howkins, 2001), the creative class (Florida, 2002), creative cities (Landry, 2000; Montgomery, 2010), and creative industries (DCMS, 1998/2001)—all of which imply that governments and businesses should invest in creativity and creative education, however these notions are defined. This momentum has only accelerated in the digital age with its technology-mediated creativity—for example, computer-assisted design (CAD), smartphones, start-ups, and "apps for (almost) everything." Individuals are encouraged to be creative, resourceful, autonomous, and to develop the transferable skills of thinking "out-of-the box." Today, this shift toward independent creative thinking is rapidly gaining traction in China, despite criticisms of a competitive education system that encourages rote learning (Appelbaum, Cao, Han, Parker, & Simon, 2018). Meanwhile, consultants are cashing in in droves, offering ways for cities, regions, and nations to raise their ranking on "indexes" that supposedly represent such desirable characteristics as creativity, cultural capital, liveability, connectedness, happiness, quality of life, and air quality.

Advocates of Chinese-style innovation have pointed to the so-called four great Chinese inventions of antiquity: paper, printing, gunpowder, and the compass. Despite these achievements, the stereotype of modern China is of a nation that has lost its ability to innovate. Indeed, Ding (2008), referring to a past golden age, has written about China's lost soft power. By the turn of the 21st century, many Chinese harbored an inferiority complex in relation to the West, a sense that China's

economic success was based on imitation. Such a view has not been corrected by continuing international reports of large-scale copyright infringement. Elsewhere, imitating the success of others was justified by the view that China was a developing nation; after all, it was about technological catch up.

The cultural industries became part of a developmental road map in 2001 (Keane, 2007, 2013; Zhang, 2016). The digital creative industries were subsequently inscribed into the 13th Five-Year Plan (Keane, 2019). The rapid expansion of digital technology led to a new enthusism for the "four new inventions of China": fast trains, cashless payment systems, bike sharing, and e-commerce. Notwithstanding the fact that these systems existed elsewhere in the world, their rapid spread throughout Chinese society constituted a model of innovation—one with an emphasis on the digital domain and the sharing economy. An openness to and, indeed, enthusiasm for technological development is largely responsible for China's contemporary reputation as an innovative nation. In the late 20th century, Western corporations and inventors watched in dismay as Chinese manufacturers, backyard tinkerers, and micro-entrepreneurs reverse engineered their products and services. However, it is this curiosity, sense of discovery, and make-do spirit that has helped give China its technological advantage, allied with substantial support from both central and local government.

It is the development and impact of this public support, coupled with private ventures, that a wide range of indexes have sought to gauge. In the next section, we critique several well-known indexes and methods of assessing levels of cultural power that have accrued from these initiatives. Collectively, albeit unevenly, these and other tools have begun to trace the social and cultural impacts of digital transformation in China and around the globe.

Power indexes

Access to reliable data is a problem faced by researchers in this area. The discussion that follows does not draw directly on the official cultural statistics collected by state agencies in all countries. Such statistics mainly pertain to intangible heritage, as well as tourism and recreation, and use traditional classification systems that are amenable to longitudinal analysis. For example, the United Nations Economic Scientific and Cultural Organization (UNESCO), of which China is a powerful member nation, has made considerable efforts to harmonize international comparisons of cultural data in order to build capacity with respect to its advocacy of cultural diversity (Pessoa, 2015). Elsewhere in the United Nations family, the United Nations Conference on Trade and Development (UNCTAD, 2010; UNCTAD, 2018) has compiled comparative data that ranks national "creative economies." UNCTAD's indexes have been generous to developing countries, in particular where manufacture of electronic devices and the components of "cultural" products are outsourced. However, we are less concerned here with the distinction between a creative output and a manufactured product used to assess cultural content—for example, a television receiver, neither do we wish to engage in discussion of the social and aesthetic value of cultural outputs; we believe that these questions are often best left to expert adjudicators of quality such as critics and curators, or even audiences and users.

In the past, there have been many attempts to calculate the impact of digital transformation and also to rank countries on their national branding strategies and cultural power, either through large-scale surveys and opinion polls or by utilizing big data and computational techniques. Readers may be familiar with some of the dozens of indexes devised by industry, government, and academic groups—for example, those that investigate liveability and smart cities (e.g. the Economist

Intelligence Unit's Quality of Life Index and Global Liveability Ranking and CITYKeys Smart City); the creative economy, innovation, and entrepreneurship (e.g. United Nations' E-government, Cornell/INSEAD/WIPO Global Innovation, Kauffman Foundation's Index of Growth Entrepreneurship, and the World Bank's Digital Adoption Index); and soft power branding for a city or nation (e.g. ANHOLT-GFK-City Brands and Anholt Nation Brands). Other indexes formulated in China or by Chinese experts are beginning to draw attention in the West.

Put simply, these longitudinal and data-driven instruments aim to standardize a set of variables for measuring an observable phenomenon. Two indexes in particular are germane to this study: the Portland Soft Power 30 Index and the Lowy Asia Power Index.

The Portland Soft Power 30 Index is a joint initiative between Portland, a strategic communications consultancy, and the University of Southern California's Center on Public Diplomacy. This annual index covers 60 countries, with data drawn from international polling and secondary sources, and is widely cited in China. The polling data used, which carries a 30% weighting, have an accumulated sample size of over 10,000 drawn from 25 countries across the world. The data assess respondents' "impressions" of a nation's appeal in various categories including cuisine, tech products, friendliness, culture, luxury goods, foreign policy, and liveability. The secondary data, which contributes to the final result with a 70% weighting, deals with the sub-categories of government, digital, culture, enterprise, engagement, and education.

Although culture is a sub-category across both primary and secondary sources, it is given the lowest weighting of all the Portland sub-indices. In an attempt to counter the limitations of using the reach and volume of cultural output to assess cultural influence, the culture sub-index measures both the quality and international reach and appeal of a country's cultural production. Specific measures include annual numbers of international tourists, the global success of a country's music industry, and a nation's international sporting prowess. The digital sub-index is a useful category, although it mainly assesses connectedness and the exercise of "digital diplomacy" through social media platforms. While "digital" also features in the polling data, the focus is on perceptions of a country's tech products.

In 2018, the Portland Soft Power 30 Index ranked the United Kingdom (80.55) as the leading state in terms of soft power, followed by France (80.14), Germany (78.87), the United States (77.80), and Japan (76.22). While developed Western countries dominated the top rankings, the Portland index also recognizes Asia's rise and in 2018 featured a dedicated section on the region for the first time. While Japan continues to perform strongly, in 2018, its regional rivals claimed several positions between 20th and 30th places. Here, South Korea leads the pack (62.75), followed closely by Singapore (62.44), with China scoring 27th place (51.85). For China, this represents an improvement of three places from its ranking in 2015, when the index was first released. On the cultural front, statistics drawn from secondary data put China in ninth place. Interestingly, none of its Asian rivals are in the top 10 (Australia claimed seventh place). Japan, as regional champion and one of the world's top performers, derives its soft power mainly from the sub-indices of digital, enterprise, education, and engagement. The polling results reflect Japan's strong cultural influence in areas such as anime, manga, J-Pop, and consumer electronics.

While the inclusion of polling data in the Portland Index has its merits, the element of digital transformation is only captured here by the sub-category of connectedness—in other words, infrastructure—and perceptions of tech products. The penetration of digital platforms into users' everyday lives affords further opportunities to capture both their perceptions expressed online and their online behavior. The stream of public opinion online is a rich vein to tap into; in other words,

intangible services and media platforms need to be taken into consideration. Moreover, determining how digital methods might best contribute to the indexing exercise is a new challenge.

Portland's weighting system gives a prominent place to the sub-indices of government and foreign policy. Thus, as the index's creators remind us, models of governance and their outcomes for citizens, along with public diplomacy, exert more influence than other indices on the assessment sheet. While formal, official initiatives are an important part of building soft power, the Portland Index could benefit from more attention to informal and unofficial elements. The challenge here is that these features are often hard to capture and assess.

Based in Australia, the Lowy Asia Power Index describes itself as an online analytical tool (or "innovative calculator") for sharpening the debate on power dynamics in the Asia-Pacific. The Lowy team has selected 25 countries and regions, somewhat controversially separating Taiwan from mainland China and its autonomous zones including Hong Kong and Macau. The index includes eight indicators of power: economic resources, diplomatic influence, military capability, economic relationships, resilience, defense networks, future trends, and cultural influence. The Cultural Influence indicator lists the top five countries as the US (93.9), China (49.5), India (42.9), Japan (40.8), and South Korea (25.0). Significantly, China's ranking in this domain is more than three times that of Russia (15.8).

The Cultural Influence indicator is further divided into three sub-themes: cultural projection (40%), information flows (40%), and people exchange (20%), which are all composites of data, mostly gleaned from Google. The following indicators are listed under "cultural projection": Google interest (representing the average Google search over a 12-month period, 2016–2017), the percentage of cultural exports in the relevant UNESCO statistics, the number of brands in the Global 500 directory, the number of buildings taller than 150 meters in the country's financial capital (presumably Beijing with reference to China), the number of countries that can be visited visa-free, and the number of UNESCO-listed World Heritage Sites.

The actual "cultural influence" wielded by these categories bears on reputation only indirectly. Cultural exports is a problematical category as UNESCO designations do not adequately capture audio–visual media, the area into which so much state effort is being diverted in China. One could also challenge the use of Google analytics as a proxy for projection; for example, is searching for "China" regarding issues such as pollution control or governance in any way relevant to "cultural projection?" The number of high-rise buildings in financial districts is the most dubious of all the indicators; it is not explained how this equates with cultural projection other than in terms of status. If one were to use the same proxy in Europe, Amsterdam would score poorly.

In the next category, Google once again comes to the rescue. The metric "information flows" is leveraged into four Google search categories: the number of "interested" searches on Google for news agencies, newspapers, television broadcasters, and radio broadcasters. In addition, there is a category called "international students enrolled abroad." China does less well in "information flows," coming in fifth, behind Russia.

For us, the most interesting point of the Lowy Index and the interactive calculator on its digital platform, which seems to have been designed and maintained with a fairly large budget, is that China comes in second in the region, significantly ahead of Japan and South Korea. Having a large number of UNESCO cultural heritage sites gives China a distinct advantage on this listing. The indicator "People exchanges" also puts China at the top of the list (100), the next closest being India at 72.9, although this indicator is only weighted at 20%. Overall, the Lowy model is a corrective to the Portland index, which does China no favors, although Lowy's reliance on Google

suggests that it is effectively an Anglophone index, given that Google is banned in China at the time of writing. Asian-based search engines, for instance Baidu (People's Republic of China (PRC)) or Naver (South Korea), would likely reveal very different findings.

Although China lacks a comprehensive instrument like the Portland Soft Power 30 Index, China has undertaken experiments involving a series of mini projects that challenge what are viewed as Western-centric and biased approaches to the measurement and ranking of soft power. These studies include "Report on the International Competitiveness of China's Cultural Industry" (2004) by Qi Shuyu of the Chinese Academy of Governance; a qualitative and comparative study of Chinese and American soft power led by Yan Xuetong of Tsinghua University in 2008; "China's Soft Power through International Communications" by Beijing University in 2011, 2015, and 2017; "Global Report on China's National Branding Strategy" by the International Communications Research Center of China International Publishing in 2012, 2013, 2014, and 2015; and the "Evaluation of the Effects of Chinese Culture Going Global" led by Li Huailiang of the Chinese University of Communication in 2013 and 2018. Finally, Yu Dan, director of the Beijing Institute of Culture Innovation and Communication, led a survey in 2015 aimed at assessing people's understanding of Chinese culture; it included respondents from the United States, the United Kingdom, France, Australia, Japan, and South Korea.

Qi's (2004) report is probably the first systematic study of the competitiveness of China's cultural industries. It did so by means of a comprehensive evaluation index, which included five main elements: productivity, demand/market, industry, corporate strategy, and government policies. Yan and Xu (2008) proposed six indexes measuring three major categories to evaluate soft power: global attractiveness (comprising "national model" and culture), global mobilization (comprising strategic relations and the country's role in setting international rules), and domestic mobilization (the ability to mobilize citizens of the upper and lower socio-economic groups).

More recent research by Huailiang Li (2018) has used sentiment analysis, investigating the perception and consumption of China's cultural products. This report focused on the intangible elements that make Chinese culture attractive. These comprised (1) cultural elements, such as Chinese food, kung fu, and medicine, which were seen as holistic, sustainable, and enduring, as opposed to the "superficial" and "transient" vitality of American attractiveness mediated through screen and sport; (2) value elements, particularly the Golden Rule or the ethic of reciprocity found in Chinese philosophy, seen as underlining China's unwillingness to impose its own values on other nations, in contrast with the US; and (3) system elements, especially China's emphasis on regime stability and long-term vision, again in contrast with Western liberal democracies.

Yu Dan's survey focuses on cultural elements. It offered 18 cultural icons including Confucius, the panda, the Beijing opera, and kung fu to test respondents' awareness and understanding of Chinese culture. The panda turned out to be the most widely recognized symbol of Chinese culture, followed by green tea and the Yin and Yang dynamic. Interestingly, while both the panda and kung fu are widely recognized as Chinese symbols, *Kung Fu Panda* is more a manifestation of American soft power—that is, until *Kung Fu Panda 3* is completed through a co-production arrangement between China and Hollywood.

Most of these Chinese attempts to establish an alternative indexation system to quantify and evaluate cultural soft power are in the experimental and conceptual stages. They represent Chinese efforts to reclaim the discursive high ground in assessing the nation's soft power. All criticize the West-centric approach to measuring cultural soft power in existing models and indexes. They also lament the lack of indexes relevant to China and China's unique techno-cultural systems (which

explains China's low rankings in conventional Western instruments). By emphasizing China's competitiveness in the cultural field and its resources in survey and metric design, and by highlighting the importance of sentiment and perception in index-making, Chinese scholars are seeking to provide a more nuanced and "scientific" approach to evaluating China's cultural soft power.

From the perspective of media and communication studies, soft power is essentially a part of a communicative process and a resource for public diplomacy. Hence, the perceptions and sentiments of targeted audiences or markets, rather than deployable resources and agents, should be the primary area of interest for communication scholars. This follows Hayden's (2012) communication-centric and discourse-analysis approach to soft power. Li Ji (2016, p. 84) has suggested three scales for evaluating the impact of soft power; our CPM relates to the second:

Scales	Example approaches
Emotion/sentiment (valence)	Poll, survey, questionnaire, content analysis, big data
Perception/opinion (discourse)	Content analysis, textual analysis, discourse analysis, framing analysis, big data
Behavior (products consuming; institutional and foreign policy–related outcomes)	Big data, framing analysis

The CPM: how it works

The creation of an alternative index to the well-funded (and well-developed) Portland Soft Power 30 and Lowy Asia Power indexes, as well as some of the Chinese initiatives in this area, provided the starting point for this study. Our Digital China CPM aims to build on the Western and Chinese indexes and studies discussed above by bringing together some key analytical tools from computer science and the creative industries. Following Lev Manovich (2018, p. 485), the CPM is designed to facilitate a "surfacing" experience that enables users to engage with variable digital and social media content in order to create new knowledge.

The CPM comprises an interactive online and mobile dashboard that was developed on a relatively small budget as part of an Australian Research Council Discovery Project grant. The dashboard, which is accessible free of charge after users register membership on the CPM site (available at: http://dc-dashboard.digitalchina.net.au), contains two central zones. The first zone features five searchable analytical components: (1) International News Analytic; (2) Chinese News Analytic; (3) Movie, TV, and Web Series Reception Aggregator; (4) Twittersphere Analytic; and (5) Search Engine Trends. The second zone collects and aggregates users' dashboard search and interaction data—what Manovich (2018) calls "digital traces"—as well as their actual search results, and then uses an experimental computation to synthesize a specific CPM. In turn, this index is displayed as a near-real-time cultural power barometer. This "live" metric is designed to capture attitudinal and geo-locational changes over time. In this way, the CPM has the capacity to identify the circulation, timing, and regional specificity of a range of social media and popular and trade press content that is shaping the representation of Digital China.

Each of the CPM's five analytical components aggregate and display reputational calculations based on amalgamated primary sources (e.g. company-generated data and user-generated content) and secondary sources (trade and popular newspaper articles and academic journal articles) harvested by the research team. These particular data sources have been chosen because they represent a mix of

both traditional closed networks—described by McClory (2017) as "self-contained systems that are only influenced from the inside"—and digital social media platforms that afford more open voices via cohorts of opinion leaders (p. 92). Existing big data and computational analysis tools are employed to calculate this live CPM. The rationale behind the utilization of these frameworks (discussed below) shows the project architecture in relation to the analysis of the three main data sources—news, entertainment (movies, TV, and web series), and social media data derived from Twitter.

The International News Analytic aggregates quantitative and qualitative data gleaned from the RSS feeds of 11 press outlets: *The Sydney Morning Herald, The Straits Times* (Singapore), *The Korean Times* (South Korea), *Japan Times, The Star* (Malaysia), *Bnews* (Kazakhstan), *Bangkok Post, Vietnam News, Jakarta Post*, and *South China Morning Post* and *Asia Times* from Hong Kong. It also incorporates nine popular trade press sources, including *China Film Insider, TechCrunch, Digital News Asia, Technode, China File*, and *Wired*, which between them cover many China-related stories on a daily basis. Collectively, these carefully selected sources constitute the most prominent English-language repository of their kind. Anecdotally, the trade titles in particular are among the most widely shared news sources on the LinkedIn platform and especially in Facebook groups interested in following Digital China and contributing to the discussion of its evolution.

This part of the CPM tracks and categorizes keywords and performs sentiment analysis on specific topics covered by these 20 media sources. Using the keywords supplied by their RSS feeds, as well as some predetermined keywords relating to "Digital China," the dashboard generates a series of interactive word clouds based on keyword frequency, enabling users to compare how particular topics are covered at different times and in different regional locations. Users can drill deeper into a particular article and access complementary information by means of a Google search trends graph. By organizing these various sources in this way, the CPM dashboard affords users a more advanced tool than those offered by most customizable news aggregator apps.

Like the International News Analytic, the Chinese News Analytic enables users to generate interactive word clouds that compare and contrast English-language content appearing in leading newspapers published in Mainland China. It includes "official" news sources such as the *People's Daily, Global Times, Beijing Today, Xinhua English, Shanghai Daily*, and *Shenzhen Daily*, which are all sanctioned by the PRC's State Administration of Press, Publication, Film, and Television. These word clouds can be displayed adjacent to those generated by the International News Analytic, thereby providing users with a comparative composite reading of China's official, and thus preferred, representation of Chinese cultural identity.

Each RSS feed is analyzed on a per-article basis to determine if the article is related to "Digital China." Two lists of keywords are predetermined. One contains self-evident keywords such as Alibaba, Baidu, and Tencent, etc. The second list contains topic keywords such as AI, big data, and digital media, etc. In technical terms, a fuzzy matching algorithm based on edit distance matches the article title and summary to both the Digital China and topic keywords. When the algorithm detects a Digital China–related article, the program stores the article and its keywords through an automated process which is updated daily. Hence, when users search for particular content on the news feeds, the articles that match the supplied criteria are filtered and their keywords—either matched or supplied—provide the basis for the word cloud. Finally, when a user clicks on a specific word cloud bubble, they are redirected to a page that contains a more detailed analysis of the keyword in question, including related articles as well as relevant Google trend data.

The Movie, TV, and Web Series Reception Aggregator contains both current and historical data on a selection of Chinese films, television programs, and web series. This third component of the

dashboard features ratings and user data collected from multiple-language sources, including Douban (Chinese), Naver (Korean), and Internet Movie Database (IMDb; English). By displaying these three different rankings side by side, users can gain a sense of their domestic and international reception. The data for this component, which can be filtered by genre, are collected on a weekly basis, thereby displaying changes over time. As discussed below, our analytical instrument also collects users' interactions with these data, incorporating these "digital traces" into the CPM computation.

The Twittersphere Analytic comprises millions of tweets collected from five specific geographic locations: Australia, Singapore, Hong Kong, Macau, and South Korea. Users can specify the time frame and keywords they wish to investigate, and the dashboard will display the filtered tweets accordingly. In addition, a word cloud based on these filtered tweets can be generated, as well as a sentiment analysis and grammatical dependency analysis. This process attempts to shed light on the opinions expressed in the data set—the positive, neutral, or negative status of a comment—as well as the linguistic complexity and style of language used. This area of the dashboard also features a list of popular hashtags associated with "Digital China," and users can access information such as the prominence of particular hashtags over time, influencers (i.e. who is sharing this content with the largest audience), and the geographic distribution of specific texts.

Discovering the overall "impression" created by a particular tweet or a group of tweets is the primary purpose of the Twittersphere Analytic. That is, the dashboard can tell us where particular messages have traveled and to whom, how they have been engaged (in terms of likes, retweets, clicks, and replies), as well as which topics have trended over time and which topics appeal to particular opinion leaders and their followers. For the project team, tracing online opinion leaders and opinion-leading content has become a major objective of collecting big data on demand and the media analytics research related to it (Yang & Yecies, 2016; Yang & Yecies, 2019). In theory, this feature can provide dashboard users with a macroscopic overview of Twitter users' attitudes to Digital China. Although only 10 filtered tweets are displayed on the dashboard at one time, pagination enables all tweets matching the search parameters to be viewed. On demand, users can access a sentiment trend and grammatical dependency analysis on the same page.

Finally, the Search Trends Indicator displays a semi-live view of when and how often a specific search term relating to Digital China is entered on Google—in relation to the overall search volume across different regions worldwide. The results are divided into three parts: interest over time, regional interest, and related searches. These trend reports only include data related to popular terms—search terms with a low volume will not appear in the results. Users can drill down to the level of country, time frame, and specific categories and can also determine the specific location of a particular search term on the larger Google site.

Conclusion

As we have suggested, the interactive CPM dashboard involves the processing of large amounts of data, as well as the collection and analysis of users' digital traces, which are then incorporated into the computation of the live CPM barometer. This instrument brings together a community of researchers and other stakeholders seeking to generate new knowledge of pan-Asian digital culture and activity—beyond conventional indexes that track national branding strategies and cultural power and the surveys and opinion polls and basic computational techniques associated with them. Thus, the CPM offers a possible research platform for exploring aspects of cultural and soft power that differs from existing indexes.

At conference presentations, we have heard concerns that our on-demand index could be biased toward China. In response, we would argue that the CPM offers fresh and evolving insights into the study, formation, and spread of Digital China, while attempting to identify degrees of commensurability. Clearly, the CPM focuses on geo-location data and the timing of user-generated content in ways that were unavailable in the pre-digital era and are beyond the capacity of older cultural power indexes. The new metric established here is a non-ethnocentric and dynamic measure of China's digital reputation, which warrants a more robust conceptualization than existing systems can afford. Since our dashboard link can be easily shared through a wide network of interested parties, it is hoped a growing user base will extend the dimensions of the project and this important domain of media analytics more generally.

Cultural power is elusive because it embodies tacit as well as explicit knowledge. It is difficult to pin down, let alone measure. Another problem is that cultural power is, almost always, manifested retrospectively. Britain's cultural power, for example, derives, among many other factors, from its former colonial outposts, its status as an early adopter of the industrial revolution, and the spread of the English language as the international lingua franca of commerce; all these developments took place over many centuries. While the British themselves might have long nurtured ambitions to be a "great cultural power," it is only in hindsight that the combination of these elements endowed Britain with its (now fading) cultural cachet.

Metric indexes are a tangible means of gauging the progress of a desired objective in the present moment—specifically, the reputational strength of China's technological and digital innovations. In the same ways as all technologies are political artifacts (Winner, 1986), every index incorporates the assumptions and values of its creators. The Chinese government, along with Chinese scholars, are now endeavoring to create an alternate metrics and wrestle back the discursive high ground in a concerted effort to tell China's story differently.

While the CPM does not follow that particular prescription, it seeks to include a broader range of sources—including news sourced from China and internationally, the reception of media content originating in China, and Twitter and Google search terms—to provide a better balance of East versus West measurement criteria. In addition, we make no claims to global reach, but seek to confine our data collection to specific geopolitical areas—Australia, Singapore, Hong Kong, Macau, and South Korea. While such indexes provide insights into the zeitgeist, they should, as we are doing, be complemented by alternative methods of data gathering such as interviews and surveys, with a view to ensuring a robust and scholarly understanding of the current progress and future prospects of Digital China.

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