Social Position and the Internet 'Divide': Network Centrality as a Dimension of Social Position

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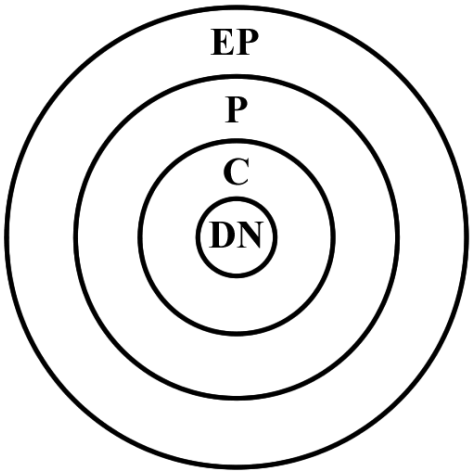
Samenvatting

In deze bijdrage worden enige resultaten gerapporteerd van onderzoek naar factoren die een rol spelen bij het ontstaan van een kloof tussen zij die wel en zij die niet beschikken over toegang tot Internet. Daarin worden vragen beantwoord naar mogelijke oorzaken en maatschappelijke consequenties van wat meestal wordt aangeduid met de term 'digitale kloof'. Aan de hand van literatuurstudie wordt nagegaan in hoeverre er een relatie bestaat tussen sociale positie en het gebruikmaken van Internet. Met behulp van recent empirisch onderzoeksmateriaal uit Nederland wordt een aantal hypothesen getoetst dat betrekking heeft op de relatie tussen iemands maatschappelijke positie (met name geslacht en leeftijd) enerzijds en de toegang tot het Internet, alsmede de wijze waarop gebruik gemaakt wordt van het Internet (het al dan niet raadplegen van nieuwssites) anderzijds.

Centre and Periphery

In his article 'Foreign policy opinion as a function of Social position' (1964), Galtung analyzes social structure as one that is divided into two parts: the Centre and the Periphery. 'The social centre occupies positions that are socially rewarded and the social periphery positions which are less rewarded or even rejected' (Galtung, 1964: 207-208). In the centre are the top dogs of society (the decision-takers power-holders and in the periphery the underdogs. According to his model, there is a continuum from the extreme periphery (EP) via the periphery and intermediate positions to the centre of the social structure, the so-called decision nucleus (DN) (See figure 1)

Figure 1 – The model of Social Structure (Galtung, 1964)



In this model the structural differences between centre en periphery are, summarised, that the centre ranks higher in social participation, in knowledge and in opinion holding than the periphery. New ideas are normally created in the centre and are then communicated to the periphery, which usually accept them a long time after the centre, sometimes even when the centre is not concerned with them any longer and has already started to discuss new subjects. The centre is normally the initiator, the

periphery the receiver. Therefore the periphery can be expected to be often in favour of the status quo, since it will be hard to abandon just accepted and internalised ideas.
The different style of thought between centre and periphery is expressed in the assumption that the centre is 'inductive, pragmatic and means-oriented', while the periphery is 'deductive, moralistic and ends-oriented' (Galtung, 1964: 216). As a consequence the centre is supposed to have a gradualist perspective of social change, which manifests itself in an attitude towards the existing order that can be characterised by partial rejection or partial acceptance. The perspective of social change in the periphery is absolutist in the sense of either a total acceptance or a total rejection of the existing social order.
As a parallel, this C/P hierarchy in social structure may also be applied to the global structure of nations, the world system of states, in which the centre (in different colours, e.g. 'the coalition forces' in Iraq, 'the international community' or the 'G-7/8' panel et cetera) and guided by the US, supposes its norms to be subscribed by all other nations (see e.g. Hartmann & Van der Veer, 2003).

The operationalisation of the variable social position conforming Galtungs model as has been sketched in figure 1 is based on the following assumptions:

A Centre person	is located in urban communities, in central districts, has a superior position in his job, works in the tertiary sector,
has the quality of being	male highly educated, in his most productive years,
and is rewarded by	high income.

The Periphery person is the opposite of all this – and then there are the in-betweens.

A holistic approach of Social Position

The social position index, developed by Galtung in the early 1960s in Norway implies 8 dimensions. In his recently revised holistic approach of the concept of social position, structure and culture (2004) Galtung extends both the individual rank dimensions on which a person's social position is based and the state rank dimensions respectively (Galtung, 2004) to 12 ascribed, semi-ascribed and achieved dimensions. These four additional dimensions include violence (sender-receiver military power), decisions (sender-receiver political power), race (white/lighter- non-white/darker) and nation (dominant-recessive in the world), and network centrality.
The last dimension belongs to the achieved dimensions.

Taking this social position approach as a point of departure, I will focus in this contribution on the significance of network centrality as one of the relevant dimensions of social position on the individual level.
Developments in telecommunication and the rising importance of the Internet have changed the importance of geographical location (defined by Galtung as a semi-ascribed and for that reason changeable position on this dimension). Access to an Internet provider, and a frequent use of Internet browsing, access to chat and e-mail facilities, access to news sites and background information in connection to 'newsworthy' events could be indicators to (at least partly) substitute the role of geographical location in defining a persons social position (and a nation's position within the world state structure). To put it differently, the creation of an Internet society, being the most recent stage in the information society, is diminishing the impact of geographical location both on the level of social structure of a society and on the level

of the world state structure (see also Hartman & Van der Veer, 2003: 159). The total number of Internet providers in the world, and the distribution of them over nations may serve as an indicator for both the importance of Internet within a nation and the centrality of that nation within the structure of world states.
On the global level, the total number of Internet providers in 2000 was estimated as 10,350, mostly operating in the G-7/8 nations. USA alone had about 7000 Internet providers out of 10,350 worldwide, and the other nations belonging to the G-7/8 together had more than 1388/1688 providers (source: CIA, 2003).

Internet obviously plays a crucial role as a news medium in the information society. According to the Central Bureau of Statistics (CBS) in the Netherlands (http://www.cbs.nl/), in 2002 the percentage of the population using the Internet was already 61%.

In this contribution I will try to find an answer to the following questions.
1. To what extend is network centrality related to other dimensions of Social Position within society and to Internet access?
2. To what extend is the informational use of Internet (the way in which people use the Internet for online news gathering (headlines, backgrounds of news items)) related to Social Position?

We will focus upon the first question by means of a brief literature review.

Internet, network connectedness, network centrality, and the 'internet divide'

Internet can be described as the electronic network of networks that link people and information through computers and other digital devices allowing person-to-person communication (e.g. by email and chat) and information retrieval (about e.g. products, services and news). This infrastructure uses the Internet Protocol (IP) with applications like email and World Wide Web.
The main differences between Internet and the traditional news media (with the exception of the personal computer) implies the interactive and multimedia character of Internet - interactive in the sense of the possibility of symmetric (two-way) communication, and multimedia in the sense of integration of video, audio and text within one format.

Research on what is generally called 'the digital divide' (see e.g. Jung et al., 2001) follows a long tradition of research on the diffusion and effects of other communication technologies (Douglas 1987; Fisher, 1992; Marvin, 1988; Rogers, 1983; Rogers & Shoemaker, 1971), as well as early personal computer diffusion studies (Dutton et al., 1987; Dutton et al., 1996). The majority of studies on the digital divide, especially the earlier ones, have used binary measure (access/non-access) or a time-based measure (number of hours spent on certain media) as indicators of the gap between haves and have-nots (in terms of access to information in the information society), which have been widely used in media and technology studies (Kraut et al., 1998; Nie & Erbring, 2000; Robinson et al., 2000).
However, dichotomous conceptions and measures of the digital divide have serious limitations. They are appropriate to e.g. studying comparisons between those with and those without Internet access, the technological haves and have-nots, and therefore for studies that are only concerned with the diffusion of the technology, but are not sufficient when discussing the social consequences of the technology's diffusion, like inequality. These measures introduce an element of technological determinism that ignores the social context in which the technology is incorporated (see Jung et al., 2001) Now it is widely recognized that inequality in access to ICT and Internet is related to other dimensions of social inequality. That is at least the main conception in the variety in literature that has been published concerning the Internet divide.

In recent literature we may, roughly speaking, differentiate between three viewpoints concerning the nature, the causes and the consequences of this digital divide, each position suggesting its own way for measuring the width of this 'divide'.

The first one is the one which we dealt with in the beginning of this paragraph: according to this view the digital divine is assumed to exist between the haves and the have-nots of internet access using binary measures as possible indicators, rather assuming than researching for correlation with other indicators of social position and inequality.

The second viewpoint is taken by e.g. Frissen (2000). According to this viewpoint, the existence of a digital divide is a mere myth. Not the medium and differences in access to information media are important in its consequences, it is access to the content of the media that really counts. This content does not by necessity have to be retrieved by means of the Internet. Even if everybody within society has Internet access, this does not mean that social inequality concerning the position within the informational network has disappeared or even diminished. Social inequality is related to the way people use the collected information, and not to the medium with which the information is collected. So there is rather an information divide, than a digital divide.

The third position is more elaborated than the second one, and is represented by among others Van Dijk (2003), Jung et al. (2001), and Shah et al. (2003).
According to this viewpoint access to Internet plays a role. Moreover there does exist a digital divide, but this divide is not only dependent on access to and ownership of technological means (e.g. hardware) but is also dependent on motivation, abilities, and the way in which the collected information is used. The well-known sociological dimensions of social position like income, education, gender, age, profession and ethnicity were found to be only indirectly related to Internet access. Access to Internet and access to ICT is (strongly) defined by people's position within the different networks in which people participate, like the labour network, the educational network, and the social network. ICT knowledge is acquired in diverse specific practical situations, at work, at school and because friends and relatives use or do not use ICT.
In other words, the nature of the Internet divide transforms from ownership and access to practical abilities to use ICT and to the way in which it is used. Even when all, or at least the vast majority of citizens in a modern country like the Netherlands have unlimited Internet connection at home (e.g. broadband), this does not mean that because of that the digital divide has been bridged. (Van Dijk, 2003: 7)
The nature of the divide will change to one in which there is a gap between people who are able to use Internet and information that has been retrieved by Internet and ICT in general for the improvement of their own social position, and people who are not able to do so. That means that the main cause of the problems concerning access to ICT (in order to acquire a position within the informational network) changes from 'motivation and ownership' toward abilities and the way in which ICT is used. According to Van Dijk, around 25% of the Dutch population (□18 years) has anno 2003 insufficient motivation to buy and use a computer and internet access. From his research he concluded that to this part of the population belong many more women then men, more elder people (55+) than youngsters, more lower educated than higher educated persons, and more jobless, retired and disabled persons than people with a job (Van Dijk, 2003:16). The reasons for this may not only be emotional ones (fear of computers and hostility toward technique), but also rational motives: digital applications so far offer insufficient surplus value and still suffer from a number of serious deficiencies. In the (near) future it is to be expected that *abilities* to find, to select and to produce information out of computer and network files and databases (e.g. indicated by the number of years that people have experience with the use of Internet) together with the *easiness of access* to Internet (at work, at home, via broadband) will play a more important role in defining the digital divide.

Jung et al. (2001) have investigated the relations between the digital divide, defined in a comparable way as Van Dijk (2003) - they themselves speak of 'internet connectedness' - and social inequality in terms of the possible consequences for people's upward mobility in society. They developed the Internet Connectedness Index (ICI), defined as 'a measure for monitoring long-term inequalities in the quality of Internet connections among users, especially in terms of whether Internet connections will enhance the chances of people's upward mobility.' (Jung et al., 2001: 507). The ICI serves in practice as an operationalisation of network centrality. The digital divide is supposed to have strong social consequences because the information divide which it causes effects peoples position within the information network, the extend of network centrality. So a persons network centrality is both dependent on her or his social position and has consequences for her or his chances in upward mobility.
Jung et al. approach seems promising because it takes causes and consequences into consideration.
The ICI index is a multidimensional one, based on the assumption that the digital divide refers to fundamental inequalities in people's connections to communication technologies. The term itself is a metaphor for a large and persistent problem of unequal access to new communication technologies that is unlikely to be resolved by sheer diffusion of Internet or related technologies. 'The failure to own a Mercedes does not lead to the impediment in job, educational, and civic opportunities, whereas the failure to obtain appropriate Internet-related skills is likely to limit these opportunities' (Jung et al., 2001: 508). Compared to other information sources, like TV, radio, newspapers, ICT and Internet vastly expand the available resources that are central to career development.
This underlines that network centrality, indicated by the use of Internet and the way in which it is used, is an essential dimension in social inequality, and has consequences for social mobility.
The mere connectedness to Internet is of course not a sufficient indicator for network centrality, particularly not in a multitasking era when people connect to more than one media channel at the time (having the television set on while reading, and at the same time being online, makes it difficult to interpret measures of contact with a single medium). So we have to develop measures of contact that pose the problem of connection in relative rather than absolute terms – which means in our case, measures that contextualize Internet connection. But there is more to be measured, like the ability of persons to use internet applications (e.g. only emailing, or also other tasks like reading newspapers online, searching for medical information, search for job vacancies et cetera.
The ICI (Yung et al., 2001: 515) includes the following aspects:

1. Home computer history (number of years a person has owned a PC);
2. Task scope (work-related, school-related, and personal related tasks);
3. Site scope (number of places where a person connects to Internet, like work, school, home);
4. Goals scope (which and how many goals do persons pursue through online activities);
5. Activity scope (type of Internet activities a person is involved in, like emailing, seeking information et cetera);
6. Time spent on interactive online activities (indicating the intensity of people's connectedness to interactive online activity);
7. Evaluation of how the Internet affects personal life (positive or negative);
8. Computer dependency relations (how much people would miss their PC in case it were vanished);
9. Internet dependency relations (how much people would miss Internet in case it were vanished).

Jung et al. found significant correlations between the ICI score and the level of education, income, age and gender. Only gender was found to be significantly correlated with time online (on the average, men were found to be significantly more hours online than women). The higher the ICI score, the more educated, affluent,

younger and the more likely to be male (Jung et al., 2001: 523-524). These outcomes suggest the persistence of various socio demographic inequalities in utilizing the Internet when using this ICI measuring instrument.
These outcomes also provide an at least a preliminary answer on our first research question: Network centrality is related to at least 4 other dimensions of social position.
However, although the ICI as multidimensional measuring instrument provides a better alternative than the traditional one-dimensional measures of the digital divide, it leaves out of consideration more precisely the way in which people use ICT and Internet applications. The authors are the first to admit that the process of development of a valuable, reliable and relevant measuring instrument for internet connectedness has to go on, taking into account the substance of people's connections: what exactly do people look for when using Internet?

A recent study by Shah et al. points to the importance of informational use of Internet in relation to social participation. The authors conclude that informational uses of mass media, and more in particular the use of the Internet by young adults, are positively related to the production of social capital, whereas recreational uses are negatively related to these civic indicators (Shah et al., 2001: 464).

In the next section we will look to find an answer to our second research question concerning the way in which people use the Internet for online news gathering (headlines, backgrounds of news items), and what social position has to do with that.
We chose online news as a subject since, according to the C/P theory, newsgathering contributes importantly to opinion holding and for that reason is highly relevant in the context of social position and network centrality.

Who uses Internet for news and in what way?

To find empirical evidence for the relation between network centrality and social position, we carried out an analysis on secondary data, collected among a representative sample of Dutch inhabitants aged between 18 and 82.
We tested, in addition to the suggestions by Van Dijk, Jung et al., and Sha et al., the following hypotheses concerning the informational use of Internet, which is used in this study as one (and of course not necessarily the only one) indicator of network centrality:

a. The easier access to Internet, the more time people spend on informational use of Internet.
b. The more abilities in using Internet, the more time people spend on informational use of Internet.
c. Women, young people, lower educated people spend less time on informational use of Internet compared to elder, higher educated men.

Sample

Students in Communication Studies collected the data during a research seminar at the Vrije University Amsterdam in a survey (in short: the Amsterdam survey) among an a-select sample of 210 respondents in December 2003. The self-completion questionnaires were completed at different public locations like a railway station in Amsterdam, a post office in Utrecht and a shopping street in Leeuwarden (reported in Verburg et al., 2004). (M age=34.6 (SD=12.2); female=52,4%). In interpreting our findings we have to take into account the slight overrepresentation of respondents with the highest educational levels (polytechnics and university) in this sample.

Easiness of Internet access

Access to Internet could be measured by asking if, and if yes where people had access to Internet. Almost all respondents in the Amsterdam Survey (97%) had access to Internet. Most respondents had access both at their job and at home (85%) and 43% had Internet access at home via broadband connection. Like Jung et al., 2001:515) we will take the easiness with which people are able to connect to Internet comparable

with the aspect 'site scope (Jung et al., 2001: 515) as an indicator for easiness of access to Internet.

Abilities in using Internet: amount of experience in years, and number of hours online per day

In the Amsterdam survey there are two possible indicators for the amount of abilities that people have in using the Internet: the number of years of experience with the use of Internet, and the number of hours that people on the average daily spend on the Internet. The results are presented in tables 1 and 2.

Table 1 – Internet experience (in number of years)

Number of years of experience with the use of Internet	Percentage (n=204)
<1 year	2%
≥1 year and <2 years	8%
≥2 years and<3 years	19%
≥3 years	71%
Total	100%

Table 2 – Average number of hours spent in using Internet

Average number of hours spent online on any activity	Monday-Friday (n=201)	Saturday-Sunday (n=201)
0 hours	10%	24%
0.5 ≤1.5 hours	72%	62%
≥2.0 hours	18%	14%
Total	100%	100%

The vast majority of the respondents (71%) had more than three years experience in any way in using the Internet. Nearly half of all Internet users (48%) reported to use Internet more than one time during the day. However the distribution of this variable is too skew to be used as a possible predictor for informational use.
Therefore we will take (see also Jung et al., 2001: 515) the average number of hours that people reported to spend daily online as an (although rough) indicator for ability.

Informational use of Internet

There is no empirical evidence for a cannibalistic effect of Internet, according to which news sites and online newspapers gradually substitute the function and the use of printed newspapers (Kaye & Johnson, 2003; Deleersnijder et al., 2002). On the contrary, the most frequent readers of online newspapers are also the most frequent readers of printed newspaper (see e.g. Chyi & Lasorsa, 2001). We will use the amount of time spent in reading online news sites and online background news as an indicator for the informational use of Internet. The Amsterdam survey data imply data on the number of hours spent at news sites and data on what one reads on those sites (only headlines, headlines + leads, complete articles and background articles / dossiers). Table 3 summarizes the average number of hours that people spend in visiting news sites and or newspapers online

Table 3 – Average number of hours spent on reading news online

Average number of hours spent on reading online news	Monday-Friday (n=201)	Saturday-Sunday (n=201)
0 hours	55%	73%
0.5 ≤1.5 hours	37%	26%
≥2.0 hours	8%	1%
Total	100%	100%

Table 3 shows that 45% of the daily internet users spend time on visiting news sites or reading online newspapers, and in the weekend this is even less. Those who use Internet for other purposes reported emailing, chatting, online gaming, and seeking information about products and services. We will use the number of hours spent on reading online news as a (rough) indicator of the amount of informational use of Internet. Van Dijk (2003) concluded from his research that it is generally speaking the people without job or study, elder people and mostly women who use Internet mainly for recreational purposes.

Table 4 shows the survey results concerning what people actually read when they watch news sites and or read newspapers on line.

Table 4 – What users of Internet news sites read

Type of news	(n=90)
Headlines + leads only	57%
Whole news articles	33%
News articles and background articles / dossiers	10%
Total	100%

The majority of the readers of news sites and / or online newspapers read headlines and leads only. Data about the media that people use in gathering background information about news items are presented in table 5.

Table 5 – Media used for news backgrounds

Medium used for backgrounds of news	Yes	No	Total
TV	57%	43%	100%
Newspaper	56%	44%	100%
Internet	22%	78%	100%
Radio	8%	92%	100%
Else	1%	99%	100%

The data in table 5 suggest that Internet is not the most popular medium to get in-dept information about the news. Those who reported to read backgrounds of news on news sites were found likely to be reading background articles in printed media and to be watching background news programs on TV as well (Verburg et al., 2003: 34).

Findings

Access to Internet and informational use

The data from the Amsterdam survey confirm, although weakly, that the easier access people have to Internet (at work - yes or no; at home – yes or no), and the better quality/speed of the connection (broadband vs. analogue), the more time (in number of hours) they spend on using the Internet (R=.14, .26 and .22 respectively, p<.05). The correlations between these three variables and informational use of Internet are equally low (R=.20, .24 and .29 respectively), although significant (p<.05).
Like expected, we found no significant correlation between Internet access (both easiness of access and speed/quality of the connection) and the level of education, gender, occupational level (employer or employed), and occupational sector (secondary /tertiary vs. primary).
So these findings support, although not very strong, that the easier the access to Internet (at work and/or at home) the more time people spend on informational use of Internet, like suggested in our first hypothesis.

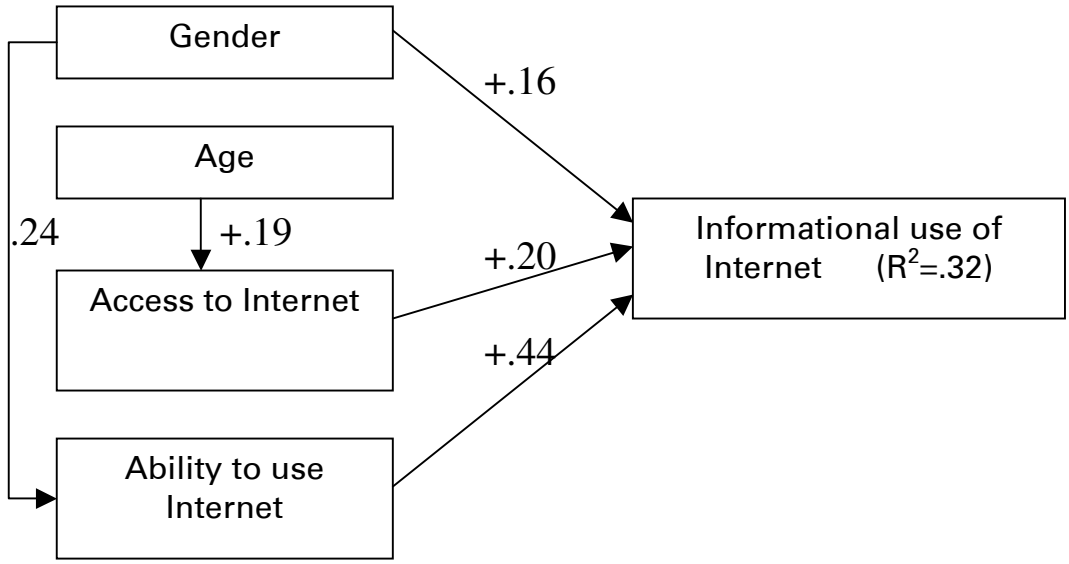
Abilities and informational use of Internet

Not surprising is that the more time people spend 'online', the bigger chance that they also spend more time on informational use of internet (operationalised by the average number of hours daily spent on visiting Internet news sites). The data from the Amsterdam survey show a significant correlation (R=0.44, p<.05) between the average number of hours that is daily spent on using Internet and the time that is spent on informational use of Internet.
These findings support our second hypothesis: the more abilities people have in using Internet, indicated by the number of hours online, the more time they spend on informational use of Internet.

Informational use of Internet, Social Position and Internet Connectedness

Taking the informational use of Internet as indicator for network centrality, we carried out a multiple regression analysis using informational use of Internet as the dependent variable, and the in the data available SP variables (age, educational level, gender, together with the other variables that in the former paragraphs turned out to be relevant as indicators for Internet Connectedness (access to Internet and ability to use Internet) as the independent variables. In this model the construct 'access to Internet' is operationalised into a dichotomous variable in the following way. Easy access to Internet is supposed to have only those persons (39% in our sample) who have access both at work and at home (via broadband connection).
The resulting empirical model is presented in figure 2.

Figure 2 – Network Centrality, Internet Connectedness and Social position: an empirical model



The results of the multiple regression analysis underline the interdependency of network centrality (in our study: informational use of Internet) with social position and the role that Internet connectedness (in our study: easiness of access to Internet and amount of abilities to use it) play in this connection. This means at least a partial support of our third hypothesis.

Discussion

In spite of the limitations in our sample – on the average the level of education, and the income level in our sample are higher than in the population – the concept of 'network centrality' seems to be a relevant dimension in social position. Internet connectedness, and more in particular the aspects 'site scope' and 'time spent online' turned out to be relevant intervenient variables that contribute to the explanation of network centrality. We have to bear in mind that the research that has been reported in the former sections has been carried out in a country where Internet access is approaching the hundred percent. In less centre countries Internet access itself may still play a major role. However, network centrality implies more than access to Internet and the informational use of this medium.

The Media Substitution theory in its first appearance (McCombs, 1972) suggests that just like in the animal kingdom where species must compete for limited resources and where competition could drive the weaker species toward extinction, media sources must compete for a finite amount of resources in terms of advertising dollars and time available to consume media. More specifically, later studies (see e.g. Lin, 2001a and 2001b) suggest that when a new technology is viewed as more desirable than an old medium, people will reduce the time devoted to traditional media that are functionally similar. Furthermore, the Internet and other new media will displace functionally similar traditional media if people perceive that the new media have superior content, are less costly and are more convenient. On the other hand, a new technology is less likely to reduce time spent with media that are functionally dissimilar. That means that Internet as a new medium may supplement or complement the existing technology. And hence that people have the ability to evaluate, rank order, and select the medium that best gratifies their needs.

Resent studies are split on whether the Internet is cutting into time spent with other media as the number of Internet users continues to climb. Individuals may initially reduce their time with other media to go on-line but as the novelty wears off, then they are likely to return to more typical media use patterns. A study by Perse & Dunn (1998)

supports this hypothesis. More recently, Kaye and Johnson concluded from their comparative study in the US, using data collected with an on-line survey, that Internet had not dramatically altered media use patterns. However, whenever a new medium emerges, like Internet, old media use patterns are altered until eventually the old and new media fill different niches and learn to exist side by side (Kaye & Johnson, 2003: 260).
This means that research on network centrality, like meant by Galtung (2004) as a dimension of Social Position, has to take into account the use of the traditional (print- and audiovisual media as well, both in centre states and in peripheral states.

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