Flow of Online Content from Production to Consumption

in the Context of Globalization Theory¹

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Abstract

Some studies have regarded globalization as a process of cultural homogenization, whereas others, that of cultural heterogenization. This conflict stems from their focus on either the production or consumption side of cultural products based on globalization theories bifurcated into political economy and cultural studies. This study covers the production, distribution, and consumption sides in online content flow, and examines the effects of economic, geographic, and linguistic factors. This question is explored through the study of longitudinal changes in the number of Internet hosts from 1995 to 2010, online network connectivity among 174 countries, and geographic distribution of the top 300 web domains. The results suggest that the economic factor was most likely to have an impact on the flow of online content from production to consumption, but that its impact weakened over time. In addition, geographic proximity accounted for the bilateral relationship between countries. Limitations of world-system theory are also discussed.

Keywords: Globalization, Cultural Imperialism, Cultural Proximity, Critical Transculturalism, World-System Theory, online content
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1. Introduction

Although globalization has been widely discussed, there is an ongoing debate over its effects on culture. There are three major theories that attempt to explain the influence of globalization on global culture: cultural imperialism, cultural pluralism, and critical transculturalism. Cultural imperialism views globalization as cultural homogenization, particularly Americanization, whereas cultural pluralism regards it as a process of diversification, that is, cultural heterogenization. Between these two perspectives stand critical transculturalism that sees both the vertical flow from the West to the rest (cultural homogenization) and horizontal exchanges across countries (cultural heterogenization) in the globalization process.

This conflict among theories stems from differences in their perspectives. Cultural imperialism, coming from the political economy tradition, tends to find consequences of cultural homogenization from the rise of transnational corporations that produce and distribute cultural products across the world. In contrast to cultural imperialism, cultural pluralism claims that globally distributed cultural products can be avoided or adapted based on the local autonomy, which can facilitate cultural diversity. This contrast between cultural imperialism and cultural pluralism may stem from differences in viewpoints and theories because the former, which is influenced by economic logic, tends to focus on the production and distribution of cultural products by industries, whereas the latter, which is inspired by cultural theories, tends to look at the consumption of cultural products by users. Critical transculturalism denies either the
economic logic or the local-autonomy argument, and calls for the interplay between the two, which may both be embedded in the globalization process.

In addition to differences in analytical viewpoints, a lack of empirical data (Sparks 2007) providing support for theories may contribute to the persistence of the question of how globalization influences global culture. Most studies of global culture have examined television programs and movies because these are among the most widely traded products at the global level and because they represent the most influential cultural form in people’s daily lives. However, the practical difficulties inherent in gathering transaction data on televised programs and movies on a worldwide basis limit research, and therefore previous studies have generally considered only dozens of empirical cases to explain the overall process of globalization. Even one of the most extensive data sets on international film trade does not allow the researcher to go further than confirming the presence or absence of trade relationships between countries and lacks trade volume/value data (Chung 2011).

This lack of empirical support can be addressed in part by examining the Internet, which enables researchers to track the flow of online content. Although Internet use is less pervasive than television viewing, the present study proposes the Internet as a medium best reflecting a global medium, following previous research (Barnett, Park, Jiang, Tang, & Aguillo 2013; Park & Thelwall 2006; Sparks 2007). The Internet, which is somewhat similar to television in that they both have audio and visual cues as well as textual cues, can convey cultural products or cultures per se to its users. However, previous studies of the Internet in the context of globalization have generally regarded it as an extension of the telecommunications network and focused on the network structure of the Internet through the lens of world-system theory (Barnett & Park 2005; Park, Barnett, & Chung 2011), which accounts for the structure of the core, the semi-periphery,
and the periphery based on economic logic (Wallerstein 1974). The present study considers the flow of online content not as a point-to-point global communication medium influenced only by a capitalist structure, but as a worldwide exchange of cultural products and images that can have important cultural consequences.

Overall, in light of the need for more empirical evidence as well as a broader perspective that encompasses both economic and cultural aspects, this study explores how economic and cultural factors have influenced the flow of online content over time.

2. Theories of Globalization

Theories of globalization are broadly based on the following two perspectives: political economy and cultural studies. The political economy of communication has developed since the 1960s, and the unbalanced exchange of cultural products has been examined (Mattelart & Mattelart 2004). Wallerstein (1974), recognizing the dependence of the semi-periphery and the periphery on the core, proposed world-system theory, which envisions globalization not as a new phenomenon but as an extension of capitalism, reproducing the basic structure of inequality with the flow of some value from the periphery to the semi-periphery and then to the core (Chase-Dunn & Grimes 1995; Galtung 1971; Robinson 2007). In line with this theory, previous studies have employed dependency theory to explain the lower economic development of Latin America in the 1970s and attributed the underdevelopment of the periphery to the exploitation of the core in terms of economic and political influences (Chilcote 1974). In the 1970s, debate on the new world information and communication order (NWICO) was held by UNESCO. This debate was divided into the U.S. and U.K. camp, which argued for the “free flow of information,” and the rest, which called for the “free and balanced flow of information” (Kraidy 2005, 23). In the wake
of this debate, *cultural imperialism* drew attention to the underlying dynamics of international relations in cultural and communication matters.

*Cultural imperialism* argues that the exploitative system of the core against the periphery remains through the “totalizing cultural space” regardless of the rise of some “global civil society” and individual receptors as an “active audience” (Schiller 1991). From this perspective, the soft power (Nye 2004) of the center has increased through cultural products of U.S. firms and the influence of the U.S. on international institutions. According to this theory, U.S. cultural exports to the periphery can lead to Americanization or Westernization, and audiences in the Third World are assumed as “an extremely vulnerable and deliberate target of American cultural exports” (Schiller 1991). The impact of media content and its distribution on culture is accentuated through media imperialism, which claims the “colonization of communications space” (Boyd-Barrett 1998) by the center, for example, the dominance of Hollywood movies, news agencies, the global manufacturing of operating systems for personal computers, and global media outlets, most of which are identified as U.S. entities (Boyd-Barrett 1998). Based on political economy, *cultural and media imperialism* sees the globalization process as becoming more susceptible to the cultural power of the center, which can ultimately lead to cultural homogenization. This perspective has been shared by scholars who have presented arguments about “McDonaldization” (Ritzer 2010) and the “worldwide standardization of lifestyles” (Latouche 1996) stemming from Western culture.

Using financial data on transnational media firms for the year 2005 and imports of U.S. television programs by other countries for the year 1997, Sparks (2007) provided support for the *cultural imperialism* argument that the dominance of American media products, although declining slightly, remains overwhelming in the global trade of media content. In addition, media
products distributed worldwide did not have global or hybrid characteristics, but were localized to meet the taste of the local market in his analysis. Moon, Barnett, and Lim (2010) also found that a country’s economic development has considerable influence on the flow of international music content and noted no noticeable changes in the structural inequality between the core and the periphery for the 2002–2006 period.

In contrast to the political economy tradition, cultural studies place greater emphasis on individuals’ cultural autonomy. *World-system theory*, *dependency theory*, and *cultural imperialism* tend to view audiences as cultural dupes directly influenced by American cultural products, whereas cultural studies provide individuals with greater agency, viewing them as having their own creativity and freedom to decode media messages and sometimes to reproduce them in a hybridized form. *Cultural pluralism resonates with cultural proximity theory*, which claims that people tend to prefer cultural products produced by their own countries or cultures because of the culture-specific knowledge required for understanding content and the appeal of their familiarity with locally based issues, themes, and actors (Straubhaar 2007). The phenomenon of cultural proximity is likely to take place between countries that are geographically close to one another and that share common linguistic backgrounds. According to Straubhaar (2007), national or regional markets from areas with similar cultures can successfully compete with transnational media firms. This argument is conceptualized as “geo-cultural media flows” (Thussu 2007) that undermines the totalizing effect of transnational corporations armed with economic power. In this light, although asymmetrical interdependence between countries still exists even within regional markets, globalization can contribute to cultural diversity, not to the homogeneity of the culture of the center.
Based on data from 25 countries across various regions from the 1960s to 2000s in 10-year intervals, Straubhaar (2007) found that national programming during prime-time viewing hours increased over time in most countries except for the U.S. Hispanic market, which had more regional imports. In addition, Latin American and Asian countries preferred regional imports to international imports, and the programming of U.S. television shows declined in Brazil, Chile, and the U.S. Hispanic market. Based on these changes over time, he suggested that emerging regional markets in Latin America, the U.S. Hispanic market, and East Asia provide evidence supporting the phenomenon of cultural proximity. Varis (1984) found increased regional exchanges of television programs from 1973 to 1983 as well as the persistent dominance of the U.S., Western Europe, and Japan as exporting countries. This regionalization has also taken place in international film trade, although it has emerged only partially in Europe and Asia (Chung 2011).

Criticizing cultural imperialism for ignoring the cultural depth of hybridity and cultural pluralism for disregarding the influence of political and economic power dynamics, Kraidy (2005) suggested critical transculturalism. According to Kraidy, culture is neither holistic monoculture (cultural imperialism) nor pluralistic multiculture (cultural pluralism) but synthetic transculture, in which the form of cultural hybridity exists along with the power dynamics to homogenize global culture and with local autonomy to heterogenize global culture. Hybridization can be a global strategy of multinationals for the low-cost expansion of their audiences or an expression of individual creativity.

In sum, cultural imperialism explains the homogenizing effect of globalization spearheaded by global content producers with capitalistic interests, whereas cultural pluralism addresses the heterogenizing movement of globalization by local audiences with different
cultural backgrounds. Critical transculturalism resides in both sides. Given the differences in the theoretical underpinnings, the present study examines how both economic and cultural factors from both production/distribution and consumption sides influence the configuration of global culture.

3. Globalization and the Internet

The Internet can be framed as a global medium that enables human beings to communicate their global citizenship (Khatib 2003), to have a “portable homeland” in which a multispatial self exists (Sloterdijk 2000), and to create interactions through the flow of information, the exchange of valued resources, and cultural meanings (Barnett, Chon, & Rosen 2001; Barnett, Chung, & Park, 2011). This growing presence of the Internet in people’s lives and culture and its technological affordance to connect the world have led to studies exploring the effects of Internet connections between countries on globalization.

Based on a network analysis with a number of inter-domain hyperlinks of 29 OECD member countries for the year 1998, Barnett et al. (2001) found that the U.S. was the most central node, followed by the U.K., Canada, Germany, and Australia. The higher the GDP of the country, the more central its node was, and this correlation was significant (.974, \( p = .000 \)). In addition, the Internet flow had a weak correlation with the language (.202, \( p < .002 \)), but it had no significant relationship with the physical distance between countries. Later, Barnett and Park (2005) compared the hyperlink network of 47 countries (including OECD members) for the year 2003 with that for the year 1998 and found consistent results. That is, the most central countries

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2 There is another branch of literature related to the online content flow in a global context. Studies based on geography and environment and planning have focused on mapping countries’ online presence and examining relationships between geographic proximity and other networks. Please refer to Zook (2001) and Zook, Devriendt, & Dodge (2011).
in 1998 maintained their positions in 2003. Recently, Park et al. (2011) examined the transformation of hyperlink networks between 2003 and 2009 and provided support for previous studies demonstrating the centralized presence of economic superpowers with one exception: the emergence of regional, cultural, and linguistic groupings among semi-peripheral countries in the 2009 network. All these studies have been guided by world-system theory, which corresponds well to the network analysis, which focuses on the structural relationship between nodes. World-system theory organizes the world into the core, the semi-periphery, and the periphery and explains how the exploitative system of capitalism interacts with these groups. However, it falls short of explaining why the interaction takes place within semi-peripheral and peripheral groups, as in the aforementioned case of the 2009 international hyperlink network. Because this theory relies on economic logic, it cannot clearly explain a new cluster group based on countries’ geographic or linguistic proximity. This point is consistent with Worsley and Bergeseon’s (Featherstone 1990) criticism that world-system theory fails to consider the cultural dimension.

Some studies have addressed the cultural dimension to explore the structure of the Internet. Barnett and Sung (2005) used Hofstede’s (1980) dimensions of national culture and found significant relationships between the dimensions of individualism and uncertainty avoidance and the structure of hyperlink networks. However, they focused on national culture, not global culture. From the perspective of communication networks, Rogers and Kincaid (1981) proposed cultural convergence theory, which posits that the cultural difference between countries can be reduced through international communication and that unrestricted communication between countries can lead to a homogenized, universal culture (Barnett 2009; 2011). This theory argues that the process of divergence takes place only when the flow of communication between countries is limited. In this regard, the phenomenon of cultural hybridity
or cultural proximity may play an important role in the transition from a national identity to a uniform, global identity, not to cultural diversity. Based on this theory, Barnett (2001; 2009) envisioned that a universal culture would be formed akin to U.S. culture because of the dominance of the U.S. over the information flow on the Internet. Cultural convergence theory may be susceptible to criticisms similar to those about the diffusion of the innovation model because it relies on the transactional model of communication and regards people as passive receptors of receiving information as encoded and having the least autonomy to decode it differently.

Other studies of global culture on the Internet have provided different interpretations. Rusciano (2000) addressed cultural imperialism on the Internet based on the discourse of other researchers and argued that audiences do not accept messages passively and that the decentralized structure of the Internet allows less developed countries a more powerful voice than before, thereby undermining the dominance of cultural imperialism on the Internet. Focusing on the linguistic aspects of the Internet, Block (2004) and Dor (2004) both found the growing diversity of languages on the Internet, not a global process of Englishization. Using the cases of Hawaii, Singapore, Egypt, and Spanish-speaking Latinos based in the U.S., Block (2004) argued that the Internet is “a medium of identity construction” in which languages under threat are revived, local versions of English (i.e., Singlish) are promoted, and local languages are increasingly emphasized over time relative to English, whose use is confined only to a few elite groups. Observing similar phenomena, Dor (2004, 116) interpreted this tendency as a phenomenon based on “market-based, imposed multilingualism” that is neither “global Englishization” nor “multilingual freedom” and explained that the key driver of online linguistic diversity is global business, which has to penetrate local markets by providing translation
services and using local languages, not some government policies designed to promote national languages or the regional interaction between or revival of ethnic groups. Despite the similar observation of non-Englishization on the Internet, Block’s perspective is closer to cultural proximity theory, whereas Dor’s is closer to cultural imperialism. This contrast further highlights the importance of relying on comprehensive empirical data instead of on a few scattered examples, as they both did.

In sum, this section explored previous research on the flow of online content and two theories that have served as a key theoretical basis for most empirical studies: world-system theory and cultural convergence theory. World-system theory is confined to economic logic and does not fully explain the rise of geographic and linguistic clusters of countries in the context of the flow of online content. Cultural convergence theory addresses a single possible outcome of globalization, that is, cultural homogenization, and does not consider other forms of cultural consequences. Previous studies providing a meta-analysis or case studies have generally been limited in terms of capturing the overall dynamics of international relationships on the Internet (Barnett & Park, 2012). In this regard, the present study draws on theories of global culture to interpret the consequences of globalization by examining the flow of online content over time. In terms of this flow, the study operationalizes the creation of online content as the number of a country’s Internet hosts and measures the distribution of online content based on hyperlink networks of countries. In addition, the study employs the popularity ranking of web domains as a proxy for the consumption of online content (see Table 1).

Based on the above analytical framework and the literature review, we propose the following four hypotheses drawn from a primary research question:
RQ. How does countries' economic, geographic, or linguistic factor influence the flow of online content?

H1. The economic factor is more likely to influence the number of Internet hosts (production) over time than the geographic or linguistic factor.

H2. The economic factor is more likely to influence hyperlink networks (distribution) than the geographic or linguistic factor.

H3. The economic proximity is more likely to influence hyperlink networks (distribution) than the geographic or linguistic proximity.

H4. Online content produced through web domains of wealthy and English-speaking countries in the West is most likely to be consumed (consumption).

4. Method

4.1. Independent variables

We operationalized the economic factor as a country’s income level and classified countries into five groups—(1) high-income OECD countries, (2) high-income non-OECD countries, (3) upper-middle-income countries, (4) lower-middle-income countries, and (5) low-income countries—according to the World Bank Group’s classification based on GNI per capita in 2009.\(^3\)

\(^3\) The World Bank Group classified countries into various groups based on their GNI per capita in 2009 as follows: the low-income group (less than $995), the lower-middle-income group ($996 to $3,945), the upper-middle-income group ($3,946 to $12,195), and the high-income group ($12,196 or more). The high-income group is divided into the OECD and non-OECD groups, which show large differences in their average GNI per capita.

<table>
<thead>
<tr>
<th>Group</th>
<th>Average GNI Per Capita (current USD)</th>
<th>Year of Data Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Income (OECD)</td>
<td>$39,654</td>
<td>2009</td>
</tr>
<tr>
<td>High Income (Non-OECD)</td>
<td>$22,182</td>
<td>2008</td>
</tr>
</tbody>
</table>
For the linguistic factor, we examined the top 10 global languages used on the Internet. According to Internet World Stats, these languages were English, Chinese (Mandarin), Spanish, Japanese, Portuguese, German, Arabic, French, Russian, and Korean, which together accounted for 82.6% of all Internet users worldwide as of June 30, 2010. The official language or the most-used language of each country was identified based on data from Internet World Stats and Infoplease. However, for the statistical analysis, the linguistic variable was classified into English and non-English ones because of a need for statistical practicality with respect to the sample size and the number of levels of independent variables. Conceptually, this dichotomy is valid because English is regarded as the world language (i.e., the most widely shared language across countries) and the contrast between English-speaking and non-English-speaking countries can clearly address the matter of “Englishization” discussed in the literature. The geographic factor was categorized into five areas based on regional Internet registries offered by the Internet Assigned Numbers Authority: Africa, America, Asia-Pacific, Europe, and Latin America.

4.2. Dependent variable

By operationalizing the flow of online content as the number of Internet hosts over time, as done by several studies such as Hargittai (1999), Zook (2001), and Zook, Devriendt, and Dodge (2011), we determined the changes in the number of Internet hosts for each country from January 1995 to January 2010 by using data from the website of the Internet Systems

<table>
<thead>
<tr>
<th>Income Level</th>
<th>Average</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper-Middle Income</td>
<td>$7,471</td>
<td>2009</td>
</tr>
<tr>
<td>Lower-Middle Income</td>
<td>$2,298</td>
<td>2009</td>
</tr>
<tr>
<td>Low Income</td>
<td>$503</td>
<td>2009</td>
</tr>
</tbody>
</table>

http://www.iana.org/numbers/.
The ISC conducted a survey of Internet domains\textsuperscript{7} by determining the number of IP addresses with assigned names. If a host had multiple IP addresses, then the ISC subtracted the duplicate count from the total host count. We used only country code top-level domains (ccTLDs) such as .uk and .dk for the analysis, because generic top-level domains (gTLDs) such as .com and .net were not divided into country-level hosts in the ISC’s data and other sources providing both ccTLDs and gTLDs by country did not provide longitudinal data. Here a caveat is that most hosts based in the U.S. use gTLDs for historical reasons based on the development of the Internet, whereas those in Germany and the Netherlands are most likely to use their own ccTLDs\textsuperscript{9} (OECD, 2009). To account for the potential underestimation of Internet hosts in the U.S., we included gTLDs such as .gov, .edu, and .mil, all of which are reserved for the U.S.’s exclusive use, in the analysis and considered them as U.S. Internet domains (in addition to .us, its ccTLD). Given the limitation of counting only ccTLDs, we focused on longitudinal changes in the number of Internet hosts over 16 years to reduce the bias from excluding gTLDs. Barnett, Chung, and Park (2011) suggested “cracking .com procedures” to decompose gTLDs into the country level, but this procedure is based on the proportion of Internet users who visit .com sites, not on hyperlinks to those sites.

In addition to the longitudinal analysis, which focused on the production side of online content, we conducted a cross-sectional analysis to examine the effects of the three predictors on the distribution and consumption of online content. The longitudinal analysis of Internet hosts was for determining which factors contributed to the expression of opinions and the creation of

\textsuperscript{7} http://www.isc.org/.

\textsuperscript{8} The ISC changed its data collection method in January 1998, and therefore a comparison of new and previous survey results can reveal subtle distinctions.

\textsuperscript{9} The wide variation in ccTLD adoption across countries stems from differences in the goals of domain registries and registration policies (OECD, 2009).
online content over time, whereas the cross-sectional analysis was for examining how the
distribution of this content varied across countries. The distribution of online content was
measured by hyperlinks of Internet domains between countries. For this, we collected data in
November 2010 under the same condition as that for Internet hosts. To generate the number of a
country’s webpages that maintained at least one link to another country’s webpages, we used
Thelwall’s (2009) LexiURL Searcher, a web analysis software tool, that retrieves such pages
from Yahoo’s search engine. This procedure has been frequently used in webometric network
analysis (Park 2010).

To configure the popularity of Internet domains in terms of their use, 300 most popular
domains as of September 2010 were collected through the website of Ranking.com. For this, we
considered both gTLDs and ccTLDs. The ranking of web domains by Ranking.com was based on
their popularity relative to all websites visited by the sample group of over 215,000 Internet users.
These domains were classified by their country of origin, which was identified through their
contact information. If contact information was not explicitly stated on the website, their IP
addresses, which were retrieved through the website of webhosting.info, were used to identify the
country to which the domain was registered.

4.3. Analysis

Generalized linear model analysis was used to examine the effects of the three
independent variables on the dependent variable by year. This model, as an extended version of
the general linear model, addresses dependent variables that do not have normal distribution.
Given that this study’s data set was composed of count variables containing many zeros and had

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10 LexiURL Searcher changed its name to Webometric Analyst in 2011. For further details, please see http://lexiurl.wlv.ac.uk/.
large variance among scores, we selected the generalized linear model to conduct an analysis with a negative binomial distribution. The data set contained many zeros because a substantial number of countries had no Internet domains during the initial part of the study period (the mid-1990s and late-1990s). The data on 237 countries were retrieved, and after excluding those with missing values, 181 countries were included for the analysis.

For the hyperlink analysis, UCINET 6.0 (Borgatti, Everett, & Freeman 1999), a network analysis software package, was used to calculate degree centrality and QAP (quadratic assignment procedure) correlation. In addition, NodeXL (Smith, Milic-Frayling, Shneiderman, Rodrigues, Leskovec, & Dunne 2010), an add-on program for Microsoft Excel, was used to visualize the hyperlink network of countries. The hyperlink analysis covered 1.8 billion hyperlinks of 174 countries.

5. Results

5.1. Online content creation over time

As shown in Figure 1, Internet hosts based in OECD countries dominated those other countries, displaying a sharp increase. In contrast to the results for OECD countries, the number of Internet hosts is slightly higher for high-income non-OECD countries than for low-income countries. Given that a common characteristic of the countries in this group (which included Croatia, Estonia, Latvia, and Monaco) was the small population size, the relative number of a country’s Internet users might have influenced the number of its Internet hosts. Except for high-income non-OECD countries, the number of Internet hosts varied according to GNI per capita.  

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11 On average, the correlation between the number of Internet hosts and the level of GNI per capita was 0.60 (Spearman’s rho) from 1995 to 2010. The correlation coefficient declined from 1999.
Figure 2 shows the dominance of Internet hosts in English-speaking countries over those in other countries during the early years and the recent rise of “others” (those not included among the 10 most widely used Internet languages). The actual number of Internet hosts in English-speaking countries should be somewhat higher than that in Figure 2 because most U.S. domains are gTLDs. Although Internet hosts are not exactly the same as domains, the heavy reliance of the U.S. on gTLDs is likely to influence the number of ccTLD-based Internet hosts. However, even with the potential underestimation of Internet hosts in English-speaking countries taken into account, the result indicating the growth of “others” suggests that the Internet has become less dependent on English, which is consistent with the findings of Block (2004) and Dor (2004).

As shown in Figure 3, the European and the Asia-Pacific regions drove the increase in Internet hosts, but a caveat here is that European countries were heavily dependent on ccTLDs, whereas those in the U.S., China, and India preferred gTLDs (OECD 2009; Barnett et al. 2011). Given this bias, any interpretation of these results should be limited to ccTLD-based Internet hosts.

To examine the relative explanatory power of the three independent variables over time, we considered the size of the Wald chi-square of the three variables and its change as well as the increase in the number of Internet hosts (Figure 4). The results of a statistical analysis for each year indicate that the economic and geographic variables were significant at the p value of less than .001 for the whole study period. In particular, the economic variable had the greatest effect.
on the dependent variable. That is, its Wald chi-square was much higher than that of the other variables. However, its relative impact decreased with an increase in the number of Internet hosts over time. Although this result requires a careful interpretation because of the number of Internet hosts in the U.S., a major economic superpower, was underestimated in this study, the results of a longitudinal analysis indicate that the relative impact of the economic factor weakened over time.

<Insert Figure 4 about here.>

As another significant factor, the geographic variable also helped to explain the flow of online content, but the linguistic variable was significant only from 1995 to 1998. Before 1999, English-speaking countries showed a greater online presence, but from 1999, they showed no clear dominance over non-English-speaking countries in terms of the number of Internet hosts. Overall, the results of the statistical analysis suggest that the economic power of a country, not the language used by its Internet users or its geographic location, is the most important factor influencing its online presence, although the relative impact of the economic factor decreased over time. These results provide support for H1.

5.2. Distribution and consumption of online content across countries

There was a significant correlation between the number of Internet hosts and that of in-links and out-links in 2010: .74 for in-links and .78 for out-links ($p < .001$). This may be because countries with more Internet domains are more likely to have hyperlinks to and from other countries. That is, the higher the visibility through the creation of online content, the more likely the content is to be distributed.
The economic, linguistic, and geographic variables were all significant predictors of in-links and out-links between countries (Table 2). Consistent with the results for the effects of these three variables on the number of Internet hosts, the economic variable had the greatest impact on both in-links and out-links, providing support for H2. That is, those countries with a higher level of GNI per capita were more likely to “influence” others by hyperlinking to others and enjoyed greater “popularity” by having hyperlinks from others (Hanneman & Riddle 2005). Figure 5 visualizes the hyperlink network, which verifies this tendency: The U.S., the U.K., France, Germany, and Japan were those countries that mostly hyperlinked to and were hyperlinked by other countries.

In terms of bilateral relationships, the geographic variable, not the economic variable, had a significant relationship with the number of hyperlinks between countries, although this correlation was weak (.02, \( p = .024 \) for the geographic variable; -.002, \( p = .432 \) for the economic variable). The linguistic variable was not significant (.03, \( p = .067 \)). Previous studies have suggested that two countries’ geographic proximity can predict their historical or cultural proximity. In this regard, countries may network with others based on their shared historical backgrounds, cultures, and interests. Thus, H3 is rejected.

In addition to considering the distribution of online content, we investigated how this content is consumed by Internet users through examining the 300 most popular domains as of

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12 We converted countries’ attributes, including their GNI per capita, language, and geography, into matrices by using UCINET 6.0. Each matrix was composed of one if two countries shared a common attribute and zero otherwise. We examined the QAP correlation between these matrices and hyperlink networks.
September 2010. Non-U.S. domains\textsuperscript{13} accounted for only 29 of these 300 domains. Even non-U.S. domains were biased toward Western countries such as the U.K., Canada, and France. Only four domains were from the Asia-Pacific region, and none was from Latin America and Africa. This indicates that web domains launched in the U.S. were the most consumed and popular ones on the Internet.

\textbf{6. Discussion and Conclusion}

Based on a longitudinal analysis of changes in the number of Internet hosts covering ccTLDs for the 1995–2010 period, we examined the effects of economic, linguistic, and geographic factors on the flow of online content over time. The results of an analysis based on the generalized linear model indicate that the economic variable was the most significant predictor of the creation of online content during the study period. This finding is consistent with Hargittai (1999), Zook (2001), and Zook et al. (2011), all of which found the importance of economic factors by examining the number of Internet hosts or domain names by country. There was a sharp increase in the use of non-English languages, indicating that Englishization was not a widespread phenomenon. That is, speaking English was a significant factor only during the early years of the analysis. However, this does not necessarily imply that the Internet is becoming a true multilingual space, as suggested in Block (2004). Instead, it provides support for Dor’s (2004) interpretation of an imposed form of online multilingualism resulting from corporate strategies, considering that a country’s economic power had the greatest impact on the number of Internet hosts. Rusciano (2000) also agreed that the Internet has grown along with the

\textsuperscript{13} The 29 non-U.S. domains included those for the U.K. (9), Canada (4), France (2), the Netherlands (2), Spain (2), Hong Kong (2), China (1), Belgium (1), Bermuda (1), Germany (1), Israel (1), Micronesia (1), Norway (1), and Sweden (1).
expansion of transnational corporations. As suggested by critical transculturalism (Kraidy 2005), it appears that the Internet is not only becoming a multilingual space through the increased participation of Internet hosts in non-English-speaking countries but also being influenced by the underlying economic logic.

In addition to considering the creation of online content over time, we examined its distribution through an analysis of the hyperlink network of countries for the year 2010. The economic variable was the most significant factor in terms of the distribution of online content. Those countries with large numbers of Internet hosts, which tended to be high-income ones, were the most influential and popular actors in terms of hyperlinks to and from other countries. Although the economic superpowers played more important roles in creating and distributing online content, geographic proximity was more salient than economic logic in bilateral relationships. This result is consistent with the findings of Park et al. (2011), who found an increase in regional clusters in the hyperlink network for the year 2009. According to cultural proximity theory (Straubhaar, 2007), this regional grouping occurs because people tend to prefer content produced in their own countries or in those neighboring countries with similar cultural backgrounds. Straubhaar (2007) explained that this preference strengthens with an increase in the amount of content produced in their own countries. The reason why Barnett and his colleagues found no regional clusters in their early analyses of hyperlink networks (e.g., Barnett et al. 2001; Barnett & Park 2005) may be explained by the fact that the rate of Internet adoption was not high for many countries in 1998 and 2003, when they conducted their analyses.

In terms of the consumption of online content, the most consumed and popular Internet domains were mostly in the U.S. We identified the country of origin for the 300 most popular domains based on headquarters contact information provided by their websites or on the location
of the IP address. Following this procedure, we classified some websites such as google.com, facebook.com, and youtube.com as U.S. websites. This may raise some concerns because although the U.S. headquarters of such a website may benefit from earnings generated by overseas branches, the content uploaded and consumed through the website is likely to be localized or glocalized, not U.S.-oriented. Given a mixture of economic logic and cultural logic, Kraidy’s (2005) critical transculturalism resonates in this context.

According to Waters (2001), the term “globalized” refers to symbolic exchanges that form a particular culture; the term “localized,” to the exchange of resources such as labor, capital, and raw materials; and the term “internationalized,” to political exchanges such as diplomacy and alliances. Content created and shared on the Internet that can facilitate symbolic exchanges across countries can have considerable influence on contemporary culture. Given that the Internet is a conveyor of symbolic processes at the global level, the result indicating the dominance of high-income countries in terms of the flow of online content provides support for cultural imperialism. However, the rise of geo-cultural relationships in the distribution of online content and the localized or hybridized form of online content consumed through U.S.-created websites suggest that the general trend is not necessarily toward cultural homogenization, as predicted by cultural imperialism or cultural convergence theory. In addition, the wider diffusion of the Internet and a decrease in the digital divide in terms of users’ access and skill may lead to a different conclusion. The result indicating a decline in the economic impact along with an increase in the number of Internet hosts provides additional support for further changes in the future.

This study contributes to the literature by considering various theories of globalization to explore the flow of online content and by providing a comprehensive analysis of contrasting
arguments in globalization theories. We examined the effects of the flow of online content on global culture based on various theories of globalization, not on world-system theory, which has provided the theoretical basis for most studies exploring the topic of the present study. Although world-system theory harmonizes well with a network analysis by structuring the world into the core, the semi-periphery, and the periphery, it considers only economic relationships between countries. Acknowledging this limitation and considering the Internet as a conveyor of culture, we examined the theoretical discourse on global culture. Theories of globalization such as cultural imperialism, cultural pluralism, and critical transculturalism discuss the observation of the same phenomena but from different perspectives. We analyzed the effects of both economic and cultural (linguistic and geographic) factors from both production/distribution and consumption sides to provide a better understanding of globalization.

This study has some limitations. As discussed in the “Method and Data Collection Section,” we considered only ccTLDs, which might have led to the underestimation of countries with mainly gTLD-based Internet hosts, such as the U.S., China, and India. In addition, we were able to obtain only the number of Internet hosts for each country from official sources. In this regard, future research should consider a wider range of information, particularly domain ownership and the type of online content. Furthermore, the discussion on globalization and the Internet can be extended to a further examination on the engagement of new media technologies with geopolitical issues across countries such as the Arab Spring and its aftermath on regional and global civil societies (Khondker 2011; Kluver 2013). One of the present characteristics of globalization is that new social networking media, for example, Twitter and YouTube, may facilitate some horizontal connectivity in social mobilization in combination with conventional media such as television, radio, and mobile phone (Khondker 2011; Kim, Heo, Choi, & Park
Beyond the focus of the present study on economic and cultural aspects, the consideration of geopolitical aspects by exploring the actual content shared via the Internet might also help us to understand the consequences of globalization.
References


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### Table 1 Analytical framework of the theories of globalization

<table>
<thead>
<tr>
<th>Domain</th>
<th>Theory of globalization</th>
<th>Consequence of globalization</th>
<th>Focus (viewpoint)</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political economy</td>
<td><strong>World system theory</strong></td>
<td>Cultural homogenization</td>
<td>Production</td>
<td>Number of Internet hosts</td>
</tr>
<tr>
<td></td>
<td><strong>Dependency theory</strong></td>
<td></td>
<td>Distribution</td>
<td>International hyperlink network</td>
</tr>
<tr>
<td></td>
<td><strong>Cultural imperialism</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural studies</td>
<td><strong>Cultural pluralism</strong></td>
<td>Cultural heterogenization</td>
<td>Consumption</td>
<td>Popularity of Web domains</td>
</tr>
<tr>
<td></td>
<td><em>(cultural proximity)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Critical transculturalism</strong></td>
<td>Cultural hybridity</td>
<td>Production/distribution and consumption</td>
<td></td>
</tr>
</tbody>
</table>
Table 2 The impact of economic, linguistic, and geographic variables on in-links and out-links

<table>
<thead>
<tr>
<th>Variable</th>
<th>Wald chi-square</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-link</td>
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<td></td>
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<tr>
<td>Economic</td>
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<tr>
<td>Linguistic</td>
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<td>.013</td>
</tr>
<tr>
<td>Geographic</td>
<td>73</td>
<td>.000</td>
</tr>
<tr>
<td>Out-link</td>
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<td>.000</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>144</td>
<td>.000</td>
</tr>
</tbody>
</table>
Figures

Figure 1. The Internet Hosts by the economic variable

Figure 2. The Internet Hosts by the linguistic variable

Figure 3. The Internet Hosts by the geographic variable

Source: World Bank Group (Economic), Internet World Stat and Infoplease (Linguistic), ISC (Internet Hosts)

Note: The number of Internet hosts is based on ccTLDs, not including gTLDs, except for the U.S.A. The number of Internet hosts of the U.S.A. covers those with suffixes .us, .edu, .mil, and .gov.
Figure 4. The relative impact of economic, linguistic, and geographic variables (1995–2010)

Source: World Bank Group (Economic), Internet World Stat and Infoplease (Linguistic), ISC (Internet Hosts)

Note: The number of Internet hosts is based on ccTLDs, not including gTLDs, except for the U.S.A. The number of Internet hosts of the U.S.A. covers those with the suffixes .us, .edu, .mil, and .gov. Only statistically significant Wald chi-squares (p < .05) are marked on the graph.
Figure 5. The major hyperlink networks of ccTLDs between countries

Note: This network is drawn with NodeXL and only represents hyperlink connections over 10 million. The thickness of the line indicates the number of hyperlink connections between countries. The ccTLDs of some countries (e.g., those of Tonga and Tuvalu) need to be interpreted with caution because these are often used for commercial and other purposes by other nations.