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# The Internet and Democracy

## Global Catalyst or Democratic Dud?

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In this study, we explore the global effect of the Internet on democracy over the period of 1992 to 2002 by observing the relationships between measures related to democracy and Internet prevalence. Our findings suggest that while Internet usage was not a very powerful predictor of democracy when examining full panel data from 1992 to 2002, it was a stronger predictor when we study data from just the years 2001 to 2002. We hypothesize that the jump in the ability of Internet penetration indicators to explain variation in democratization that occurred in 2000 suggests that the Internet may have only recently come into its own as a positive force for democratization. However, these results are not globally consistent, and we show that some regions do not enjoy a positive Internet/democracy correlation suggesting that the Internet can be used both as a tool for democratization as well as an instrument for authoritarianism.

***Keywords:*** *Internet and democracy; Internet and political development; Internet and democratic regulation*

Since the globalization of the Internet, researchers have puzzled as to its effects on political institutions and their operation. In particular, researchers and practitioners alike have asked if the Internet acts as a positive force in the development of democratic systems and ideals. Often, the question has been asked with great expectations for an affirmative answer. Some of this optimism might be due to the correlations found in the diffusion of earlier communication networks (e.g., voice telephony) and democracy (Sun & Barnett, 1994). Another source of the optimism might be, simply put, due to the democratic vision and architectures of the Internet itself (Barlow, 1996).

However, in terms of a rigorous establishment of the democratizing effects of the Internet, the jury is still out and there are a number of reasons why this is so. For one, the sheer quantity of potential variables involved complicates everything. Government regime type, degree of Internet diffusion, and social roles of the Internet are just a few of the variables that may play a role in how the Internet affects democracy. Furthermore, the definition and measurement of many of these variables can be contentious. For instance, the boundaries of the term *democracy*, and how it is measured, are subject to lively debate.

Despite these analytic hardships, the research community continues to explore how the Internet and democracy interrelate. And while debate continues, there is no doubt that rigorous and data-driven analysis of this relationship will benefit scholars and policy makers alike. Indeed, the majority of earlier studies of the effects of the Internet on democracy are case studies and/or largely theoretical analyses. Few previous studies approach the issue of Internet and democracy with data-driven analysis. There are two additional reasons that can explain this: (a) limited Internet data and (b) limited Internet presence especially in the very nations (those with recently dynamic levels of democracy) that are most relevant to such a study.

These limitations have been diminishing, however. From the 1990s, the Internet has exploded globally. In addition, Internet diffusion data are becoming increasingly available. The presence of these new data allow us to statistically explore the relationship between Internet and democracy with greater accuracy than ever before. And even where Internet usage is limited,

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the proliferation of the Internet in other places may still register an impact; it is certainly worth examining whether the Internet has had a democratic effect around the world, if only for the purpose of setting a benchmark.

In this study, we explore the global effect of the Internet on democracy over the 10-year period from 1992 to 2002 by observing relationships between measures related to democracy and an Internet prevalence variable. We study the relationship of a nation's gross domestic product (GDP) per capita (purchasing power parity [PPP]) and adult literacy along with measures of the nation's level of civil liberties and political rights. To represent Internet penetration, we consider the number of Internet users per 1,000 people. Finally, we also utilize an aggregate measurement of a nation's level of democratization.

We employ several methods of analysis to gauge how these various variables relate. The first part of our analysis involves distributions and bivariate correlations. Through these methods we ascertain how well our "democracy-affecting" variables really relate to democracy in the first place.

The second part of our analysis utilizes a simple linear regression model. The potentially democracy-causing variables act as the predictors in the model while the democracy index acts as the dependent variable. We examine changes in the variables' coefficients, both independently and in relation to each other, to determine degrees of relatedness.

## Related Works

In a 1997 RAND paper, Christopher Kedzie provides an account of how information and communication technology (ICT) came to be considered as a democratizing force. Its potential was first realized by politicians and policy makers when it emerged as one of the few theories that could explain the "third wave" of democracy, that is, the fall of the Soviet Union and the proliferation of the democratic political system in Eurasia. Prior to this new wave, the mainstream theory of democratization was that democracy followed economic development, a theory popularized by Seymour Martin Lipset in 1959.

Apparently, simple electronic networks—precursors to the Internet—were used to transmit e-mail to and from foreign sources in the Soviet Union. Kedzie (1997) relates how Relcon—Russia's first privately owned electronic network—was integral to bringing in foreign sources of news through e-mail. This news, suggests Kedzie, may have acted as pins that were able to prick through the walls of the conventional Soviet media, making the conventional media more accountable.

Today, there are myriad theories that explain why electronic networks—more specifically the Internet—affect democracy. A few of the more prominent ones are summarized below. All are cast in terms of how the Internet interacts with democratically relevant information and communication flows, as well as with social capital and the public sphere.[3] We first list those that describe how the Internet can promote democracy and then those that describe how the Internet can hinder democracy.

### Some Democracy-Causing Theories

*The "dictator's dilemma."* One of the more popular Internet-causing theories of democracy is the "dictator's dilemma" (Kedzie, 1997). It is founded on the idea that globalization and globalized markets—largely facilitated and accelerated by the Internet—force governments to keep their countries' communication borders open. The consequent free flow of information not only allows for the efficient passage of commercial information but also for more "democratic" information. The obvious example being that citizens gain the potential to expose government abuse of power, which can have a negative effect on governments in the world community if they are cast as illegitimate, violent, dishonest, or untrustworthy. The Internet's collective characteristics (e.g., low cost, multidirectional capability, etc.) help make this possible. In addition to newsworthy dissent, the Internet can also enlighten citizens of less democratic nations of the comparatively high-income lifestyles associated with democracies and, as a result, they may begin to wish for democratic change. This is the same idea as the geographical spillover or "domino effect" from the traditional democracy literature (e.g., Starr, 1991), except via the virtual world.

*The Internet amplifies trends in international affairs.* Steele and Stein (2002) argue that the Internet amplifies trends in international affairs. What this means is that the Internet acts as a politically neutral "constant," whose main effect is to amplify political situations to new heights. For instance, the Internet in an authoritarian political environment would tend to exacerbate the brutality of the regime, while the

Internet in a democratic political environment would tend to improve civil rights and political liberties. As such, we can determine how much of an effect the Internet has on democracy merely by evaluating a given political situation and multiplying by some Internet factor.

Political Outcome = Political Orientation × Internet Factor.

Looking at democracy over the last several decades, we can see that it has been on the rise since the 1970s (Freedom House, 2004a). Powerful and influential state actors such as the United States and the European Union have been advocating democratic institutions around the world for some time now. Nongovernmental organizations (NGOs) dedicated to exposing atrocities and serving as a conscience for the world have proliferated around the globe. Also, there have been relatively few interstate conflicts in the past couple of decades (Correlates of War, 2005). It seems likely then that the amplification theory of the Internet and world affairs would prescribe that the Internet has helped buttress peaceful and democratic relations around the world.

*The Internet's democratic role in "postinternational" change*. In addition to amplifying extant change, Rosenau and Johnson (2002) posit that the Internet has been a key variable in change itself. (By change, they mean "postinternational" change, postinternational simply referring to the present day international scene as characterized by increased dynamics in world affairs.[4]) Although the authors do not explicitly state which Internet-based changes are democratic, they hint at a few.

At the individual level, the Internet can help people to better determine where they sit on issues because of its extraordinary capacity to gather information. Also at the individual level, the Internet can teach people how to organize to collectively effect change around the world.

At the international level, the Internet has contributed to the rise of a more multicentric world structure in which nation-states have seen their preeminence lessen and nongovernment actors take the stage (see also Mathews, 1997). This increased number of actors means that people can now pick and choose among a range of powerful collectives to associate with and subscribe to (e.g., NGOs, associations, social groups), in addition to their nation-state. These new abilities and skills enable citizens to choose their identity more freely, which may be putting more of a strain on nation-states to look attractive relative to one another and other actors. There are obvious democratic elements to this, including the need for nation-states to provide democratic rights to their citizens so as to build legitimacy on the global stage.

*The new capitalism—enabled by the Internet—embodies democratic values*. In *Globalization, Information, and Change*, Frank Webster (2002) argues that the Internet has helped facilitate a new form of capitalism termed *information capitalism*. In information capitalism, the new world labor market demands highly flexible, contractual, ever-learning workers called *symbolic analysts*, a term coined by Reich (1992). In this new market, bureaucracies and middle management are cut out due to inefficiencies and the ability to replace them with machines.[5]

A symptom of the growing number of symbolic analysts is the growing importance of the principle of meritocracy. "In 1980, only four percent of China's ruling elite had a college degree; now more than 90 percent do" (Kalathil & Boas, 2003, p. 17). Meritocracy does not mean a change in the elite class structure, but it implies that elites increasingly cannot exist in their positions without being educated as symbolic analysts and be subject to the principles of meritocracy. How is this democratic? Because an educated cosmopolitan person is more likely to grasp the importance of democratic institutions and human rights. So through the promotion of information capitalism and its consequent emphasis on meritocracy, the Internet might be indirectly responsible for popularizing democratic norms around the world.

Furthermore, the growing importance of information capitalism makes nations keen to attract "symbolic analysts." Like most people, symbolic analysts prefer to live in areas of low crime, fair governance, and minimal bureaucracy. As such, governments are pushed toward providing attractive, perhaps more democratic, environments to maintain and draw such people to work in their nations.

## Some Democracy-Stifling Theories

*The Marxist conception of the Internet as an extension of the ruling class*. Several scholars (e.g., Barney, 2000; Kalathil & Boas, 2003; Mazrui & Ostergard, 2002; Murdock & Golding, 2004; Strienstra, 2002; Webster, 2002) have voiced concerns that the Internet is acting as an extension of the ruling class and, as such, is not promoting democratic change in political systems.

Perhaps, the loudest advocates of this viewpoint are Shanti Kalathil and Tyler Boas (2003), whose book *Open Network, Closed Regimes* provides several cases of empirical evidence that support this theory. Indeed, only a small percentage of the world's population uses the Internet outside the Western world, and most of this small percentage are elites who are probably averse to the idea of seeing their preeminence wane. Why would elites use the Internet to impose democracy on themselves? Therefore, the argument goes, unless the gap between the elites and nonelites is somehow closed, we will likely see more of the status quo as far as the Internet and democracy is concerned. This is not unlike the "amplification" argument that was explained earlier in the "Democracy-Causing" section, the only difference here being that amplifying trends in international relations do not do anything to help the poor and unrepresented. Indeed, Bruce Bueno de Mesquita and George Downs have recently argued in a 2005 *Foreign Affairs* article that government elites (e.g., in Asia) have learned how to stifle the bottom-up democratic potential of the Internet and still promote economic growth, contrary to Kedzie's (1997) dictator's dilemma argument. These results reflect the sentiment that "computer and information technology can be used as much to keep things the same as to cause change" (Johnson, 2001, p. 12).

*The Internet does not necessarily engage people in politics*. But even in the event that the poor and unrepresented do gain Internet access, it may be that they will not use it for political ends anyway. This condition is not necessarily specific to the poor either. For example, several studies have attempted to determine whether the Internet engages the common American in politics (see Scheufele & Nisbet, 2002). The results have not been very promising. To explain this, Tewksbury & Althaus (1999) suggest that because online news is often formatted in such a way that one story looks like it is equally important to every other story, Internet news seekers attend less to political stories that are traditionally covered on the front page of newspapers (and in television news). Indeed, Internet news seekers are in no way obliged to view political matters at all if they do not want. Consequentially, these people become disconnected with politics, and democracy suffers.

As a corollary, the Internet might not politically engage users who were not engaged prior to their migration onto the Internet. As Scheufele & Nisbet (2002) explain, people are cognitive misers (Downs, 1957; Popkin, 1991) and do not typically seek out (political) information unless they feel they have to. This reflects the Huxlian idea that new communication technologies such as the Internet tend to distract more than empower citizens. In his book *Amusing Ourselves to Death*, Neil Postman (1985) argues that all new communication technologies since the photograph have been geared more toward sociopolitical disorientation than democratization. The reason for this, he explains, is because they are primarily focused on amusement and entertainment rather than rational debate—perhaps the chief cornerstone of civil society and democracy (Dunn, 2005). In the same vein, Lewis Mumford (1934, p. 240) has argued that instantaneous communication tends to trump "the great economical abstractions of writing, reading, and drawing, the media of reflective thought and deliberate action."

## Some Quantitative Studies of Internet and Democracy

In his 1997 RAND paper, Christopher Kedzie tests the dictator's dilemma hypothesis by using linear regression to compare the strength of traditional predictors of democracy including economic development and education, human development and health, ethnicity and culture, as well as indicators that represent pre-Internet ICTs, and studies them against the strength of Internet prevalence. His analyses, which include data from 144 nations, suggest that the Internet is a stronger predictor of democracy than the other more traditional predictors. This research is corroborated by Richards (2002) in his exploration of physical integrity rights and the Internet.

Kedzie's (1997) results may or may not be indicative of a true relationship between the Internet and democracy. His study makes use of data from 1993, a time when the Internet was only beginning to build international prevalence (International Telecommunication Union, 2004). Moreover, he draws rather broad conclusions based on a simple longitudinal analysis (1993 variable levels minus 1983 variable levels).

In any case, not all analyses yield such positive results. For instance, Bimber (2001) used regression analysis to show that the Internet does not stimulate politically inactive Americans into political activity. Additionally, a study by Scheufele & Nisbet (2002) has indicated that the Internet actually depresses the democratic propensities of Americans who frequently use the Internet for entertainment purposes. This, in

addition to a finding that mass media broadcasting (e.g., television, newspapers) plays a more effective role than the Internet in promoting democratic citizenship, suggests that the Internet may not be as conducive to democracy as people might have hoped.

However, Scheufele and Nisbet (2002) caution against overextending the results of their study as there is not yet an established body of quantitative research to build on and compare their results with. For example, it could be that Internet users are more attracted to some forms of democratic knowledge and participation that were not covered by their study's questionnaire or that Internet usage is better measured in alternative ways.

Recent quantitative studies suggest that this might in fact be the case. For example, the results from Horrigan, Garrett, and Resnick's (2004) study indicate that the Internet is, despite the nay-saying studies, successfully exposing Americans to a wider array of political viewpoints, while Gibson, Lusoli, and Ward's (2005) and Kavanaugh, Joon Kim, Pereze-Quinones, Schmitz, and Isenhour's (2008) results indicate that the Internet engages certain sectors of the population in politics who do not normally engage in an off-line capacity.

## Description of Data and Methods

### The Variables

We employ several variables in this study to try to quantitatively access the impact of the Internet on a nation's level of democratization. The independent variables consist of measures often associated with levels of democracy, in particular a nation's GDP and levels of adult literacy, which serve as useful surrogates for the economic and social level of development. In addition, Internet prevalence measured as the number of Internet users per 1,000 people serves as an independent variable. The data for these indicators come from the World Development Indicators database (World Bank, 2004). The sole dependent variable was provided by Freedom House (2004b). It attempts to quantify a nation's level of democratization by aggregating indicators of that nation's level of civil and political liberties.

### Principal Independent Variables

We represent the level of Internet penetration by using the number of Internet users per 1,000 people, measured nationally. This number is approximated by first determining the exact number of Internet subscribers within a nation and then trying to account for the level of sharing among accounts (for instance, via a cyber café or community center or among friends and family members).

We want to control for many of the factors that traditionally are associated with levels of democratization—in particular those related to social and economic development levels. A nation's level of economic development has long been known as a strong predictor of democracy (Lipset, 1959). In addition, Hadenius (1992) has shown that literacy can be an even better predictor of democracy than economic welfare. Of course, while strong correlations are evident, the direction of causal influence of these variables on democracy has been debated (Olson, 1993).

To represent economic development, we use the GDP per capita PPP in constant 1995 dollars. For literacy, we consider the percentage of adults (age 15 and older) who are literate. Both indicators come from the World Bank Development Indicators database (World Bank, 2004).

### Dependent Variable

To represent national levels of democratization, we employ the Freedom House (2004b) scores for political rights and civil liberties. Freedom House measures national political rights and civil liberties by tabulating ordinal sets of survey questions. The resulting political rights and civil liberties scores range from 1 to 7, 1 being the highest score. Our index is computed by summing these two scores and inverting the result; thus, our index runs from 2 to 14 with 14 as the highest level of democratization. Kedzie (1997) reviews a number of scholarly publications that gauge democracy in the same way.

Although it is true that it is difficult to define exactly what democracy means, most of us can readily identify its salient characteristics, especially "that political power should reside in the citizens of a nation, rather than in a single person or a small group of persons" (Johnson, 2001, p. 208). Luckily for researchers, combining together some subsets of these salient characteristics into an aggregate measure is an accepted practice in the scholarly world (Kedzie, 1997). One of the reasons we are able to get away with this is, as Inkeles suggests

> Democracy is a distinctive and highly coherent syndrome of characteristics such that anyone measuring

> only a few of the salient characteristics will classify nations in much the same way as will another analyst who also measured only a few qualities but uses a different set of characteristics, so long as both have selected their indicators from the same larger pool of valid measures. (Inkeles, 1990, p. 5, cited in Kedzie, 1997)

## Method

To determine how the Internet affects democracy, we study the relationship of Internet prevalence to our indicator of democratization (and controlling for economic and social development) using ordinary least squares (OLS) regression. OLS regression is commonly employed to examine cause-and-effect relationships in the social sciences. Kedzie (1997) notes that "[s]tudies of democracy's correlates have relied extensively on the tools of linear regression."

We find that an important explanatory variable for level of democratization (and many other factors), in addition to level of social and economic development, is a nation's geographic region. We have grouped nations into six different regions. By demarcating our data into these regions, we can get some insight on how global results compare with regional results and how geographic region helps explain levels of development.

Kedzie (1997) split the nations according to general regional categories, and we employ the same approach. His categories are as follows: "Western Europe" includes nations that have a dominantly Western European heritage; "Middle East" includes nations in and around the Middle East that are predominantly Muslim; "Africa" includes Africa minus the North African Muslim states included in the "Middle East" category; "Asia" includes the East Asian states, India, and the island nations of the Southeast Pacific; "Latin America" includes all of Latin America except Cuba; and "Eurasia" includes the former Warsaw Pact states and the Balkan states, plus Cuba and North Korea.

While our raw data set contains records from 188 nations, not every nation is represented by a full 11 years of records (1992-2002). This is especially the case for nations in the early 1990s and for the lower income nations. For example, Afghanistan has Internet usage data only for the year 2002.

## Results

There are three parts to this section. First, to get some footing on the principal independent variables, we overview their annual trends around the world from 1992 to 2002. Next, we begin the process of analyzing the relationships between democracy and the independent variables. Here, we use bivariate correlations to try to reveal interesting trends and relations.

Finally, we study a multivariate linear regression model to estimate how much the variance in democratization across nations can be accounted for by the Internet when controlling for the socioeconomic and cultural/regional factors.

**Figure 1**
**Internet Penetration**
**From 1992 to 2002, Plotted by Region**

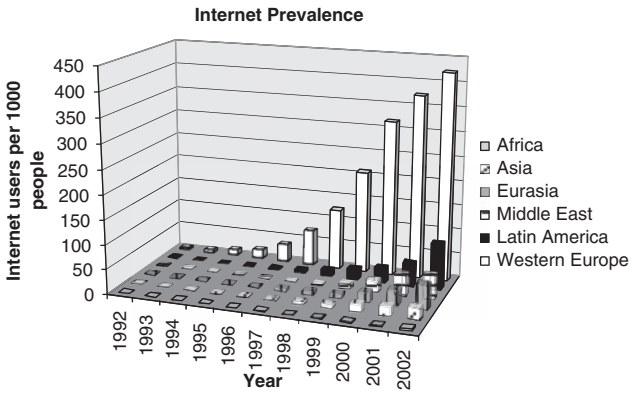
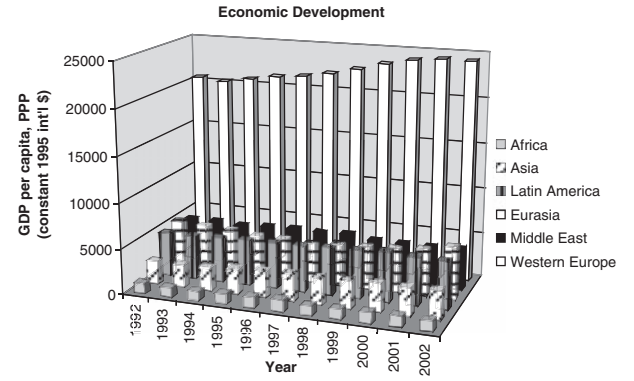



**Figure 2**
**GDP per Capita (PPP)**
**From 1992 to 2002, Plotted by Region**




### Summary of Indicators, 1992 to 2002

In Figures 1 to 3, we overview the changes in Internet use, GDP, and literacy levels broken out by region from 1992 to 2002.

**Figure 3**
**Adult Literacy From 1992 to 2002, Plotted by Region**

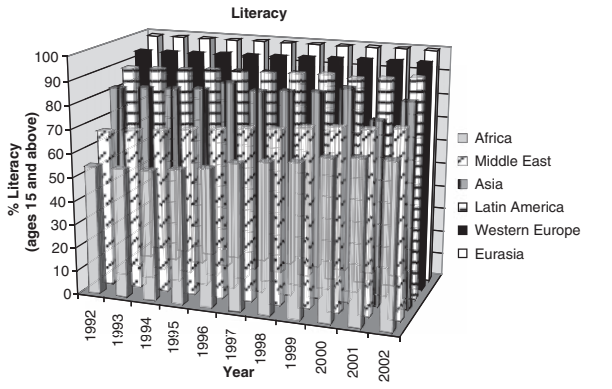



**Figure 4**
**Correlation (and Linear Fit) Between Democracy Variable and Internet Users per 1,000 People**

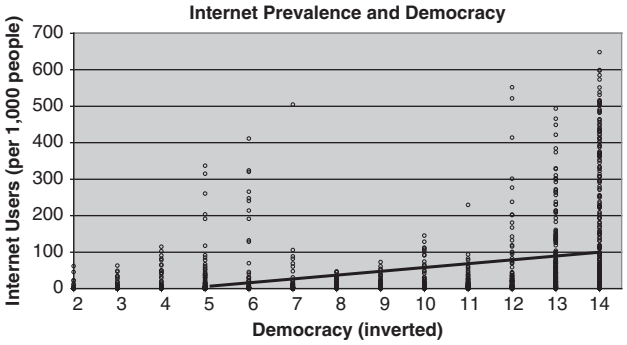



Figure 1 shows that from 1992 to 2002 the Internet proliferated within every regional group. Western Europe consistently held the highest level of Internet users per capita, while Africa consistently held the lowest. Explaining why one cultural region might have more Internet users than another can be a complicated matter. Wolcott, Press, McHenry, Goodman, and Foster (2001) suggest a number of factors including perceived value of the Internet, ease of use, cost and affordability of access, geography, and regulatory framework.

Figure 2 depicts GDP per capita during our period of study. From 1992 to 2002, Western Europe consistently held the strongest economic position, while Africa consistently held the weakest. Also evident is significant economic disparity between Western Europe and all the other regions. Despite this disparity, the economic level of these other nation groups does improve over the 11-year period.

Figure 3 shows levels of adult literacy from 1992 to 2002. We can see that literacy levels consistently improved in Africa and the Middle East, while for the rest of the regions the rates remained fairly constant at high levels. All of Asia, Eurasia, Latin America, and Western Europe maintain literacy rates around or above the 80% mark. Eurasia maintained the most literate population of any nation group.

## Bivariate Analysis

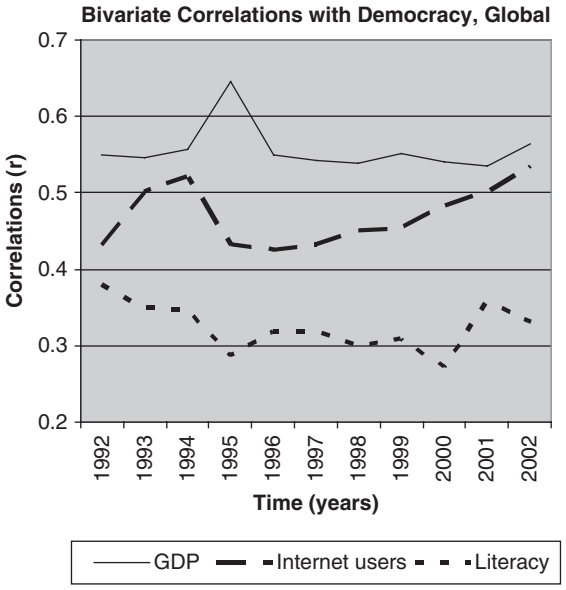
We now study how the independent variables relate to democracy and, in particular, how Internet prevalence helps explain variance in democracy. Figure 4 shows each country's democracy score plotted against its level of Internet penetration. The global correlation between these two variables is evident (Pearson's $r = .39$; $p < .0001$). We also plot the linear fit for these two variables (Internet users [per 1,000 people] = −47.08067 + 10.464863 Democracy [inverted], $R^2 = 0.15$).

This analysis shows that there was a statistically powerful correlation between Internet penetration and level of democratization. To continue, we look at these correlations over time for all of our principal independent variables.

Figure 5 shows how democracy correlates to the three independent variables from 1992 to 2002 across all regions. We can see that economic prevalence consistently holds the strongest correlation with democracy, followed by Internet prevalence and literacy. The more salient observation to make, however, is that while economic prevalence and literacy maintain relatively constant correlations with democracy, the correlation for Internet prevalence gradually strengthens, almost to the same level as economic prevalence. This steady increase in the strength of correlation is suggestive of a growing bond between Internet prevalence and democracy. This growth in correlation strength might be expected given the positive network externalities, the "network effect," which is a salient property of the Internet.

Figures 6 to 8 give us a regionally disaggregated picture of the correlations found in Figure 5. (*Note:* If a region is missing in Figures 6 to 8, it is because most of its correlations were insignificant.) They serve two purposes. First, they show us the strength of the regional correlations for each variable against democracy. Second, they show us which regions' democracy

**Figure 5**
**Correlation of GDP, Internet Users, and Literacy Levels With Democracy ($p < .05$ for All Points on the Graph)**




scores have had significant relationships with the independent variables. We can tell when this happens based on whether the region is included in a figure or not. In other words, when you see a region is included in one of the figures, this implies that democracy has a statistically significant ($p < .05$) relationship with that figure's variable (e.g., GDP) between 1992 and 2002. So, for instance, the presence of Africa, Eurasia, and Latin America in Figure 7 (the GDP/democracy figure) implies that GDP is statistically related to democracy for all these regions, whereas in Western Europe, Asia, and the Middle East, democracy has no significant correlation with GDP.

From these disaggregated figures, it is apparent that the Internet has had more statistically relevant relationships with democracy from around the world than have the other two variables. In the Internet/democracy correlation (Figure 6), 4 of 6 regions are statistically significant while only 3 of 6 regions are in the GDP/democracy correlation (Figure 7), and just 1 of 6 in the literacy/democracy correlation (Figure 8).

There are several other things to take note of in Figures 6 to 8. For one, the correlations involving economic prevalence and literacy from Figures 7 and 8 remain relatively constant between 1992 and 2002. This is not surprising given the lack of change in GDP and literacy rates around the world (see Figures 2 and 3). In contrast, from Figure 6 we can see the

**Figure 6**
**Internet Usage Correlates With Democracy. Only the 1998-2002 Correlations Are Statistically Significant for Latin America ($p < .05$ for All Points on the Graphs)**

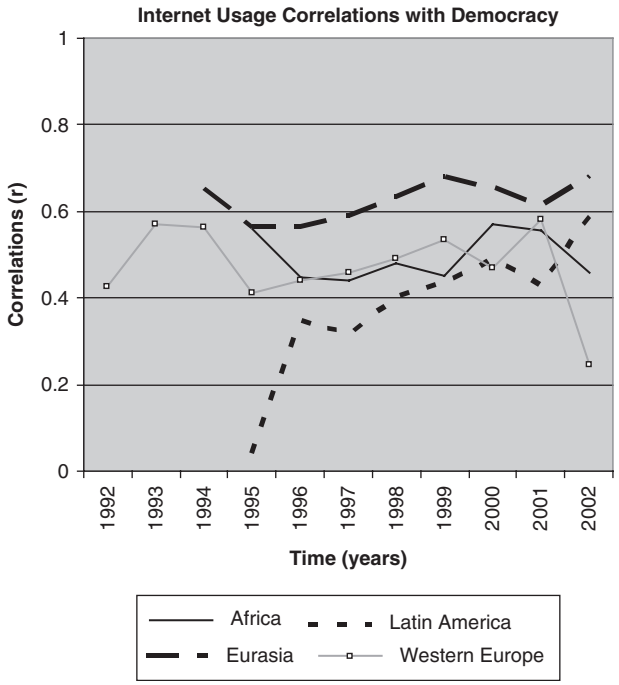



**Figure 7**
**GDP Correlates With Democracy. Correlation for Africa and Latin America Is Mostly Significant ($p < .05$ for All Points on the Graphs)**

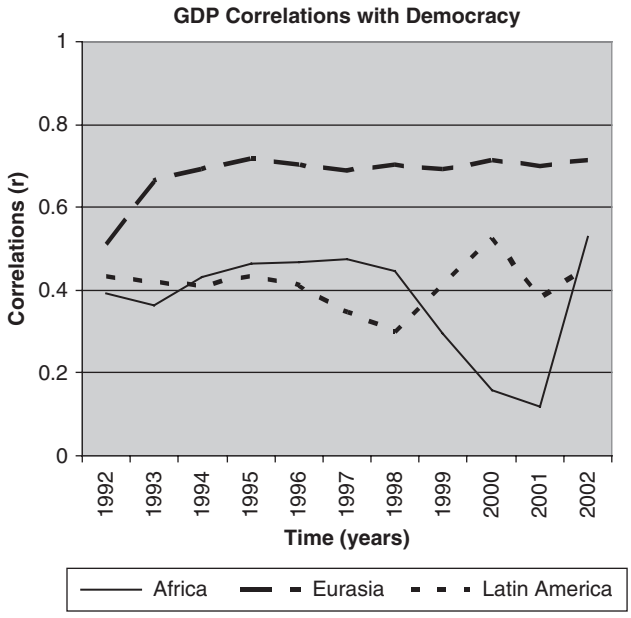
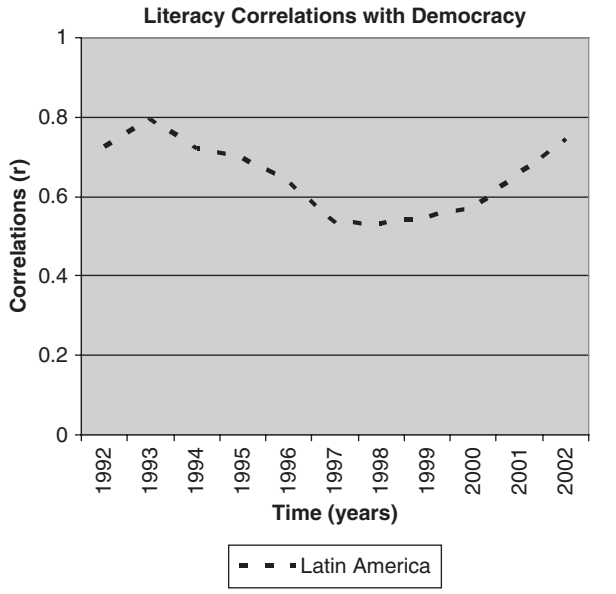


**Figure 8**
**Literacy Correlates With Democracy. Only Latin America Has Statistically Significant Correlations ($p < .05$ for All Points on the Graphs)**




correlations between Internet prevalence and democracy steadily strengthening between 1996 and 2002.

With regard to specific regions, Figures 6 and 7 reveal that Eurasian democracy has stronger correlations to GDP ($r = .7$) and Internet prevalence ($r = .6$) than any other region. And from Figure 8 we can see that literacy only correlates significantly to democracy in Latin America. Because literacy only has a statistically significant relationship to democracy in one out of the six regions, this suggests that literacy is not a very good predictor of democracy in general. Figure 5 affirms this; it situates literacy as the weakest correlate of the three independent variables. As for why Latin America is the only region where literacy and democracy relate (and especially at such high a rate: $r = \sim.7$), the issue is not really addressed in the literature and we are hard pressed to offer an explanation.

Finally, we should add that none of the independent variables managed to correlate significantly with democracy in the Asia and Middle East regions. Therefore, it is highly unlikely that they have had any endogenous democratic influence in those places. This lends credit to the theory that the Internet may only affect democracy in certain situations. Put plainly, this leaves us with an extremely important question: Has the Internet served as an agent for democratic change in some parts of the world (e.g., Africa) but not in others (e.g., the Middle East)?

## Multivariate Relationships Between the Independent Variables and Democracy

Included in this section are several OLS regression models, all of which incorporate the same variables we used in our bivariate analysis. The main purpose of these models is to determine the capacity of Internet penetration to predict democracy levels while controlling for major socioeconomic and regional affects.

The first two models employ 1992-2002 data, and are computed using a Prais-Winston regression function with panel-corrected standard errors. We also check for autocorrelations and, accordingly, you will find that a rho value has been included in all our models. (Autocorrelations never actually proved to be a problem; our rho values were always greater than .8) Although it is preferable to use casewise selection in OLS regression, doing so proved to be impossible (possibly due to a lack of full country records). Finally, because our data are somewhat more cross-sectional than time series (especially for the earlier years of many less economically developed countries), we found it unnecessary to control for fixed effects.

Looking at Table 1, we can make several simple observations about the literacy, Internet prevalence, GDP per capita, and population variables. For one, literacy is a poor predictor of democracy; in fact, it only ever attained statistical significance when we included it as the sole independent variable. Second, both the Internet usage and GDP PC variables achieve $p < .01$ statistical significance, which indicates their ability to predict at least some amount of variation in democracy. As for how much democracy they predict, the interpretation of their coefficient values reveals that it is only a minimal amount. To generate 1 point of democracy, an extra 500 Internet users per 1,000 citizens is needed, or an extra $5,882 of GDP per capita is needed. These numbers are not indicative of variables that promote democracy. Indeed, Internet usage can only grow by 500 per 1,000 users a couple of times before everyone becomes an Internet user, and a $5,882 hike in GDP per capita is unobtainable for many nations around the world. Third, the larger the population the less likely a nation will advance democratically. Although we know of no scholarly study that explains this phenomenon, it has been proposed that "[t]he larger the group the more difficult it is to achieve a common mind and purpose and

**Table 1**
**1992-2002 Regression**

| Variable | Beta Coefficient | Interpretation |
|---|---|---|
| Internet users | .0020** | An extra 500 users per 1,000 citizens yields one extra point on the Freedom House scale |
| Literacy | .0047 | Statistically insignificant |
| GDP PC | .00017*** | An extra $5,882 per capita yields one extra point on the Freedom House scale |
| log(population) | –.34*** | A decrease in population of –294% yields one extra point on the Freedom House scale |
| Asia | –3.22*** | Asian countries have on average –3.22 fewer points on the Freedom House scale compared with all West European countries |
| Eurasia | –1.98*** | Eurasian countries have on average –1.98 fewer points on the Freedom House scale compared with all West European countries |
| Latin America | –.75 | Statistically insignificant |
| Middle East | –6.54*** | Middle Eastern countries have on average –6.54 fewer points on the Freedom House scale compared with all West European countries |
| Africa | 2.93*** | African countries have on average –2.93 fewer points on the Freedom House scale compared with all West European countries |
| Constant (Western Europe) | 15.21*** | The Freedom House score on which all other regional scores are added |
| $R^2$ = .644 | | This model explains 64% of the variation in Freedom House scores |
| ρ = .850 | | Indicates that autocorrelation is not a problem |

Note: Values are for the 1992-2002 data set (Western Europe is the omitted regional category).
*$p$ < .10. **$p$ < .05. ***$p$ < .01.

the more inevitably will it be unified by momentary impulses and immediate and unreflective purposes" (Niebuhr, 1932, p. 48). In other words, the larger the society the less often constituent interests will coalesce, which may lead to less overall representation, especially where there are few political parties. Also, it seems reasonable to assume that political change can be effected more quickly in smaller groups. Because the most accepted and popular system of polity today is democracy, democratic political change may be occurring quicker in less populous nations.

Apart from Latin America, the regional variables enjoy high statistical significance. The reason for Latin America's failing statistical significance could be due to lack of data, or because countries in this region genuinely do not have positive or negative democratic tendencies. Although we have not included the standard error values in Table 1, the Middle East is by far the most statistically significant of all the predictors. This fact combined with the Middle East's strong predictive power in the negative direction tells us that Middle Eastern nations have a strong propensity toward authoritarianism. Asia is also quite authoritarian; it places second after the Middle East in both its low democracy score and high statistical significance. As for African and Western European nations, each appears to have a strong propensity toward democracy.

Finally, the model in Table 1 explains the dependent variable—democracy—quite well at 64%. Thus, the collective combination of independent variables is well suited to predict democracy. The regional variables, however, probably account for the bulk of this variance.

It is also worth mentioning that we tried computing the same model with data containing only those nations with more than one million citizens, as "very small nations may be anomalous" (Kedzie, 1997, chap. 4). When we ran our models over these reduced data sets, however, the results turned out to be pretty similar to those found in Table 1. There were a few changes though: the $R^2$ scores were slightly smaller, and the Internet prevalence variable became slightly more predictive. Because many smaller nations are both somewhat democratic and may have a more

**Table 2**
**1992-2002 Regression With Interaction Variables**

| Variable | Beta Coefficient | Interpretation |
|---|---|---|
| Internet users | −.0007 | Statistically insignificant |
| Literacy | .0013 | Statistically insignificant |
| GDP PC | .0002*** | An extra $5,000 per capita yields one extra point on the Freedom House scale |
| log(population) | −.332*** | A decrease in population of −332% yields one extra point on the Freedom House scale |
| Asia | −3.27*** | Asian countries have on average −3.27 fewer points on the Freedom House scale compared with all West European countries |
| Eurasia | −2.34*** | Eurasian countries have on average −2.34 fewer points on the Freedom House scale compared with all West European countries |
| Latin America | −1.03** | Latin American countries have on average −1.03 fewer points on the Freedom House scale compared with all West European countries |
| Middle East | −6.87*** | Middle Eastern countries have on average −6.87 fewer points on the Freedom House scale compared with all West European countries |
| Africa | −3.41*** | African countries have on average −3.41 fewer points on the Freedom House scale compared with all West European countries |
| Constant (Western Europe) | 15.60*** | The Freedom House score on which all other regional scores are added |
| Internet users * Asia | −.0074* | See Regional Total |
| Internet users * Eurasia | .0074** | See Regional Total |
| Internet users * Latin America | .0046^ | See Regional Total |
| Internet users * Middle East | .0039 | Statistically insignificant |
| Internet users * Africa | .0344** | See Regional Total |
| $R^2$ = .665 | | This model explains 67% of the variation in Freedom House scores |
| ρ = .835 | | Indicates that autocorrelation is not a problem |

| Regional Total | Extra Internet Users per 1,000 Citizens Needed to Advance One Extra Point on the Freedom House Scale |
|---|---|
| Western Europe | Unknown |
| Asia | −135 |
| Eurasia | 135 |
| Latin America | 217 |
| Middle East | Unknown |
| Africa | 29 |

Note: Regional Totals are computed by adding the main Internet users coefficient (if it is statistically significant) with the given interaction coefficient, then computing the extra number of Internet users needed to advance democracy by one point.
*$p$ < .10. **$p$ < .05. ***$p$ < .01. ^Almost * significance.

limited Internet presence, eliminating these nations from the data set might explain for this slightly improved predictive power and higher Internet prevalence coefficient.

*The 1992-2002 data set with interaction terms*. We now investigate what happens to our model when we introduce Internet/regional interaction variables into our regression equation (see Table 2). Kedzie used this technique in his 1997 study to determine how Internet usage affects democracy across regions.

The impacts of the Internet on each specific region can be found in the Regional Total section of Table 2, and are produced by combining the main Internet users coefficient with each of the regional Internet interaction coefficients. (*Note*: Although it is important to avoid translating the interaction term coefficients by themselves—see Braumoeller, 2004—we

**Table 3**
**2001-2002 Regression**

| Variable | Beta Coefficient | Interpretation |
|---|---|---|
| Internet users | .0076^ | An extra 132 users per 1,000 citizens yields one extra point on the Freedom House scale |
| Literacy | .0036 | Statistically insignificant |
| GDP PC | .00028*** | An extra $3,571 per capita yields one extra point on the Freedom House scale |
| log(population) | −.175 | Statistically insignificant |
| Asia | 1.01 | Statistically insignificant |
| Eurasia | .235 | Statistically insignificant |
| Latin America | 1.78^ | Latin American countries have on average 1.78 more points on the Freedom House scale compared with West European countries |
| Middle East | −4.25*** | Middle Eastern countries have on average −4.25 more points on the Freedom House scale compared with West European countries |
| Africa | .61 | Statistically insignificant |
| Constant (Western Europe) | 9.00*** | The Freedom House score on which all other regional scores are added |
| Adjusted $R^2$ = .551 | | This model explains 55% of the variation in Freedom House scores |

*$p$ < .10. **$p$ < .05. ***$p$ < .01. ^Almost * significance.

had to do this because the main Internet coefficient was statistically insignificant.) In this section, we can see that for Asia the overall effect of the Internet is small and negative, while for Eurasia and Latin America the result is small and positive. Because the effects across all regions are small, this suggests that the Internet has not promoted democracy anywhere (except Africa, which only needed 29 extra users per 1,000 people to gain a point of democracy).

Comparing the models in Tables 1 and 2, the population and regional variables as well as $R^2$ and Rho are all highly similar. Also similar is literacy's failure to be a good predictor. What has changed between the two models is the GDP per capita coefficient, which now shows that an extra $5,000 per capita is now needed to stimulate an extra point of democracy instead of $5,882. Computing a model with GDP/regional interaction terms (instead of Internet/regional interaction terms) reveals an even weaker outcome for GDP per capita, with only a few interaction terms even achieving statistical significance (as for those terms that are statistically significant in this model, their coefficient values show that additional GDP actually causes democracy to fall).

Thus far the three main variables—Internet prevalence, GDP per capita, and literacy—have not been able to predict much variation in democracy. Although the weakness of GDP per capita and literacy corresponds with Kedzie's (1997) study, the weakness of the Internet variable contradicts his results. It may be that the Internet has only recently come of age as a predictor of democracy, for example, in the past few years of our data. Happily, when we combine our data from 2001 and 2002, $N$ is still large enough to investigate this matter with multivariate regression.

*The 2001-2002 data set*. The next two regressions were computed using standard OLS regression over 2001-2002 data. Here, we refrained from using Prais-Winston as 2-year data sets are not really time series. For the same reason, we did not check for autocorrelations. Also, this data set was full enough that we could employ casewise regression instead of pairwise regression.

By comparing the 2001-2002 regression in Table 3 and the 1992-2002 regression in Table 1, we can see a few substantial changes. One is that, in Table 3, the Internet prevalence variable gains considerable strength as a predictor of democracy. It goes from needing an extra 500 users per 1,000 citizens to correspond with an additional point of democracy in the 1992-2002 regression to only 132 users in the 2001-2002 regression. This evidence suggests that Internet usage may have come of age only recently as a significant predictor of democracy.

Another noteworthy change is with the GDP per capita variable, which, like the Internet usage variable, gains predictive strength in the 2001-2002

**Table 4**
**2001-2002 Regression With Interaction Variables**

| Variable | Beta Coefficient | Interpretation |
|---|---|---|
| Internet users | −.0040 | Statistically insignificant (see Regional Total) |
| Literacy | −.0101 | Statistically insignificant |
| GDP PC | .00026*** | An extra $3,846 per capita yields one extra point on the Freedom House scale |
| log(population) | −.229* | A decrease in population of −229% yields one extra point on the Freedom House scale |
| Asia | −3.25 | Statistically insignificant |
| Eurasia | −2.91 | Statistically insignificant |
| Latin America | −1.47 | Statistically insignificant |
| Middle East | −6.55*** | Middle Eastern countries have on average −6.55 fewer points on the Freedom House scale compared with all West European countries |
| Africa | −3.31 | Statistically insignificant |
| Constant (Western Europe) | 14.10*** | The Freedom House score on which all other regional scores are added |
| Internet users * Asia | .1322** | See Regional Total |
| Internet users * Eurasia | .0168^ | See Regional Total |
| Internet users * Latin America | .0159^ | Statistically insignificant |
| Internet users * Middle East | −.0047 | Statistically insignificant |
| Internet users * Africa | .0693*** | See Regional Total |
| Adjusted $R^2$ = .589 | | This model explains 59% of the variation in Freedom House scores |

| Regional Total | Extra Internet Users per 1,000 Citizens Needed to Advance One Extra Point on The Freedom House Scale | |
|---|---|---|
| Western Europe | Unknown | Unknown[a] |
| Asia | 8 | −135[a] |
| Eurasia | 60 | 135[a] |
| Latin America | 63 | 217[a] |
| Middle East | Unknown | Unknown[a] |
| Africa | 14 | 29[a] |

a. 1992-2002 interaction results.
*$p$ < .10. **$p$ < .05. ***$p$ < .01. ^Almost * significance.

regressions, but not nearly at the rate the Internet variable does.

As always, literacy remains a statistically insignificant predictor of democracy.

*The 2001-2002 data set with interaction terms*. Finally, the model in Table 4 is identical to that in Table 3, except with interaction terms. Compared with its counterpart 1992-2002 regression in Table 2, the Internet variable has now become a far more powerful predictor of democracy while GDP per capita's predictive power remains relatively unchanged. By looking at the Regional Total section of Table 4, we can see that the 2001-2002 values are much more indicative of a democracy-effecting Internet. Indeed, Asia, Eurasia, Latin America, and Africa now appear to be considerably affected by the number of Internet users in these countries, needing only 8, 60, 63, and 14 extra Internet users per 1,000 citizens, respectively, to spur an extra point of democracy.

To sum up, the 2001-2002 regressions show a marked improvement in the Internet variable's ability to predict democracy. This is in contrast to the other independent variables, which do not undergo a fundamental change in predictive power.

*Lagged models*. Finally, we would like to mention that on lagging the Internet usage variable in the 1992-2002 and 2001-2002 models by 1 year, we discovered that its coefficient improved slightly and that the GDP coefficient remained relatively constant. Lagging by 2 years pronounces these changes a little further still. (We only conducted a 2-year lag for the 1992-2002 models as there was not enough data to run the same computations on the 2001-2002 models.) We did not include these findings within the

regressions above because they do not add very much to our existing results.

*Analytic conclusions*. Our multivariate analysis has revealed several findings. First, we learned that, all in all, our variables explain democracy quite well: Every model's $R^2$ predicted somewhere in the neighborhood of 50% to 70% of all democracy scores. Second, with regard to the regional dummy variables, the Middle East variable was the strongest predictor; its consistently high, negative coefficients suggest that Middle Eastern countries have a strong propensity toward authoritarianism. Conversely, the Africa, Latin America, and Western Europe coefficients consistently predicted in the positive direction. Third, literacy turned out to be a terrible predictor of democracy. Although this may be due in part to a lack of data—especially for the 2001-2002 models—there were still enough cases to essentially confirm its ineffectiveness. Fourth, the larger the population the less a nation is likely to advance democratically. We already commented that this is a largely unexplained (and unexplored) phenomenon, although it has been noted in passing by other studies (e.g., Kedzie, 1997). Finally, although some of our findings are in sync with Kedzie's study—especially his findings that, in the early 1990s, GDP per capita and literacy were terrible predictors of democracy—our results contradict his findings that Internet prevalence is an excellent predictor of democracy during this time period. In contrast, our 2001-2002 models show that while GDP remains a weak predictor of democracy, the Internet makes substantial gains. Perhaps this is an indication that the Internet has come of age as a correlate of democracy.

Although we consider our analysis to be fairly robust, there are a few steps that could have been taken to boost our confidence in the results. For one, employing at least one other Internet usage variable would have helped ensure that our Internet prevalence numbers are accurate. It might have also been interesting if we had broken democracy down into some of its constituent components, such as freedom of the press, openness of the electoral process, and so on to determine whether one component is more effective than others, despite our argument that the components of democracy tend to occur at the same level together. Also, the use of alternative literacy and education variables with more records than the ones we used might enhance our analysis. That notwithstanding, most of our *N*s are sufficiently large that it is highly unlikely a full set of data would have rendered profoundly different results. Finally, breaking down democracy into components would probably introduce more multicollinearity issues into the analysis, because—as we noted—components of democracy tend to occur together.

As for multicollinearity issues constituent within our existing analysis, the three main independent variables of literacy, GDP per capita, and Internet usage all correlate quite highly with one another. This suggests that we should be suspicious about whether our beta coefficients are an accurate representation of reality. After an analysis of these correlations, however, we find that their effects probably do not distort our findings a great deal. First, with regard to the relationship between literacy and Internet usage, the bivariate analysis revealed that literacy is not a significant correlate with democracy, while Internet usage is. This suggests that literacy and Internet usage's relationships to democracy are different by nature and that they are thus safe to use together in the same regression model as independent variables. This is further evidenced by the fact that when literacy was included alone in our trial regression models, its coefficient value is consistently low. And when Internet usage is added to these models (alone with literacy), literacy's coefficient value remains nearly constant. Second, with regard to the relationship between GDP per capita and Internet usage, there does appear to be a multicollinearity here. The inclusion of either one of these variables in a regression model with the other variable always results in one taking on a significant portion of the other's coefficient value (not shown in the tables). Despite this, we can still deduce something about the predictive power of these variables based on a certain multicollinearity trend found within these models. In the 1992-2002 regressions, we found that the GDP per capita coefficient absorbed some of the Internet's beta weight, while in the 2001-2002 regressions the reverse occurred. This suggests that GDP per capita is a stronger predictor for the 1992-2002 data, while Internet usage is a stronger predictor for 2001-2002, which is consistent with the conclusions we draw in our analysis.

## Discussion and Theoretical Framework

The results section reveals a number of things, some of which help confirm existing theories of Internet prevalence and democracy. For example, Corrales (2002) says that the Internet tends to have a greater democratic impact on regime types that are formally democratic but defective in reality, such as some of those found in Latin America. Indeed, our results show some evidence of this. Although our

results show that Kalathil and Boas (2003) may be wrong to downplay the Internet's effectiveness in Asia, and also that cultures with limited internet prevalence (such as Malaysia) may actually be able to harness the political potential of the Internet despite limited penetration (George, 2005), they certainly seem to be right to downplay the democratic impact of the Internet in the Middle East. As well as the Middle East, our statistics indicate that the Internet has not made a significant impact in Western European nations. This was made especially clear when we allocated Africa as the omitted variable in our multiple regressions instead of Western Europe; it revealed extremely low Internet interaction values for Western Europe. This is consistent with Scheufele and Nisbet's (2002) finding that the Internet does not enhance democracy in America.

Unfortunately, it is hard to formulate an all-encompassing theory, especially with such a degree of regional variation. And it is probably the case that a unique set of variables play into exactly how the Internet affects any one nation at some specific time.

In an earlier study, we provide a theoretical framework that helps explain how the Internet can have both democratic and antidemocratic impacts, depending on the context (Best & Wade, 2007). This framework was first posited by Lawrence Lessig (1999) to understand ways in which the Internet can be regulated. A typology of regulators was identified, which included code (or architecture), law, markets, and social norms. We extend Lessig's framework and posit that a regulator is considered democratic or antidemocratic depending on whether it acts on the Internet to enhance or deprive political rights and civil liberties.

From this study, we found that many of the positive democratic regulators tended to yield the same outcome: increased government transparency and increased effectiveness of NGOs. Therefore, we think it is reasonable to assume that this argument—that increased government transparency and increased effectiveness in NGOs—can be used to explain a good proportion of the Internet's apparent connection to democracy. In short, increased transparency equates to an increase in public awareness of government abuses, which can constrain abusive (e.g., nondemocratic) governments to be more accountable to their people. NGOs who make it their mission to expose human rights injustices can help facilitate this, especially in countries without strong civil societies or accountable mass media.

This supposition, that increased transparency and NGO prowess (facilitated by increased Internet prevalence) are largely behind the post–Cold War wave of democracy are not incompatible with those theories of Internet and democracy raised in the "Related Works" section. Kedzie's dictator's dilemma theory (1997), Steel and Stein's amplification theory (2002), Rosenau and Johnson's postinternational theory (2002), and Webster's new capitalism theory (2002) all fit nicely with and around our regulatory framework. The dictator's dilemma theory, for instance, specifies the conditions that have facilitated the existence of some of the positive democratic regulators (e.g., cheap Internet access price). The free flow of information and ideas that results from the new openness that these regulators afford is wholly compatible with our framework. As for the other theories, the amplification theory suggests that democratic values themselves have been internationally popular, which is the reason why the Internet might be helping to effect democratic change. We have no qualms with this explanation. The extant democratic regulators acting on the Internet may indeed facilitate democracy in some regions, but we—like Steel and Stein (2002)—also assert that the Internet could one day act to strip people off their democratic rights. The postinternational theory and the new capitalism theory both require the existence of an Internet where the effects of positive democratic regulators outweigh the negative ones. Given the existence of an Internet with weightier positive democratic regulators, the postinternational theory posits that the Internet helps make for a more multicentric world, which subsequently brings about positive democratic change, whereas the new capitalism theory suggests that the Internet fosters the growth of a certain type of workforce that naturally lends itself to democratic values. Thus, all these theories appear to be in harmony with our own.

Of course, there are also the antidemocracy theories, whose relevance is made evident by some of our quantitative results. For those regions where we found that the Internet failed to promote democratic growth, we can say that negative democratic regulators limited the Internet's potential for democratization. For example, in Asia and the Middle East, self-censorship probably accounts for a great deal of the Internet's inability to help effect positive democratic change. In instances such as these, the Marxist theory of the Internet and politics is applicable, with the ruling class protecting their politically safeguarded status by, at a minimum, refraining from using the Internet for politically incendiary purposes. As for the West's poor Internet/democracy score, along with Scheufele and Nisbet's (2002) evidence that Internet news seekers do not keep up with domestic news very well, it may be that

Western citizens are too jaded or uninterested in politics to care about involving themselves, and so simply do not use the Internet for civil society or democratic purposes (despite the existence of a generally positive confluence of democratic Internet regulators).

## Conclusion

We approached the question of how the Internet affects democracy from a quantitative standpoint. By means of various statistical studies over an 11-year data set (1992 to 2002), we found that the Internet was not able to explain significant variation in democracy cores. In contrast, our 2001-2002 results indicated a substantial relationship between Internet usage and democracy. We also found evidence that this Internet-democracy relationship is not absolute; for instance, consider the variability among regional results. We find that this correlation maintains even when we control for a nation's geographic region, economic level (we use GDP per capita), and social development (we use literacy rate as a surrogate measure)—at least for our 2001-2002 data. Our findings suggest that an extra 131 per 1,000 people corresponds to a 1 point jump on the 14-point democracy index while still accounting for region and socioeconomic development. Overall, we find that Internet penetration explains more variation in level of democratic development within a country than does literacy rates and some of the geographic regions. We suggest that the influx of government transparency and NGO efficacy—which the Internet affords—is behind much of the Internet's statistical success. We do not, however, proclaim that the Internet is a natural boon to democracy. Indeed, we concede that democratization in several regions do not appear to be have been affected by levels of Internet usage. Overall, however, our evidence supports the existence of a positive relationship between democratic growth and Internet penetration.

## Notes

1. Also affiliated with the Berkman Center for Internet and Society, Harvard Law School, and the College of Computing, Georgia Tech.

2. Also a technical consultant with Blackbaud, Inc.

3. Polat (2005) recommends that democracy be analyzed from these facets, with respect to the Internet.

4. The difference between the political system of yesteryear—the "international" system—and the new "postinternational" system is that the international system was state centric whereas the new system is more multicentric.

5. Elaborately explained by Alvin Toffler (1990) in his book *Powershift*.

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