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ABSTRACT There have been many attempts to understand how the Internet affects our modern world. There have also been numerous attempts to understand specific areas of the Internet. This article applies Immanuel Wallerstein’s World Systems Analysis to our informationalist society. Understanding this world as divided among individual core, semi-periphery, and periphery members adds greater clarity to studies of subsections of the world, digital and otherwise.

Since the commercial rise of the Internet in the 1990s, scholars, politicians, journalists and others have been trying to understand this platform for information dissemination. However, most of this examination has focused solely on sections or subsections of the Internet, rather than trying to understand it as a whole. For instance, many deride the prevalence of pornography on the Internet or applaud the ease of shopping online. However, these are only sub-communities of a much larger system. Initially, this work began as an examination of the role of the Internet in education. Continued readings, however, have convinced me that there is a need to understand the whole of the Internet and the larger digital world before it is entirely possible to understand the subsections of the Internet and their applications to areas such as education. In order to better understand the digital world, I think that it is useful to apply a social science theory first proposed by Immanuel Wallerstein in 1974, that of World Systems Analysis.

During the height of the Cold War, Immanuel Wallerstein devised a new way of describing the then modern world. He wrote about it first in The Modern World-System I: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century. Since then, he has added minor revisions and updates to his World Systems Analysis theory (Wallerstein, 2006). World Systems Analysis is a macro-theory which breaks the nations of the world into three main segments: the core, the semi-periphery, and the periphery. The core includes those nations that have capital and means of industrial production, but need labor to produce and markets in which to sell finished goods. The periphery includes those nations which have no capital or raw material production, but can offer labor to produce and markets in which to sell finished goods. The core includes those nations which have no capital or raw material production, but can offer labor to produce and markets in which to sell finished goods. Wallerstein added the middle group, the semi-periphery, from previous core–periphery models. The semi-periphery includes nations which have labor and need of some finished goods, but also have some capital and growing industrialization. As time has progressed there are few states not in the system, but as states come into the system they usually enter the periphery. Once in the periphery they are actively retarded, by the core and semi-periphery, from going to the next level of semi-periphery. This retardation maintains the status of the core and semi-periphery, while ensuring that there are always markets and labor pools from which to draw. Equally important to this theory are the underlying importance of capitalism and the growth of a capitalist system from post-sixteenth-century Europe. By the time Wallerstein first wrote his theory, the entire world was part of a capitalist system. Though communist countries practiced a different system, the world as a whole operated on the principles of capitalism.

Wallerstein’s system is useful for understanding the economic and political situation in the world today, but how can we apply it to understanding the digital world? It is important to define
what this digital world is. The digital world includes what most of us consider as the real world, and all of the activity and interactions that occur digitally, as well. For many of today's western youth there is no delineation between a digital world and the real world – these are both parts of the same world (Taylor, 2007). I would argue that this youthful understanding is correct, and will increasingly become the new conception of how the world operates. I would propose that Wallerstein's argument can then be reapplied to describe a digital world with three segments: core, semi-periphery, and periphery. This digital world is quite similar to the capitalist world Wallerstein described over thirty years ago. The main difference would be that instead of a breakdown based on nation-states, this model can be applied on an overall larger scale to include individuals, though individuals could be single people, institutions, or corporations. Capital in this new world understanding will take on a new form, as information.

A model such as this is useful for broadening the scope of the analysis of educational issues. It allows us to take what may seem like a local issue and situate it in the larger world of digital influences. First one would need to consider the macro-level and work down to the micro-level by listing core members of the digital world. This could include Microsoft, Walt Disney, Dupont, Walmart, MIT, or the US military. After thinking about core members it would be necessary to list members of the semi-periphery. This list may include Lojack, Sonic Solutions, Eastern Illinois University, or the University of Phoenix. Finally, it would be necessary to consider the rest of the digital world, those in the periphery. This list would include television viewers, factory workers, peanut farmers in Gambia, students, and all those who are not in the core or semi-periphery. From this macro, global view it is then possible to focus on a narrower area of interest, such as education, and on a specific topic within that area, such as online education or education in rural Illinois. As the scope is narrowed there may be additions to the semi-periphery, or movements from the semi-periphery to the periphery. These changes may not have initially been considered on the macro-level.

By first envisioning the digital globe, and then focusing on the local, it will be possible to see ties that may not have been apparent in a traditional examination of a particular educational issue. For example, Microsoft surely has an influence on education as a platform and software provider for students and educators, as well as a grant provider for education. The US military equally has an influence and stake in education, as their soldiers need to have certain skills taught in schools. Sonic Solutions sells software which students may use for viewing digital media inside or outside school. Regional state universities and online universities similarly have a stake in students as future producers of knowledge, but also as consumers of knowledge. The periphery may include more of the traditional stakeholders in education. However, a standard study of education may include local employers, taxpayers, andeducators. By first expanding the focus and considering core members, then focusing on the case in point, one can see trends that may not have been considered on first examination and gain a greater understanding of the overall topic. I will elaborate on this underlying theory through an examination of some current, related scholarship.

**Literature**

**Informationalism**

An apt place to begin is with authors who have attempted to map parts of the digital landscape, and define or redefine new words for this techno-geography. Manuel Castells (2004) builds many of his arguments from recent histories of industrialized society. He lays the groundwork for the idea of `informationalism`. Informationalism rises from an industrial society that can produce items and energy. It relies on social, political, military and other extant networks. These networks are collections of people joined by technology. Informationalism joins the technology of a post-industrial society to these varied networks and creates what will become a new type of society. This new society will be global and digital. However, this does not mean that everyone is included in these networks. These networks are socially fragmented, based on exclusion and inclusion. In fact, their goal is to exclude. Through exclusion they can maintain their social, political, military, or other forms of power. Castells discusses two groups of power brokers in these networks. There are the programmers, as he calls them, who program how the network will run and what its goals are. There are also the switchers, those that in his theory appear to have less power in a specific
network, but can join two together, such as someone who connects a political and media network. He sees the real power in future society in the network. The main difference that Castells sees in our modern networks is the technology. He also does not feel that individuals can control networks since they require complex joint action. Castells concludes by suggesting how networks will work in the future not on a capitalist model, but on one more attuned to the hacker culture. They will share information out of the pure joy of creation. In order to achieve this utopian future, everyone must become familiar with technology in order to become part of a network.

Castells has contributed some valuable ideas, which help flesh out the idea of digital systems analysis. First he touches on the idea that digital society is global, furthering the view of the younger generation that there is life which has digital and real-world components, but no actual separation. He also discusses the idea that not everyone is included in the networks, and there is a force that excludes and includes specific people. This is similar to the idea that the core needs the periphery, but actively keeps it from the core or semi-periphery. Castells also focuses upon two power groups: those who create, run, or manage the networks and those who join two or more networks. There seems an implied hierarchy in this theory that those who are programmers are part of the core and those who are the switchers are part of the semi-periphery. However, without convergence it is possible that Microsoft is definitely part of a software core, but not the microprocessor or cable core, which might be occupied by Intel or Comcast. There must be links between a microprocessor and operating system or between an Internet browser and the system on which it operates. Below, Dan Schiller will shed some light on demarcating some of these players.

Castells does not think it is possible for individuals to be the real power brokers or a network unto themselves. While I would agree that in most cases this is not possible, I would not exclude the possibility, nor would some others that we will examine. There are several individuals that might be able to be a network unto themselves, such as Richard Stallman and his influence over the open source movement or Steve Jobs or Bill Gates, coming from the opposite side of the hardware and software divides. Members of the core could be networks, but these networks would be comprised of an individual, company, or perhaps in some cases, schools or states. By excluding the possibility of individual influence, Castells may be overlooking the potential for fully understanding the system he attempts to describe. It is interesting that he ascribes such influence to existing political, economic, or military networks, yet still feels the future will be based on information sharing, which runs counter to existing models. In order for this to occur there will be a huge legal, economic, political, or perhaps military confrontation between existing networks and sharing-oriented networks, for them to gain inclusion in the core.

Castells is not the only one to define informationalism. Christian Fuchs (2007) explains that ‘informationalism is a mode of development of modern society that is structured by and based on knowledge, science and information technologies’ (p. 447). Information has become, like labor, capital, property and power, a defining feature of modern society. Labor today is mainly cognitive. Informationalism and capitalism are mutually connected but not the same, considering the history of the creation of the computer and the Internet from a capitalist militaristic background. So Fuchs says that informationalism is based on computers and the Internet, related to capitalism, and makes information as important as labor, capital (property) and power. There is most likely a core that creates and controls information, a semi-periphery of those who have a part in its formation, and a periphery of those who simply use it, but do not create it.

Fuchs (2005) also looks at the sociotechnological system which is the Internet. As Castells has discussed, networks and communications have been around for years. The difference with informationalism is the technology. While Fuchs is not discounting the technology, he is saying that it is the people, the human actors who use the technology, that are truly creating the technology. This is an evolutionary process. There were first telephones, then radio, then television, then came the Internet which is an extension of telephones. However, the systems of communication are becoming more advanced with the technology and the people. We are not creating mass knowledge, but mass information. It is the job of the people who use the information
to create the knowledge. So, differing from Castells, Fuchs wants to show the importance of human intervention in the system.

Fuchs’ two articles elaborate on Castells’ idea of informationalism. Informationalism is the network, it is the people, it is the information, and how it is used. Information is the new capital or currency of a new, emerging market, one that is not fully understandable without including a digital component. In the modern world informationalism is related to capitalism, and makes information in the digital age part of the economy. So this economy is not capitalist, but informationalist. Perhaps, then, Wallerstein’s philosophy, supported by Fuchs and using Castells’ framework for understanding our modern digital world, is a way to re-imagine society.

Megacorporations and Digital Capitalism

Dan Schiller (1999) adds to this discussion by elaborating on digital capitalism. He begins by chronicling the history of mass communications in a post-World War II America. This history is comprised of many examples of the growth of monopolies within the US communications industry. A shorter version of this history can also be found in Lessig (2004). Schiller follows this monopolizing trend as he examines the global communications industry, which is largely influenced by US markets. He discusses the growth of the Internet, which follows a similar, western influence with a few new players, Intel and Microsoft. He finishes his historical coverage by focusing on the competition and direction of modern education. The competition comes from industry, with its own private institutions of higher learning. The direction he is pointing towards, though not quite complete by the point of publication, is the growth of online learning. After setting the stage for telephone, television, satellite, and the Internet, Schiller discusses his main idea: that we are in an era of digital capitalism. This has occurred through the massive influence of industry on education and how knowledge is received. Digital capitalism is the system of controlling and producing the information for gain and influence. The technology is at a point, directed by the leaders of industry, at which there is almost convergence.

However, with this technological presence we are being led astray by the industries into thinking that there is the possibility of democracy, equality, and freedom through this technology. Schiller (1999) gives examples that as the communications industry grows, it is actually decreasing overall prosperity for the benefit of a few. Those who have the capability, know-how, desire, and connections may be able to succeed in this new world order. However, the promises of the Internet will be hollow to most. Those who have the capability, know-how, desire, and connections may be able to succeed in this new world order. However, the promises of the Internet will be hollow to most. It is this idea by Schiller that I believe helps support the core, semi-periphery, and periphery model. In order for those in the core to survive and remain in power, they must have a periphery to buy or accept their products, their information. However, in order to stay in power they need to keep the periphery complacent and stagnant. Schiller has given an extensive history of how the communications industry has become so powerful in its various forms. He has also laid out the idea of digital capitalism, the power and wealth of this new network. He details a very complete history to illustrate a very disconcerting image. This work shows how a core has been created and has stayed in power to the detriment of the greater world society. His goal is not to give an overarching theory of how the core, semi-periphery, and periphery work, but how a segment of this picture, the communications industry, has carved out a portion of the digital world. However, by describing what Schiller calls digital capitalism and detailing the history of the modern communications industry, he clarifies this Wallersteinian-based model. By understanding the model, we can place Schiller’s coverage into a larger frame to help understand how western, global players influence the rest of those in the periphery, whether they are in Redmond or Rwanda.

Edward Herman & Robert McChesney (1997) lay the groundwork for their argument in a similar manner to Schiller’s. They begin with wire services in the nineteenth century and continue to the modern day with radio, television, print, and the growing Internet (Herman & McChesney, 1997). This history illustrates their thesis that there is a two-tiered control group in charge of global media. These groups are for the most part centered in the United States, or almost exclusively in the West. While these groups do promote, or at least pay lip service, to the ideals of democracy, when democracy comes into conflict with profit, profit wins. Citizens have become consumers in this new market of information. This has also been aided by the profit and defense positioning of
the media outlets as they align with advertisers. The media are not only biased, but sell their influence to the highest bidder. The authors do end on a somewhat brighter note concerning the potential of the Internet. It could be less controlled by the global media, and more controlled by individuals submitting their own content. However, as Schiller has touched on, this is problematic.

Herman & McChesney’s work is important for understanding the growth of entertainment, journalism, and the media that delivers it. By focusing on and discussing this two-tiered control group made up of less than fifty companies worldwide, the authors have designated the global media core. They even discuss how the forty minor companies try to become bigger, to ally with each other or the ten major media players. It is possible that with the core, semi-periphery, and periphery model that it would be possible to group the ten major companies as a core, with the forty other companies either as part of the core or semi-periphery. In a global, digital capitalist world, they are controlling the production and export of information for the rest of the consumers in the world, who make up the periphery. They do need the periphery to consume their products. They can use ulterior means to force their information and methods to be spread. For instance, Herman & McChesney (1997) discuss how resistance within the periphery has led the press to create illusions of financial instability leading to real economic woes. These woes distract the periphery and ultimately lead to acceptance of the global media corporation and its message. These core players are not states, yet reside, for the most part, in western countries. The entities in this case can be companies, or in some cases individuals such as Rupert Murdoch or Richard Branson. With their major influence, these core players are able to spread their information and ways to the periphery, whether this periphery is right next door, in the USA, or in Trinidad and Tobago.

Social Production and Empire

Yochai Benkler (2007) foresees a future similar to that of Castells, with a contest between social production and market forces: for example Linux v. Microsoft. It is very easy and quick to socially produce, and can lead to great innovations, but it also disrupts the industrial model of the past. Many may believe that the companies that own mega-computers must be better because they have more money and brute computational force than two thousand college students with laptops, or even iPhones, sharing their computational capacity. Yet these students can capture more video or pictures, write more, or collectively compute for the same effort that a mega-computer can. They may be able to do so for a lower cost than a mega-computer. Today’s students are in a position where they have created mashups, YouTube videos, and machinima. Why couldn’t they test cures for diseases in biology class, rather than perennially cutting up the same frogs? Benkler is touching on the ideas of the semi-periphery, and the potential it could have for the future. He sees this potential, but also realizes that the mega-corporations, or the core, will attempt as they always have to limit the semi-periphery, and certainly the periphery. He foresees the potential ensuing battle between open source and corporate-created products. While there is the potential and the need for sharing and cooperation, there are also the monetary concerns of the entrenched capitalists.

Benkler (2007), like Schiller, Herman, and McChesney, sees the core as the companies like Microsoft or IBM. The core could also include some individuals such as Linus Torvalds, creator of Linux. However, he points to this middle ground, the semi-periphery, which as a whole may become more competitive than the core. Eventually more production of small pieces of information may dwarf the production capacity of core companies. As Wallerstein has said, however, there is the need for the core to keep the periphery and the semi-periphery down, to keep them out of the core. The core needs to be the producers and needs to have consumers. So if, as Benkler says, the future is social production, created by a large group of semi-peripherites, the core powers can do two things. Either they will allow a few into the core, or do everything they can to keep them out. Schools disallow Facebook, colleges under pressure block Limewire, but perhaps if we listen to Benkler or Lessig, there is potential growth for all to be part of a core or the semi-periphery. This could be a distant future, and it will not immediately raise the periphery and emancipate those in poverty’s bonds. But it can help some of the periphery, perhaps in western nations, and perhaps the semi-periphery and periphery in other nations. Marx had the aristocracy, the bourgeoisie, and the proletariat within each nation, while Wallerstein divides nations into core,
I am claiming that this is a global breakdown based on individuals. However, even with Benkler’s social production and widening of the semi-periphery, will that not simply reorganize a tripartite division of those in power, those with some power, and those who produce/consume?

Michael Hardt & Antonio Negri (2001) examine the history of the last few centuries, focusing on the last century, in order to understand our burgeoning digital world. It is in this historical coverage that they break the world down into three productive paradigms: first is agricultural and mining, second is industrial and manufacturing, and third is manipulation of services or informatization. The western powers are certainly in this third stage; however, these can be fluid stages. Hardt & Negri state that there are problems with other models that assume production is static, because a less developed country can become more developed. Less developed countries, they feel, cannot overcome the overall disparity, but can advance. So a less developed country can become more advanced, but more developed countries will also advance simultaneously, continuing the disparity. The example is given of Italy, which moved from the first to the second paradigm in the 1960s and into the third in the 1970s-80s. However, different parts of the country are at each of the three stages so that some parts are still agricultural, some only partially industrialized, and some informatizationized. Division by nation, then, is not productive, but division by region is more so. Perhaps a smaller division would be even more beneficial.

In the informatization stage, knowledge, service, and communication become the products of immaterial labor. Assembly lines give way to networks that continue the work of capitalism in this new society. However, there is a power structure to these networks, where only a small percentage of people control the products of immaterial labor. As Hardt & Negri (2001) examine the situation for this society, they attempt to forecast what will be the evolution of the future and what theories may apply. In the future, decentralization will continue, and national borders will not be a useful means for considering flows of capital or societal order. In fact, disparity will become more pronounced not only within, but outside current national borders. It will be the job of networks to contain this capitalism as a new imperialism appears. Hardt & Negri are re-examining Marx for the future. They find that we are at a point in which, through communications, it would be possible for the people to control the threat of imperialism and empire.

Hardt & Negri have written a very helpful analysis of the history of government, politics, and capital. They have pointed out some very important themes for the future. The first is the rise of the importance of knowledge for the future of society. This is a new form of capital and is related to ideas repeated by Fuchs. It is interesting that Hardt & Negri are skirting some of the ideas of digital systems analysis as they cover Wallerstein, but do not come to a similar conclusion. They feel that national borders will not be important in the future. They also point out that disparity will continue inside and outside national borders. It is this disparity that I am attempting to point out by individualizing Wallerstein’s theory. Considering the core, semi-periphery, and periphery of individuals rather than countries allows one to look at the levels of production in a global context, bringing in many of the ideas Hardt & Negri touch upon. However, they do not bring it down to an individual level, whether an individual is an entity or one person.

Digital Segmentation

Digital Core

In order to flesh out this model of digital world systems analysis, who, then, are in the ‘core’? In Wallerstein’s theory, the core consists of those westernized countries which have capital and means of industrial production, but need labor and markets in which to sell their wares. A digital core consists of informationist producers who need not be defined by nationality or political boundaries. However, most of those in the core would currently be in the westernized countries, as discussed by Herman, McChesney, and Schiller. This is not a monolithic core. For instance, in the United States, there is a strong digital core. It could geographically be located near the servers of Internet powerhouses such as Amazon, Google, Apple, or Microsoft. This does not mean that everyone around the Redmond, Washington headquarters of Microsoft is necessarily part of it. Some of the residents of Redmond may supply labor to Microsoft and others may buy the products, but unless they are supplying the intellectual capital or software production they are not
part of the core. At this point, I think it is counterproductive to the argument to create a grand list
of who is and is not part of the core. Schiller, Herman, and McChesney have compiled partial lists,
but by focusing on who’s in and who’s out, a grander scheme may be lost. Suffice it to say that
those in the core are those who have and produce digital, informational products, and need to
supply them to the rest of the world. This could include corporations, educators, or in some cases,
individuals.

Digital Semi-periphery
To build on the Redmond example, some of the residents of Redmond may be part of the semi-
periphery. They may provide labor and buy products, but also have ideas and skills that may enable
them to become part of the core at a later point. Those in the semi-periphery need not be bounded
geographically. They might be college students or high school students in Anytown, USA, or the
world. These individuals may be producing mods for video games, YouTube videos, machinima,
or mixing their own music. Those in the semi-periphery may also be small companies that create
web pages or programs for larger members of the core.

The semi-periphery may also include what Fuchs (2008) has called the prosumers. Prosumers
are consumers that also play a part in production. Though the prosumer may fit within the semi-
periphery, it is conceivable that the term prosumer is too specific. As Fuchs has used it, it can refer
to individuals who design shirts for companies like threadless.com. This company allows an
individual to design a shirt, which is then produced for the individual. The company can then sell
that same shirt design to other consumers, as well. The consumer has produced some intellectual
property and created an item for consumption, but also contributed to the larger digital and
business community.

Digital Periphery
The digital periphery is perhaps the easiest to categorize, as it includes everyone else. Unlike
Wallerstein’s model, these people need not be from ‘third world nations’, but may include any of
your neighbors or parents. These people are the consumers of digital items and are the labor that
keeps the digital world going. Those in the periphery may play online games, download music
from iTunes, watch videos on YouTube, lurk on forums, buy items on eBay, or just watch
television. They create a market for the core and the semi-periphery, but are not producing
anything informational for the digital economy. Therefore, a traditional geographical
understanding of the digital world is very imprecise. A sample street from any town in the world
could be inhabited by members of the core, semi-periphery, and periphery.

Digital Marx
It is interesting to note that Wallerstein bases his theory on a Marxian model. The aristocracy,
middle class, and proletariat are replaced by the core, semi-periphery, and periphery. This is
important to consider since a digital world is strongly tied to a capitalist world, as discussed by
Schiller and Fuchs. Without industrialized, economically successful nations it would not be possible
to have the hardware or software to have a digital world, as touched on by Hardt & Negri. Thus
there is a high correlation between being in a wealthy, western, Wallersteinian core nation, and
being part of the digital core. But, in the digital world system we are seeing a reorganization of
importance, and who is part of the core and who is not. To give a real-world example, in 2006
video game sales in the United States alone were $12.5 billion (‘Video-Game Sales Post a Record’,
n.d.). Worldwide sales are expected to reach $48.9 billion by 2011, and reached $37.5 billion in 2007
(‘Video-Game Sales Overtaking Music,’ n.d.). To put this in perspective, that makes world video
game sales alone equal to the gross domestic product of El Salvador or Uruguay, ranked 89th and
90th by the International Monetary Fund (‘List of Countries by GDP,’ n.d.). So the video game
industry as a core brings in more money annually than two-thirds of the world’s nations.

To further put this in context, in Play Money, Julian Dibbell (2006) discusses the real-world
trading of virtual money. Dibbell discusses that, at the time, gold coins in Mythic Entertainment’s
video game Ultima Online traded at a higher rate than two-thirds of the world’s currency. The Linden dollar, used in Second Life, trades at 250 linden to $1, the Korean Won 1118 to $1. What relevance does this have for any of us? This growth of the digital world will continue, allowing those with the capital or knowledge-production skills the opportunity to become part of the digital core, Marx’s aristocracy. There will be those in the semi-periphery who are able to advance or remain in their present location. But if Wallerstein and Marx are correct, in order to maintain status in the core or semi-periphery it is necessary to keep those in the periphery in their place. How will this be done?

Dibbell and Fuchs have both touched on this idea, both describing the same phenomenon. Dibbell (2006) discusses the potential for play as work. He touches on the idea of sweatshops in Third World nations that require workers to play video games in shifts in order to make virtual money that is then traded to players for real currency. If there is a way to earn a living through virtual trade from a game, does that make work-play, or play-work? Fuchs (2008) answers this question in a much more disconcerting way: those in the semi-periphery and periphery are losing their free time as prosumers. Their free time is being appropriated by members of the core and their payment is minimal. An example he gives is of the Amazon Mechanical Turk, which allows people to complete tasks in their free time for companies which pay an average of pennies per hour. While there may be other motivations for completion of these tasks, remuneration based on time on task is minimal. Dibbell and Fuchs are both talking about realms of the digital world as they take advantage of the periphery.

Identification of Segments

How do we identify the digital core and is it useful to do so at this juncture? I have given a few examples of who might fit into certain areas. Some of the authors have gone into more detail about core members as well. However, at this point I believe it is counterproductive to create a list of who fits within each segment and create an overall list. List positioning will certainly change over time as companies that were negligible or non-existent twenty years ago are now important. The main idea that there are core search engines, online retailers, and software developers is important to remember. It is also important to consider how and why they are in the position they are in, and how that affects the overall world, and those in the semi-periphery and periphery. By trying to place the digital world into a tripartite schema I believe greater themes will emerge for the benefit of many.

It is important to remember that the core does have a main goal. From Wallerstein’s initial argument, the goal of the core nations is to keep those in the periphery, in the periphery. I believe this is a goal of the digital core, as well. As with nation-states, I also believe there is a need for those in the core to continue to reassert their authority, presence, and rank. How can the core be influenced? As Richard Stallman has touched on, the freedom fighters in this cause are the hackers. ‘Hackers’ is an over-generalized term, but includes those with the know-how to write programs and get around security measures, and those who can see the greater picture. However, these are also the people who have the greatest potential to become part of the semi-periphery or core. These individuals have the know-how to create new products, jumping from obscurity to coredom. Perhaps hackers take the place of communists in Wallerstein’s world. Communists lived in a closed system, but were operating in a capitalist world. Similarly, hackers have their own networks for conveyance of information, but certainly, by their nature, live in a digital world. Perhaps as some of them enter the semi-periphery and core they can translate some of their initial views to help change the core or expand it.

Conclusion

The concept of digital systems brings together aspects of several different theories. Most important is Wallerstein’s original theory, which is a useful lens for considering many topics in social science or matters of globalization. The idea that the whole world is part of a system, with three divisions and active exclusion by the top two groups, provides the conceptual framework for a systems analysis. Applying this to the digital world, I call my approach digital systems analysis. However, for
a digital world, a comprehensive theory must look at smaller units. Here I bring in Hardt & Negri’s paradigms of development, and their emphasis on the decreasing importance of national borders. Within individual states, several levels of development can be seen. It is unproductive to consider one state as a whole, so digital systems analysis examines smaller units. In our evolving digital world it is also no longer useful to consider economic capitalism from Wallerstein’s model. Hardt & Negri find the highest paradigm for production is informatization, which is a new way to envision the economy. This has also been discussed by Fuchs and Schiller. I draw from them the idea that science, knowledge, information, and technology are the new currencies for our economy. I believe that this is currently true, and will become more so in the future. With this mind, it is important to consider the idea that a digital system, unlike Wallerstein’s, exists both in the physical world and in all the websites, transactions, online worlds, and everything else available through the Internet. This is supported by the discussions of Castells, Dibbell, and Taylor, all of whom explain that there is no difference between online and real-world networks.

Within this digital systems framework, we can examine the interactions between the different levels. In Wallerstein’s theory, the periphery consumes the products from the core and semi-periphery, but is excluded from joining these groups. I have used the work of several authors to describe how this would look when transferred to the digital world. The work of Herman & McChesney describes the power relations between the media’s two-tier control group and the rest of society. I connect this to Wallerstein by reframing it as the digital core, semi-periphery, and periphery. I also use the works of Castells, Benkler, and Schiller to support my claim that the exclusion of the periphery, described by Wallerstein, applies in the digital world, as well.

As mentioned at the beginning of this article, the original intent of this work was to better understand education in the digital realm. It is oftentimes easy to be seduced by video games in education or online delivery of educational content. However, it is also important to consider who is being helped and who is being excluded, who is in charge and who is being charged. By applying digital systems analysis theory to various areas, educational and otherwise, greater themes may be drawn out.

If this model holds that people are purposefully kept in the digital periphery, then what will that mean for the future and how should we deal with it? Today, people in the United States have varied concerns, such as the economy, insurance, defense, race, marriage rights, abortion, and education. Worldwide concerns will vary in ranking, but all concern quality of life issues. In a digital world, what issues are important and how will they be viewed and handled? In a digital world, should we be more concerned with access to the Internet, computers, and all things digital, or with empowering people with the necessary skills to become part of the semi-periphery and core? If this does fit a Marxist model, then what will it take, and can it be possible for the periphery to rise up in revolution or to achieve equality?

References


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