VOTERS AS NONTRIVIAL MACHINES: VALUATION OF POLITICAL ACTORS BY THE PRESS AND ESTONIAN VOTERS' PREFERENCES FROM 1999 TO 2007

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ABSTRACT

By employing a constructivist approach and conceptualising media effects as contingent change, this article examines the impact of the valuation of different political parties by the media on forming people's election preferences in Estonia over an eight year period. Research indicates that valuations serve the structural coupling of the mass media with consciousness systems and with other social domains and perform an important role in the formation of public opinion and election preferences. More frequent valuations of an actor or event in media messages trigger the valuation of that same actor or event among the public, which, in turn, is the basis for people's preferences and decisions. The valuation of political actors by the press is an essential means of orientation that enables people to organise their experiences and interact. For political actors, their valuation is the basis of their legitimacy.

Keywords: media effects, structural coupling, voting, Estonia

The Paradoxes of Media Effects

Although scholars have spent nearly 70 years studying the effect of mass communication on voters, and in spite of the fact that the legitimisation of communication science as an academic discipline has largely been derived from the fact that it set the question concerning the influence of mass media in the centre of its interest (Schmidt and Zurstiege, 2007: 100), the "media effects" in contemporary information age discussions are by far its central topic. This is in spite of the fact that numerous theories and hypotheses have been presented on the effect of media as a central problem of communication science. In figurative speech, the field of media effects research is similar to a rag rug with each piece made of a different material and huge gaps between the various parts.

For over half a century, the prevailing approach in conducting media effect research has been the minimal effect model which emphasises the importance of individual and structural factors and reduces the role of the mass media to that of a

reinforcer (Lazarsfeld, Berelson and Gaudet, 1944; Blumler and McQuail, 1968; Miller, 1991: 1–4; McQuail, 2003: 374–379, 401–423). At the same time, there have been numerous findings that show that the media's impact on public opinion and election results may be significant (Kepplinger, 1988; Fan and Tims, 1989; Roberts, 1992; Holbrook, 1996; Shaw, 1999; Iyengar and Simon, 2000; Lawson and McCann, 2005).

Using the terms of one of the architects of constructivism, Heinz von Foerster (2008: 62–66), people and communities are complex and analytically indeterminable nontrivial systems. However, traditional media and communication research has used the trivial machine model that treats people and social systems as if they are the same as common coffee machines where pushing a button always yields the same desired result. This is also reflected in language: in media research, the input is called the independent variable and the output is called the dependent variable. It should seem surprising that such studies are generally successful in the sense that they show that there is a connection or correlation between media output and audience preferences. Here we touch upon an inconsistency between cognitive autonomy and social orientation to which German communication scientist Siegfried J. Schmidt steered attention in 1994 (Schmidt, 1994).

Why does the mass media appear to have an impact in some cases and not in others? Why do social and psychic systems function sometimes as trivial and other times as non-trivial machines? What is the process whereby media influence is generated and how can the relationship between people and the mass media be theoretically modelled?

Up to now, traditional media effect research has not answered these questions, primarily because it supposes media effects in the media users. However, it often appears from the studies that there are more people affected than simply the recipients of media messages, especially at the macro level. Of course, the picture changes when one also considers impersonal communication with friends, family members, acquaintances, colleagues and others. But here another paradox is encountered. Namely, upon closer inspection, it soon appears that the direct user of media could be less affected than a person that does not use the observed media outlet, and that the same medium might have a different impact on different groups. In dealing with the interaction of many individuals, the phenomena appearing as a result are emergent properties of that interaction.

For these reasons, the authors do not rely on the traditional media effect research in this article, but instead attempt to explain media effects in a constructivist manner, based on an assumption that the recipients of media messages are cognitively autonomous individuals who are selective and actively construct meanings both individually and socially. Communication and media are handled as fundamental means of socialisation that link and connect different operationally closed consciousness and social systems. This connection, however, does not evolve randomly, but is orientated upon the creation of common meanings and the valuations that arise therefrom. These valuations are the essential means of orientation.

The goals for this article are twofold: first, to show that valuations serve the structural coupling of the mass media with consciousness systems and with other social domains and perform an indispensable role in the formation of public opinion and election preferences; and second, to present empirical evidence to support the elements of that assumption. For this purpose, the connection between valuations of political parties by the Estonian media and corresponding election and poll results are analysed in an attempt to show that the perception of the voters follows these valuations in the media. The constructivist approach affords new and additional understanding about the process by which media influence is generated.

Theoretical Framework

First, the theoretical framework in which our subject is observed must be explained. The authors' approach relies upon the work of biologists Humberto Maturana and Francisco Varela (1980, 1998), who theorise that the nervous system of a living organism operates as a closed network of neuronal interactions and cognition does not mean the reception of a representation of an objectively existing world but is the constant and continuous creation of that world by the observer in the course of living. The acquiring of knowledge through the senses or communication is not a passive process but an active one. People constantly construe something that they accept as reality (Maturana & Varela 1980, 127).

An operationally closed consciousness system lacks direct access to other operationally closed consciousness systems – these belong to its environment. A person cannot transfer the results of his observation and thoughts to the consciousness of another person. In order to share one's experience, constructions in one's consciousness with others and the coordination of one's activities, people must use communication, which is a surmounter and corrector of the autopoietic closeness of consciousness systems (see Maturana 1980, 30–35). In other words, communication and media are fundamental means of socialisation that link and connect different operationally closed consciousness.

The authors also follow the concept of autopoiesis originally developed by Maturana and Varela (1980; 1998). Niklas Luhmann (1986; 1995; 2000) modified the original biological concept and applied it to a large number of non-biological systems. A central element within the theory of autopoiesis is the concept of structural coupling which refers to the relationship between systems and their environments (Maturana and Varela 1980, xx–xxi; 1998, 95–96).

The role of communication in society and in the creation of common meanings is treated by Luhmann's theory of social systems. Let it be noted that Luhmann's theory could be seen as a successful attempt of implementing the Maturana's and Varela's autopoietic systems theory in the social field. It is also important to understand that Luhmann's social systems theory is a sociological theory and only a small part of Luhmann's rich legacy is of immediate interest for communication science. From the point of view of the topic of this article, first of all, the extension of social systems theory to mass media and to the role of media in the construction of social reality,

presented in Luhmann's "The Reality of the Mass Media", is important. According to Luhmann (2000, 97), the function of mass media is the "directing of self-observation of the social system." The distinctions made by the media system are their own product. Media communication is not the transfer of information, but the construing of reality that corresponds to the media as a system. The results of this circular and long-term activity are "the description of the world and of society to which modern society orientates itself within and outside the system of the mass media" (id., 98). From day-to-day, the media presents its descriptions to us, generating with that common knowledge and expectations arising there from. Thus "the mass media guarantees all function systems a present, which is accepted throughout society and is familiar to individuals, and which they can take as a given when it is a matter of selecting a system specific past establishing decisions about future expectations important to the system" (id., 99). People base their actions on those descriptions; that "present" created by the media, and from that their expectations ensue, as well as their expectations of others' expectations. Social reflexivity — the perceiving of others perceiving — is added to the relationship between the media and cognitive systems. Collective knowledge, beliefs and a common construction of meanings which orientate people in their activities (including communication) are formed from that. This collective knowledge enables people to act together and to constantly recreate the society.

It should be added that today critical self-observation of the political system has been largely replaced by the observation of the system by the media and that takes place not in accordance with the conditions established by the political system but by the media. The political system has merely adapted to these conditions. The media are the main connection channel between political actors and the general public. Political events occur mostly outside people's field of perception and they have little or no opportunity to verify the validity and accuracy of the media messages. The recipient of the message can but choose between similar messages and accept the media coverage that seems most sensible. Thus, politics for most people turns into politics as received through the media and policy-making is more and more the presentation of already existing policies to the general public.

Valuations and Elections

Cognitive systems observe their environment and give system specific meanings to the distinctions that have been made. However, the reflexive reference of agents to events and other actors does not end with giving meanings (and explanations). It is accompanied, consciously or unconsciously, by the valuation of the observed phenomenon as positive or negative, which regulates its acceptance or rejection by the participants in a communication. Depending upon the valuation given, one can either rejoice or grieve over an event or phenomenon; one may wish to participate in the event and support it or avoid it.

This kind of valuation is the result of the process and depends upon the meaning given to the observed phenomenon or event. Different meanings can be given to the

same phenomenon and different valuations may arise as a result. At the same time, valuations may change over time. The valuations that arise from assumptions and beliefs are the means of orientation and at the same time the means of reduction of the complexity of the environment that enables people (whose consciousness is operationally closed) to organise their experiences and act together with other people. Valuations may be weak, inaccurate, contradictory or temporary, but that does not change their purpose.

Although explanations are important in this mechanism of orientation and reduction of the complexity of the environment, individuals significantly rely on valuations. People may not know or remember the exact explanation: they orientate on the basis of valuations. Our thesis is that more frequent valuations of an actor, event or problem in the media messages trigger the valuation of that same actor, event or problem among the public. For political actors, their valuation is the basis of their legitimacy. In order to test the relationship of valuations presented in media messages with election returns, the results of the of the 1999, 2003 and 2007 general elections and the 2002 local election in Estonia, as well as the results of concurrent public opinion surveys were compared to the valuations given to the campaigning parties in the largest Estonian newspapers.

Speaking of media influence, it is important to keep in mind that communication cannot be conceptualised as a transmission of information nor people as directly influenced entities. Communication is a reflexive sign-using process, an action game, in which operationally closed cognitive systems participate. Through this game one does not (as the traditional dualist semiotic concept suggests) reach out 'into reality', but always falls back on socially approved uses of signs in communication. Media influence in this process should not be conceived as a causal relationship between mass media and their audiences, but as a result of structural coupling, where cognitive systems and mass media mutually perturb one another and affect each other's structure. It may be defined as contingent change that is dependent on the actors' cognitive and emotional state, experiences, expectations, the specific situation and many other factors. The individual interprets the message and gives it meaning that is consistent with his own understandings and culture.

Structural coupling assigns an equal role to interacting entities such that neither is seen to determine the other completely. Each entity can only trigger changes in the other, but the actual changes are not predetermined. At the same time, it must be taken into consideration that the irritations coming from the media side are repetitive, massive and touch phenomena and events that occur outside the cognitive system's field of comprehension. For the most part, an individual lacks the opportunity to compare the media messages with his own personal experiences and also lacks comparable interaction with some other part of the environment. The result is that the media valuations set the tone that the public adopts as its opinion or valuation at some later point in time. It should be possible to prove this by comparing the valuations presented by the media with the voters' preferences.

The authors hypothesise (H_1) that the frequency of valuations of political parties by the media to a considerable degree describes the election results and that the relationship between them is proportional.

By "description" and "relationship" it is meant that the certain and measurable change of an attribute characterising the valuation of a political party in media messages corresponds to a change in election results. The word "proportional" characterises the structure of the relationship of variables and means that a change in the value of an independent variable corresponds to a change in the same direction in a dependent variable. This relationship is always probable but never determined because, as has already been stated, one is dealing with structural coupling between cognitive systems and the media system. The cognitive systems can only determine themselves through their self-generated structures and states.

The authors also hypothesise (H_2) that the relationship between the valuation of political parties by the media and the political preferences of the voters accumulates diachronically as a cumulus in which valuations that emerge in the process of structural coupling are joined and congregate in the mind of the perturbed cognitive systems. It is necessary to keep in mind that this process is possible only upon the condition that both the media (whose coverage is dependent on human beings) as well as the human observers operate in a space that is deeply marked "culturally" and socio-structurally (Schmidt 1994, 47).

Method, Data and Reliability

For some reason, many communication scholars and sociologists are of the opinion that constructivism and empirical studies, especially ones dealing with media effects, are incompatible. Such an opinion is misleading. As many authors have pointed out, for the practical use of empirical methods, it is not important whether the researcher follows a constructivist or a realist approach (see Hennig 2009; Scholl 2011a; Scholl 2011b). Empirical research is as natural a part of constructivist or systems theoretical investigation of observed processes as is research within the framework of a realistic epistemology. However, there is a significant difference in understanding the role that empirical research plays in observation. In order to avoid hidden ontology, constructivism and as well as social systems theory are strictly process- orientated (see Schmidt, 2011: 4). Accordingly, by studying the impact of the valuation of different political parties by the media one is observing a process. Such a process can only be observed (as a process) with the help of empirical research if the observer manages to adhere to a static aspect, which Schmidt calls the process result (see *id.*:4). This outcome in the case of the article is on the one hand a valuation of the political actors that is not to be understood as an entity but as a process-result and on the other hand people's election preferences. According to Armin Scholl (2011a: 30), empirical research operates as a stopper of the process in order to observe it. Only the intervening (empirical) stoppage of the processes under observation makes them observable. Based on this logic, the valuation of different political parties by the

observed media outlets as static aspect (or outcome) of the process constitutes the authors' predicting variable.

It must be considered that media influence is difficult to observe empirically because cognitive processes in principle are not capable of being observed directly. In addition, there are too many physical and social factors that are simultaneously exerting influence on the observable process (each of which is difficult to isolate and all of whose influence is difficult to determine), which complicates accurate interpretation. This compels the researcher to prefer models that contain fewer components and use standard measuring instruments although their variables, correlations, and regression coefficients characterise the properties of whole aggregates at the expense of their constituent members (see Krippendorff, 1996: 316).

In the following analysis, two events are observed and compared: valuations of political parties in the print media and voting behaviour. The data about the former are compiled from content analysis. Voting behaviour is characterised by election results and alongside them the ongoing public opinion research data that is observed as the dependent variable. The observable data of the content analysis consists of the valuations given to the political parties that participated in the 1999, 2003, and 2007 Estonian parliamentary elections as well as the 2002 local elections in the major newspapers with a national circulation in Estonia.[1] In 1999, there were seven media outlets that were included in the analysis: *Postimees* and *Eesti Päevaleht* (two that consider themselves quality daily newspapers); *Õhtuleht* and *Sõnumileht* (the two largest nationally circulated tabloids in Estonia); *Äripäev* (the business newspaper); and *Eesti Ekspress* and *Maaleht* (the two largest nationally circulated weekly newspapers).

Prior to the elections held in 2002, 2003 and 2007, the newspapers analysed for content numbered six: *Postimees*, *Eesti Päevaleht*, *SL Õhtuleht* (in 2000 *Õhtuleht* and *Sõnumileht* merged under the banner of *SL Õhtuleht*), *Äripäev* as well as *Eesti Ekspress* and *Maaleht*. The data that characterises the influence potential of those publications is presented in Table 1. In the table, the 1999 data for *Sõnumileht* and *Õhtuleht* are combined and are presented as the data for *Õhtuleht*.

[1] During the period from 1999-2007 there were also two presidential elections in Estonia (21 September, 2001 and 23 September, 2006) as well as elections for the European Union parliament on 13 June, 2004. Even though there is data for those elections, it was not considered in the current framework of observations because in both the cases of the presidential elections and the European Union parliamentary elections the election systems vary too greatly from those employed in the other elections and the data is not comparable.

Table 1. Characteristic Indicators of the Influence Potential of Observed Publications

Newspaper	Publication Frequency	Circulation (in thousands)	Number of readers (in thousands)					
			1999	2003	2007	1999	2003	2007
Postimees	6 times per week		58.2	61.5	67.1	237.0	246.0	230.0
Eesti Päevaleht	6 times per week		48.6	33.5	37.0	229.0	136.0	145.0
Õhtuleht	6 times per week		75.8	65.6	64.6	279.0	279.0	237.0
Äripäev	5 times per week		17.0	20.7	23.0	78.0	74.0	77.0
Eesti Ekspress	once a week		47.1	44.7	47.7	194.0	140.0	140.0
Maaleht	once a week		42.0	49.0	51.4	180.0	156.0	129.0

Source: Eesti Ajalehtede Liit [Newspaper Association of Estonia]; BMF Gallup Media (Balti Meediateabe AS)

Here it is essential to note that the number of readers of the observed publications is fewer than the number of voters. The observant reader will have noticed that in some instances (for example, in the case of the newspaper *Postimees* in 2003 and 2007) circulation increased as the number of readers decreased. This is explained by the fact that together with the development of the economy and the rising standard of living, the means of obtaining publications has changed. In earlier times, people read publications at their workplace and the library, and often also borrowed them from friends and acquaintances. As time went on, more and more people began to subscribe to publications individually that were delivered to their homes. Thus, the readership of each individual copy of a publication has decreased.

This study included only the print media. Although a widely held belief exists that television is more influential than the print media, many authors allude to the fact that newspapers have greater influence in mobilising voters than does television (Norris et al. 1999, 101). Newspapers are also considered to be more effective in agenda setting (McCombs and Gilbert 1986, 9–10).

Usually journalists pay careful attention to media opinion leaders and that to a great extent determines the selection of issues and the manner in which these issues are treated (Donsbach, 1996: 86). In Estonia, those leading publications are the newspapers *Postimees*, *Eesti Eskpress* and *Eesti Päevaleht*, from which the television stations pick up the most essential issues.

The political actors whose presentation in the aforementioned publications were studied and compared are all of the political parties that participated with their own electoral lists of candidates in all of the observed elections. There were 12 such parties in the 1999 Estonian parliamentary (*Riigikogu*) elections, seven in the 2002 local elections and 11 in the 2003 and 2007 parliamentary elections.

The time frame for the analysis in the 1999 and 2007 elections was the nine-week period prior to the elections. All of the most essential pre-election events as well as

the most intensive election battles occurred during this period. In the 2002 and 2003 elections, the content analysis covered the pre-election period from June 2002 to March 2003. Both the 20 October, 2002, local elections and the 2 March, 2003, parliamentary elections fit into this time period. During these periods, all of the media valuations of every political party that participated in the elections were considered and analysed.

The code words for the content analysis were the names of the political parties participating in the elections. The coders counted each mention of a political party that appeared in news items, editorials and opinion articles (op-ed pieces). Upon discovering the name of the political party mentioned anywhere in the article, the coder had to ascertain the context – positive, neutral or negative – in which it appeared. The coders were given precise rules of interpretation based on how the party name relates to neighbouring words or phrases. For example, in the phrase "the Reform Party has proven to be a trustworthy partner", the name of the party appears in a positive context because "Reform Party" and the adjective "trustworthy" are positioned sufficiently close to one another. In the phrase "the Social Democrats have not been successful in steering the economy", the party is mentioned in a negative context. In the statement, "the Centre Party as well as the Reform Party, who have traditionally made strong showings in party-based elections, are planning to remain in power for a long time and will undoubtedly leave nothing to chance", the references to both parties are neutral. The favourable and unfavourable mentions attributed to the political parties were interpreted as indices of the writers' and the media's attitudes toward the named political party. In all instances the content was analysed by two or more content coders.[2] The coders' decisions were assessed and discussed during a pilot test and during coding of the full sample. Any discrepancies were resolved by this process. Since percentage agreement is often too liberal a measure of intercoder reliability, we calculated Krippendorff's alpha index for every observed publication and for each examined year separately. In all cases, the reliability sample was the same as the full sample. A sufficient level of intercoder agreement ($\alpha \geq 0.90$) suggested that the decisions of the coders can reasonably be included in the final data.

In conducting this study, six sets of data were used: election results, results of public opinion polls (surveys), the positive, negative, and neutral valuations of political parties. The first two we analysed as dependent and the last three as predicting variables. For the purposes of comparison, the figures are placed on the same base, expressing the share in percentages in all cases: in the case of election results, each political party's share of votes in percentages; in the case of media coverage, the party's positive and negative assessments and its share of neutral

[2] The content analysis was conducted by the media research firms Observer Eesti OÜ, AS Corpore and Nord University students Maria-Helena Loik, Kairi Luhaäär and Harry Kanistik.

references in the total.[3] Hereafter, for the purpose of making calculations, the author designates the symbol y for election results, y_{os} signifies the results of public opinion surveys, x_p the positive valuations of political parties, x_e the neutral valuation of political parties, and x_n the negative valuation of political parties. In some cases, the frequency of notation of political parties (x_z), which is the sum of the positive, neutral and negative valuations ($x_z = x_p + x_e + x_n$) has also been used as a predicting variable. The notations of political parties that participated in the elections were counted in the observed publications, amounting to a total of 7,830 times in 1999, 14,504 times in 2002 and 2003 and 9,152 times in 2007.

Regression Models

How are the election results tied to the input variables? It should be possible to evaluate that with the aid of the multiple linear regression model. In the interests of acquiring a complete picture, it is necessary to merge all four input variables into the model. However, there is a noticeable multicollinearity effect. In addition, multicollinearities involving three or more variables are relatively difficult to detect and it may become apparent that the results are statistically insignificant and the model is unstable. Let it be noted here that the lack of independence among predictors is inherent in this type of data: it is not generated by design. This means that the collection of additional data does not eliminate the problem of multicollinearity. This relationship is often so strong that one is left with the impression that the same data is being observed under different names. In a certain sense this is true, because the media do not transfer information from the transmitter to the recipient, but present interpretations and connotations from which the autonomous reader constructs a message that is acceptable to him in an attempt to decrease his own uncertainty. The different parameters of media content are basically one piece of related information for the active subject. Clumps of these variables measure the same thing. This explains why the input variables in the relationship between media messages and election results are also correlated among themselves. In that case, the lack of independence between predictors is inherent in all data characterising media influence and researchers must deal with the multicollinearity problem.

Multicollinearity does not affect the ability of a regression equation to predict the response, but serious correlations among predicting variables will lead to inflated magnitudes of the estimates and inflation in the variances of these estimates (Hocking, 2003: 166). In order to preclude this possibility, it is necessary to eliminate explanatory variables that are more closely tied to other input variables than to the output variable. Due to the effect of multicollinearity, it is not always possible to use all of the input variables in regression models. Thus, the predicting variable in the

[3] In order to calculate the parameters of regression models, percentages are widely used alongside the nominal values. Zhao proved that "[g]enerally, the accuracy of linear models for modelling bounded variables (e.g., percentage data) is not as good as for other unbounded variables obtained in the same experiment." (Zhao et al. 2001, 2129). In the data presented in this article, this difference is extremely small. The coefficient of correlation is, of course, not affected by the form in which the data are presented, so either raw numbers or percentages are equally useful.

1999 model is positive media coverage of political parties (*xp*);[4] in 2002, 2003 and 2007 the positive (x_p), neutral (x_e) and negative (x_n) media coverage.

In all four instances the predicting variables are not weighted by the number of readers because of the absence of significant variance within the positive, neutral and negative valuations of political parties in the different media sources.[5] The data for the three multiple linear regression models are presented in Table 2: the adjusted coefficient of determination (adjusted R^2)[6], the significance of the model, the least squares estimates of β_j (called "coefficients" in table 2) and their significance. The election results in those models are assumed to be a function of the input variables.

Table 2. Linear Regression Models: Dependence of Election Results Upon the Valuationof Political Parties in the Print Media

	1999	2002	2003	2007			
Adjusted R^2	0.971	0.966	0.990	0.853			
Significance F	0.000	0.004	0.000	0.000			
Arguments	*Coeffi-cients*	*P-value*	*Coeffi-cients*	*P-value*	*Coeffi-cients*	*P-value*	*Coeffi-cients*	*P-value*
x_p	0.987	0.000	1.545	0.004	1.462	0.004	1.667	0.000
x_e	-	-	-1.909	0.029	-0.845	0.043	-1.148	0.005
x_n	-	-	1.421	0.029	1.225	0.009	0.215	0.002

From Table 2 it can be seen that in all four instances one may speak of a strong relationship between the election results and how the different political parties were presented in the print media. The positive valuation of the political parties (x_p) is shown in all of the models to be the most prominent part of the influence of the print media on the election results. A fairly definite relationship also exists between negative valuations of political parties and the election results, but this correlation is positive: the negative media coverage of political parties influenced the election results in a beneficial way to that party. The same is confirmed in all four cases by the coefficients of correlation of the negative valuations of political parties and the election results: 0.84 in 1999, 0.73 in 2002, 0.82 in 2003 and 0.80 in 2007. The correlation coefficient for 2002 is statistically significant at the significance level 0.05; the remaining correlation coefficients are

[4] Due to collinearity, it is not possible to use other explanatory variables in the 1999 model.

[5] Unfortunately, the question about the diversity of the output of different media outlets must be left aside here because it strays too far from the main topic.

[6] Because the number of political parties being observed was relatively small and because there are several explanatory variables, the coefficient of determination may show a deceptively significant relationship among the variables. For that reason, an adjusted coefficient of determination is used. The adjusted R^2 is computed using the formula
$1- n/(n-1) \times R^2$

statistically significant at the significance level 0.01. It must be realised that reading the newspaper is not just the reception of the text, but the active subject plays the central role of the constructor. His action is not determined by what the media outlet said, but by the meaning that the reader gave to the words that reached him. Thus the authors' first hypothesis (H_1) which presumed that the frequency of valuations of political parties in the media describes election results and that the relationship between them is proportional is confirmed. Even in the case of negative valuations, the relationship between the independent and dependent variables is proportional: as the constituent part of the negative valuations increases the value of the dependent variable also increases.

Since influence was defined as change, the dynamics of the relationship coefficients prior to the election must also be observed. In order to accomplish this, the correlative relationship between election results and media coverage of political parties was studied week by week. Due to the fact that for several of the observed weeks it was not possible to calculate and obtain statistically significant results for the multiple correlation coefficients between the three predicting variables – positive, neutral and negative coverage – and the election results, the election results were compared with the frequency of media notations of political parties (x_z). As stated above, the frequency of notations is the sum of positive, neutral and negative valuations ($x_z = x_p + x_e + x_n$). Thus, x_p, x_e, as well as x_n are strongly correlated with the dependent variable. However, when plotting linear relationships that appear in more than two dimensions onto a single multiple regression plane, the strength of the partial association between x_e and x_n, on the one hand, and y, on the other, becomes weaker. A noteworthy effect deriving from the relationship among the explanatory variables themselves is also added. For this reason, the numerical value of the multiple coefficient of determination is greater than the coefficient of determination between the output variable and frequency of notation . Second, the relationship between the frequency of notation and the dependent variable is considerably weaker than the relationship between positive coverage and the response, because in the first instance, the influence of other variables is also reflected. As a result, it may be concluded that In all instances where x_z is an independent variable, the relationship between the frequency of notation and the dependent variable is relatively modest (see Tables 5 and 6, Figure 1).

Figure 1 depicts the data relating to the dynamics of the coefficients of determination between the 2 March, 2003, election returns and the notation frequency of the political parties by month from June 2002 until March 2003. The statistically significant value of the coefficients of determination shown in Figure 1 is 0.44 (the critical value for coefficients of correlation is 0.67) at the significance level 0.05.

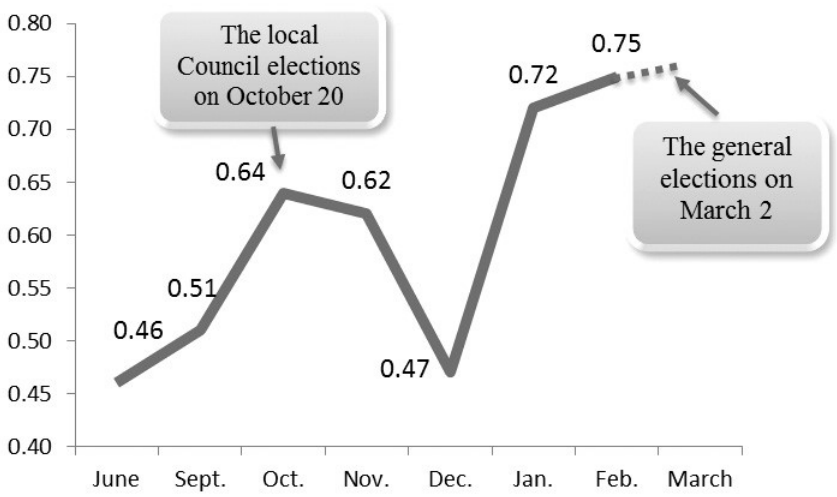

Figure 1. The Coefficients of Determination Between the 2 March, 2003, Election Results and the Notation Frequency of the Political Parties During June 2002 – February 2003.

Figure 1 shows that the relationship between media content and the 2 March, 2003 election results is noticeable. The value for the coefficient of determination clearly changed prior to the election. It rose as the local municipal elections approached from September to October from 0.51 to 0.64 (it was noted above that the adjusted multiple coefficient of determination for the 20 October, 2002, local election returns and media coverage was 0.97, clearly significantly greater). Thereafter, in December, it declined to 0.47 and rose again in January to 0.72. In the last month prior to the elections, it rose to 0.75. It may be concluded that the coefficient of determination changed.

The Cake Model

First, it can be seen that the closer the date of elections approaches, the more closely the content of the media expressed the outcome of the upcoming election. Second, the political parties that received a relatively greater number of votes in the election received more coverage in the media than did other political parties. But the critical question remains: which came first, the chicken or the egg? It is possible to argue that the media content merely reflected the changes in public opinion and that the popularity of the political parties and candidates influenced their positive, negative or neutral presentation by the media. However, the question still remains as to whether the people's preferences for political parties influenced the media or did the media influence the people's preferences for political parties? Also, did the popularity of political parties influence their portrayal by the media? The answer to the last

question is: yes and no. Comparing the coverage of the political parties that participated in the parliamentary elections of 1999, 2003 and 2007 by the leading daily and weekly newspapers immediately prior to the elections (see Table 3), the preference for some and the rejection of others became apparent.

Table 3. The Valuation of the five largest political parties in Estonia by the leading daily and weekly newspapers in their news and opinion articles during the final nine weeks prior to the 1999, 2003, and 2007 Estonian Parliamentary (*Riigikogu*) elections (the positive and negative valuations given to political parties as a percentage of the total number of corresponding notations).

	Number of valuations	Share, %					
		Reform Party	Centre Party	Pro Patria/ Res Publica Union	Moderates/ Social Democratic Party	People's Party	Five largest political parties combined
1999	pos n = 544	21.3	23.7	7.0	15.1	18.4	85.5
	neg n = 1063	15.1	37.8	7.1	7.6	9.5	77.1
2003	pos n = 727	25.7	21.6	12.2	9.5	9.5	78.5
	neg n = 1159	22.1	40.9	6.7	4.7	9.4	83.8
2007	pos n = 977	24.3	21.9	16.4	8.1	12.6	83.3
	neg n = 1424	22	44.8	8.6	5.2	13.5	94.1

The largest political parties were mentioned in the media significantly more than lesser known parties. This is natural because the political parties that are represented in the parliament (and even more so if they belong to the ruling coalition) are usually more extensively covered by the media than those that have been left out. The former are associated with far more events that are covered by the press and in general they are also far more proficient in their public relations efforts. Table 3 also shows the political preferences of Estonian newspapers. In major newspapers, the negative valuations were primarily associated with the Centre Party. The Reform Party, the Social Democratic Party and the Pro Patria/Res Publica Union were favoured with mostly positive valuations. Thus, in both positive and negative valuations, the picture was out of balance. In general, the world view of Estonian journalists is somewhat left of centre politically and this is reflected in their relatively positive valuation of the Social Democratic Party. At the same time, the aggregated data blurred the picture somewhat because the two largest newspapers have different political preferences: *Postimees* favours the Reform Party and *Eesti Päevaleht* the Pro Patria/Res Publica

Union. Consequently, each of those newspapers tended to treat its competitor's favourite political party critically and this was apparent in the negative valuations of the Reform Party or the Pro Patria/Res Publica Union, respectively. Both of those newspapers, however, have a common enemy — the Centre Party, as evidenced by that party's strong negative valuations. The aggregation of 44 percent of the negative valuations to one political party during the nine pre-election weeks in 2007 cannot be explained only by that party's unfortunate or inappropriate behaviour or actions. Data from the 1999 and 2003 elections produced similar results. Primarily negative valuations were given to the Centre Party; the Reform Party, Pro Patria/Res Publica Union and the Moderates/Social Democratic Party were favoured with positive valuations. It must be added that in two out of the last three elections observed, the Centre Party received the most votes.

Thus, the valuation of the political parties by the media was not necessarily influenced only by their popularity. This circumstance still does not answer the question of which change came first — the media tone or public preferences? In searching for an answer to that question, one may compare the results from pre-election public opinion polls with the media content analysis data.

Prior to the 2003 parliamentary elections, numerous public opinion polls explaining voters' support for political parties were conducted between December 2002 and March 2003. Four of them were carried out by the research firm Emor. The results of those opinion surveys have been published by Emor's analyst Aivar Voog (2003). The Emor polls were conducted during the following periods: 27 November – 18 December, 2002; 8 – 15 January, 2003; 5 – 12 February, 2003; and 18 – 24 February, 2003. In each case, 500 people were polled. In addition to that, the firm Turu-uuringute AS [Market Research, Inc.] carried out a survey from 31 January to 7 February, 2003, in which 1,000 persons were polled (PM 2003). The results of those polls are presented in Table 4.

Table 4. Results of Public Opinion Polls Conducted Prior to the 2003 Parliamentary Elections (support for political parties – percentage of legal age citizens who had the firm intention of voting).

Survey organisation	Emor	Emor	Turu-uuringute AS	Emor	Emor
Political Party	27 Nov. – 18 Dec., 2002	8-15 Jan., 2003	31 Jan. – 7 Feb., 2003	5-12 Feb., 2003	18-24 Feb., 2003
RefP	13	13	13	20	15
CP	27	26	30	31	27
M	3	6	5	4	7
PPU	6	8	4	6	7
PPE	5	6	6	3	11
ResP	23	21	24	14	16
	n=500	n=500	n=1000	n=500	n=500

Sources: Voog 2003; PM 2003.

The results of the surveys were compared with the media content data prior to conducting the survey and during the period of the survey, using equal time spans. If the poll was conducted during a seven-day period, for example, the period observed prior to the election was also seven days in duration. The survey results were observed as the dependent variable and the frequency of notation of political parties in the print media (x_z) as the predicting variable. The values for coefficients of determination between the survey results and the notation frequency of political parties are presented in Table 5. The critical value of the coefficients of determination shown in Table 5 is 0.50 at the significance level 0.05. N is as previously stated, the number of notation of political parties (x_z).

Table 5. Coefficients of Determination Between the Survey Findings and Frequency of Notion of Political Parties for the Periods Preceding the Surveys and During the Polling Periods in December 2002 and January 2003.

	Before	Polling Period	Before	Polling period	Before	Polling Period
	5–26 Nov., 2002	27 Nov. – 18 Dec., 2002	3–7 Jan., 2003	8-15 Jan., 2003	23-30 Jan., 2003	31 Jan. – 2 Feb.,2003
	0.62	0.38*	0.63	0.56	0.78	0.56
n	409	389	532	660	629	768

* statistically non-significant

In all three instances, the value of the coefficient of determination prior to the polling period was markedly greater than during the polling period. This finding is important: the typical lagged correlation is obvious. One can observe here the classical pattern of media influence: the media first sets the public opinion tenor which the public adopts as its opinion at some later point in time. From this it can be concluded that the coverage by the media influenced public opinion.

At first glance, this conclusion is not supported by the data collected in the survey conducted by Emor in the beginning of February. Immediately prior to the poll conducted from 5 – 12 February, the coefficient of determination for the notation frequency of political parties and the results of the public opinion poll was 0.86 and during the polling period it was 0.96 (see Table 6).

Table 6. Coefficients of Determination for the Results of Public Opinion Polls and the Notation Frequency of Political Parties Prior To and During the Polling Periods in February 2003.

	Before	Polling period	Before	Polling Period
	28 Jan. – 4 Feb., 2003	5–12 Feb., 2003	11–17 Feb., 2003	18–24 Feb., 2003
	0.86	0.96	0.85	0.73
n	691	745	692	857

From this it can be seen that media apparently followed the public opinion that prevailed at the moment more closely. However, in drawing this conclusion it must be presumed that the observed publications had not previously written anything about political parties, or that the readers had completely forgotten the prior messages they had received. This, however, is obviously not the case. It is easy to be convinced that this is so by extending the time period prior to the polling period and taking into account the earlier coverage given to political parties in the media.

Unfortunately the length of the ideal time lag between the appearance of media coverage and the change in public opinion that takes place is not known. Probably it is possible to experimentally verify this ideal interval by searching for the time lag during which the correlation between the media coverage and the results of the public opinion surveys is the greatest. It is also not known how quickly people forget the messages presented by the media. The problem has been resolved in the current study by extending the time prior to the polling period to the beginning of January (taking into consideration the content of the media from 3 January, 2003, until the February polling periods). By increasing the time period prior to conducting the poll from seven days to four and a half weeks (3 January to 4 February), the coefficient of determination between the results of the public opinion polls and the notation frequency of political parties increases from 0.86 to 0.98.

Hence it is indicated that the media content changed first and changes in public opinion followed. Moreover, the relationship between the content observed over a longer period of time and the results of the polls shows that public preferences accumulated diachronically under the influence of the available media messages. By its nature, the mental picture construed by the reader's mind is a composite that is shaped not only by the media coverage of the moment, but also by the time lag between the exposure presented in the media and the changes that take place in the perception of the audience. This may range from a few days to many months in duration. Figuratively speaking, one may compare public opinion with a Napoleon cake – it has several layers as a result of previous and more recent structural couplings. New coverage or valuations are given to the political parties on a daily basis and each event of new media coverage triggers a new layer influencing the layer that came before and that comes after. Something is forgotten and something is

remembered, one issue forces another into the background or is itself influenced by an earlier message. Thus, the public's preferences are not echoed only by the media's latest segment of valuation but also by prior coverage. This becomes apparent in the relationship between the results of the lengthier period of content analysis and public preferences.

These empirical results confirm the second hypothesis (H_2) that the relationship between the valuation of political parties by the media and the political preferences of the voters accumulate diachronically as a cumulus in which concepts and valuations that emerge in media communication are joined and congregate. The voters' preferences were formed layer upon layer in compliance with the constant supply of valuations by the mass media and were processed into information within the cognitive systems. The aforementioned applies not only with regard to mass media content and opinion polls but also in the case of election results. Figure 2 shows the coefficients of determination between the notation frequency of political parties and the election results during the nine weeks prior to the 2007 elections.

At the same time, the relationships between the concurrent week's media coverage and the election results have been compared. In the last instance, the data from prior weeks beginning with the first week in January were added to the concurrent week's notation frequency of political parties (x_z). In other words: the period of observation was extended to the beginning of January. The coefficients of determination that are presented in the Figure 2 are statistically significant at the significance level 0.05.

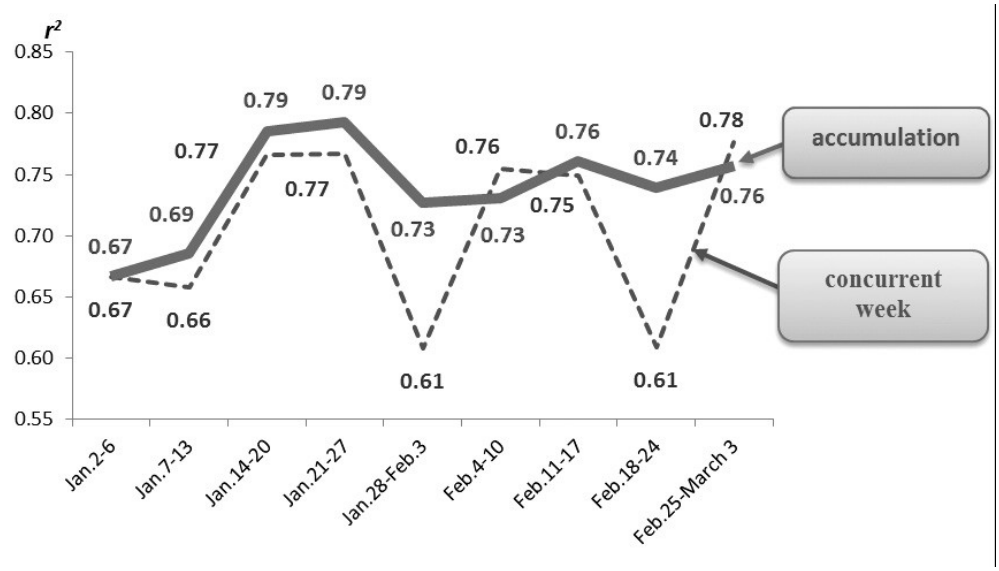

Figure 2. Coefficients of Determination Between Election Results and Notation Frequency in 2007.

In Figure 2, the dotted line depicts the concurrent weeks' coefficients of determination

and the bold line depicts the accumulation dynamics. It can be seen that the coefficients of determination between one-week notation frequency data and election results fluctuate in rather large amplitudes. However, the coefficient of determination of the combined results moves in another rhythm and reacts in an altogether different and more subdued amplitude in comparison to the boisterous movements of the current week's coefficient of determination. The basic flow of the process of forming peoples' preferences for political parties is depicted by the combined results.

Conclusions

The results of the authors' analysis show that the constructivist and systems theoretical approach has proven itself and empirical research fixed some interesting aspects of the process under observation within a certain period of time. In our study, both hypotheses were confirmed. It is indicated that the frequency of valuations given to political parties in the observed print media described the election results to a considerable degree. In the case of all of the observed elections, a quantitatively measurable relationship exists between the valuation of political parties and the election results or results of the public opinion surveys. This relationship was responsive: when one was changed the other changed as well. A clear chronological order appeared in comparing media content and the results of public opinion polls: the predicting variable preceded the dependent variable. First the media distributed its valuations, and after some time elapsed, public opinion followed. Hence, public opinion accumulated diachronically and layer-upon-layer based on the available exposure. Public opinion was shaped not only by current coverage, but also to a large extent by media messages from previous weeks.

However, the correlation coefficients do not explain everything. It should be noted that in proving the relationship between the valuation of political parties and election results, the "influence" of the media was measured for only those people who actually voted. Of the eligible voters, 57.4% voted in the 1999 parliamentary elections; 52.5% in the 2002 local council elections, 58.2% in the 2003 and 61.9% in the 2007 parliamentary elections (Estonian National Electoral Committee). Furthermore, in all four instances the readership of the observed publications did not coincide with the entire electorate – there were always more people "influenced" than there were media message receivers. This shows that the relationship between the media and individuals is considerably more complicated than is allowed for by the conventional theories that deals with how the media influences people.

It is also evident that the intent of the "sender" of the message is not always relevant: the relationship between media content and voters' preferences appears even when the communicator does not want it. In confirmation of that fact is the effect of the influence of the negative valuation of political parties. Here it can again be seen that a person's consciousness is a non-trivial system whose output cannot be predicted on the basis of the input. Changes can only be triggered by media but they cannot be determined in advance.

Thus, the activity of the reader is not determined by what the media wrote or said but by what meaning the observer gives to the words that were read or heard. The interpretation and valuation of media messages depends upon the recipient's basic implicit assumptions, beliefs, and preferences. Following that comes interpersonal communication – people discuss the events of the day and media messages among themselves. Both proceed reflexively: people as observed observers in forming their opinions keep in mind the views of others that they experience either directly or via the media. They are inclined to think what others around them think and believe what others believe. That intricate process cannot be observed empirically because cognition is recursive, complex and closed to outside observers. One can only interpret linguistic and other activity or data brought forth using some method and make decisions that better or worse fit the ascertainable facts.

The fact that the constructions and valuations presented by different media outlets were generally similar does not tell one very much about the observed events and actors, but primarily about culture as a pattern of structurally related meanings that directs the making of choices, provision of meanings and the making of valuations by media professionals. The mass media's depiction of "reality" emanates only from the observed actor or event to which it gives a system specific meaning. Compatible connotations and valuations are derived from that. For the reader of media messages, the phenomena and events exist only by virtue of such descriptions and they may be specified only as system specific realities (see Schmidt, 2007: 88).

Although the authors' database is limited – it refers to Estonia at a certain time only – it can be reasonably concluded that valuations serve the structural coupling of the mass media with consciousness systems and with other social domains and perform an indispensable role in the formation of public opinion and election preferences. In structural coupling, when the media system and the cognitive systems perturb one another, a system of common understandings, shared beliefs and accepted orientations emerges that coordinates the behaviour of the individuals. The analysis showed that although the reader was active and gave meaning to the media texts in keeping with his own beliefs and that while in the reception of media messages opinions were formed reflexively, in all observed instances the perception of the voters follows the valuations of political parties in the media to a considerable degree. People, in making their choices, relied on these valuations, on that "present" created by the mass media. The collective knowledge that is created in a complex, ongoing process of communication, and the expectations that arise from this ensured that in all of the instances observed here the cultural signifier of those who were elected corresponded to the "social mandate".

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