

Contemporary Issues and Ideas in Social Sciences

December 2007

Testing Milbrath's 1965 Framework of Political Participation: Institutions and Social Capital

D. Ruedin¹

University of Oxford

Abstract

Despite its age, Milbrath's 1965 framework of political participation is still widely cited. A computer simulation is used to empirically test the framework for the first time. The parameter estimates from the simulation provide valid results, suggesting that the framework may be viable. The simulation is then used to explore the nature of political participation. It is found that both political institutions and social capital are significant contributors to political participation. The role of social capital is revised: rather than just the time spent in a community, personal contacts appear to be more important for political participation.

¹**Email:** didier.ruedin@sociology.ox.ac.uk

1 Introduction

As a key component of political citizenship, participation in political acts often receives the attention of researchers. Different approaches have championed different understandings of what factors facilitate political participation. The hierarchical framework by Lester Milbrath (1965) is still often cited (see for example Axford *et al.*, 1997; Zevin, 1999; Plutzer, 2002; Zimmermann, 1999; Fowler, 2006). Despite its frequent use, the framework itself has never been tested empirically. This paper uses a computer simulation in order to implement the framework. The results are then compared against existing survey data. In contrast to many other studies of political participation, the vote choice itself is not of interest. Instead, it is examined who participates to what level. Both the choice of method and the nature of the framework mean that the individual motivation for participation cannot be determined. Instead, the framework focuses on personalities that are linked to the propensity of participation. The measurement of personalities itself is difficult (Milbrath, 1965), but by using a computer simulation, some of the difficulties can be overcome by making reasonable assumptions.

A short review of the different understandings of political participation forms the beginning of this article. This is necessary to situate Milbrath's framework. After outlining the framework in more detail, the operationalization is turned to. The empirical part first of all tests the validity of the framework. Secondly, the simulation is used to make new statements about the role of institutions and in particular social capital in political participation. Initially, however, it is necessary to define the key concepts.

1.1 Key Terms

Political participation is probably the most prominent term in this paper. It can be understood as the “activity by private citizens designed to influence government decision-making” (Huntington & Nelson, 1976, cited in Uhlaner, 2004, p.11078). This means that there are different kinds of activities open to the citizens. Political support and electoral activities beyond voting are included in this paper in order to widen the understanding of participation to match that of Milbrath (1965). Participation in politics is understood as an individual activity, albeit carried out in a specific context, and whilst interacting with others.

It is this specific context in which political participation takes place that can be regarded as the political institutions. Such institutions include the rules and regulations of elections and political activity in general. Not regulated as such, but still regular patterns of influence are the stimuli associated with political participation. These are the signals and messages sent by the campaigning parties, but also the mass media.

Whilst the stimuli reach all individuals, not everyone is affected by them in the same way. This is the case, because depending on the personalities of individuals, stimuli are received in a different way. Fay (1975) referred to this as a *perceptual screen*. Personalities are understood as one’s “unique pattern of traits [which are the] distinguishable, relatively enduring way in which one individual differs from others” (Guildford, 1959, cited in Froman, 1961, p.344). It is partly because of these individual traits that political behaviour differs between individuals.

Social capital, finally, is understood in this article as the relations between individuals of a community. It facilitates co-operation between citizens, and

thus increases access to resources that are beneficial to political participation. The relatively durable access to community networks and peer groups is reflected in knowing people.

2 Situating Milbrath's Framework

2.1 Background Literature

The understanding of political participation has undergone changes over the years. As research shifted its focus over the years, the domain of political participation has grown (Burdick & Brodbeck, 1959; van Deth, 2001). In the 1940s and 1950s, the focus was almost exclusively on voting. Since, the focus has grown to include first the domain of conventional, and then unconventional participation (Axford *et al.*, 1997, Burdick & Brodbeck, 1959, Verba *et al.*, 1971; Verba *et al.*, 1993). Conventional participation looks at political acts such as campaigning, donating time and money, or standing for an election (Peterson, 1990). Unconventional participation refers to protesting, direct action, or political violence (ibid.; Parry *et al.*, 1992). This shift of focus means that the period between the elections is increasingly scrutinized, rather than the elections only. Indeed, Schulz and Adams (1981) suggested that looking only at elections distorts the understanding of participation. Wider applications are very common these days: from protest movements to new social movements (Barnes & Kaase *et al.*, 1979; van Deth, 1997; Urwin & Patterson, 1990). So common they are that van Deth (2001) warned of the danger that political participation may become a study of everything. Given the observation that for many voting is the sole political act (Verba *et al.*, 1995), combined with the common occurrence of elections, however, voting

remains a key focus of research (Anderson & Zelle, 1998; Crotty, 1991).

Traditionally, the number of explanatory factors considered when studying political participation is relatively limited. Education (Peterson, 1990; Parry *et al.*, 1992; Barnes *et al.*, 1979; Chapman & Palda, 1983) and socioeconomic status (Lane, 1959; Crouch, 1977; van Deth, 1997; Verba *et al.*, 1971, 1978, 1995; Kuroda, 1965; Anderson & Zelle, 1998; Crotty, 1991; Pateman, 1970) are consistently found to be correlated to political participation, with other factors commonly studied being age, race, sex, religion, or location (Teixeira, 1987; Milbrath, 1965; Lane, 1959, 1962; Welch & Secret, 1981; Richardson, 2000). Whilst the effects of SES are constantly found to be significant factors for political participation, the exact mechanisms are not very well known. The same is true for social capital a factor considered in more recent years (Putnam, 2000; Krishna, 2002; La Due Lake & Huckfeldt, 1998; Paxton, 1999). The effects of the media are often thought to be large (Chomsky, 2002; Herman & Chomsky, 1994; Iyengar & Reeves, 1997; Kepplinger & Maurer, 2005), but are often ignored as the effects are difficult to quantify (Frizzell & McPhail, 1979).

Rational choice approaches are a common explanation for voting behaviour. Green and Shapiro (1994) outlined a drastic increase in the use of rational choice based approaches in political science literature. Rational choice is often assumed and defended as a logically coherent approach (Laver, 1997; Baert, 1998, Chapman, & Palda, 1983). In Downs' words: "Every rational man decides to vote just as he makes all other decisions: if the returns outweigh the costs, he votes; if not, he abstains." (1957, p. 260). Just like with voting, rational choice theories struggle with the problem of free-riding in other forms of participation. To overcome this problem, sometimes ben-

efits of expressive nature are suggested, although this is not uncontroversial (Teixeira, 1987; Parry, 1972). An alternative explanation is that the cost of voting is too low for utility calculations to be applied (Teixeira, 1987; Pennock & Chapman, 1975; Crouch, 1977). The observation that there are only few consistent abstainers (Crouch, 1977) is another challenge to rational choice approaches.

An alternative approach emphasizes individual qualities—personalities—in order to explain who participates at the different levels. Examples of relevant personality traits include sociability or being thick-skinned. This approach was championed by Milbrath (1960, 1965) and to a lesser extent by Froman (1961), Kuroda (1965), and Ashford (1972). Such a focus on psychological aspects is rooted in developments in behavioural sciences (Hull, 1943; Lane, 1959). The concept of the *perceptual screen* captures the different experience of the political environment well (Fay, 1975; Wallas, 1981; Andrew, 1991, Lane, 1962). Personality is in this case commonly used as an explanatory variable in conjunction with the more conventional aspects such as class or education.

Many of these studies also expanded on approaches to electoral behaviour in that they recognized the dynamic nature of political behaviour: feedback loops were introduced into previously static analyses (Milbrath, 1960; Milbrath, 1965; Verba *et al.*, 1971; Dunleavy *et al.*, 2000; Jones-Correa & Leal, 2001). This not only expanded the domain of where political participation is applied, but also the repertoire of factors looked at. The focus on personalities can thus be understood as qualifying strict RCT applications, where behaviour and traits not linked to the maximizing of benefits are typically ignored.

As the focus shifted from conventional participation to include unconventional participation—such as protesting and political violence—, the idea of different modes of participation was used increasingly (Verba *et al.*, 1971). This is a modification of the hierarchical approach as the one used by Milbrath (1965). Rather than regarding all forms of political participation concurrently, different relatively independent hierarchies are thought to exist. Particularly with studies on direct action and protest movements it was suggested that a single hierarchy of political involvement was not enough. Those involved in unconventional political action often do not engage in other forms of politics, and vice versa (Muller, 1979). Verba *et al.* (1971) were at the forefront arguing for a multidimensional approach: The idea of different levels was kept, but political participation was conceptualized as different ladders, each representing a different mode: voting, taking part in campaign activities, communal activities, and contacting officials directly. Whilst there is some empirical evidence for the different modes (Verba *et al.*, 1971; Verba *et al.* 1987), unfortunately the boundaries of the different modes are conceptually not always clear (Parry, 1972; Richardson, 1993). Indeed Parry *et al.* (1992) identified both overlaps and ambiguous cases. They suggest that different modes should be used very carefully (*ibid.*). Other studies find the one-dimensional approach adequate: “[I]n Europe the unidimensional model is a fully appropriate way to proceed” (Barnes & Kaase, 1979, p.86).

Theoretically, most work on the influence of personal traits on political participation is solid and plausible. However, the resulting framework by Milbrath (1965) was never empirically tested. This is probably the case because feedback loops are involved, making political participation an essentially dynamic matter (Milbrath, 1960, 1965; Froman, 1961). Such aspects are more

difficult to capture using conventional statistical methods (Abbott, 1988). What is more, for reasons of cost and convenience many studies in political participation are based on cross-sectional data (Beck & Jennings, 1982), as such in a relatively poor position to examine dynamic processes (Gilbert & Troitzsch, 1999). This paper will attempt to fill this gap by testing whether the suggested mechanisms really can lead to the observed outcomes. The framework developed by Milbrath is used for a number of reasons: it is conceptually clear, relatively well-developed, complete, and often cited.

Section Summary

With the insight that there is more to politics than just voting (Osburn, 1985; Verba *et al.*, 1971), research in political participation has expanded to include both conventional participation as well as unconventional participation. The use of RCT to explain participatory patterns is not uncontroversial, and many researchers limit themselves to conventional explanatory variables such as education. The case for including personalities is theoretically well founded, but suffers from the fact that the key variables are inherently difficult to measure. A computer simulation can overcome some of these problems, and thus empirically test Milbrath's (1965) model of political participation.

2.2 Milbrath's Model

Milbrath (1965) understood political participation in terms of both individual characteristics and external factors. Individual traits considered are the commonly studied age, race, sex, religion, or location, but notably also personality traits. It is indeed the personalities that Milbrath described in most detail. The simulation used in this paper considers these factors as far as

there are enough descriptive details available to include them. The intuition is that depending on the personal characteristics, a person is both more or less likely to get involved politically, and more or less affected by the political environment and its stimuli.

Milbrath (1965) conceptualized participation in a hierarchical manner: “[P]ersons who engage in the topmost behaviours are very likely to perform those lower in rank also” (p.17–8). This is a cumulative understanding of political participation, often described using the metaphors of pyramids or ladders (Benney *et al.*, 1956; Milbrath, 1960, 1965; Kuroda, 1965; Froman, 1961). People are understood to be involved in all political activities up to a certain threshold, albeit not necessarily at the same time. Following Milbrath’s framework, this threshold is influenced by external stimuli and interpersonal communication, but notably also individual characteristics, such as sociability or socio-economic status.

Milbrath took the idea of the pyramid probably further than anyone else. Involvement in politics is conceptualized in terms of different levels, allowing for a plausible more or less intensive involvement. Figure 1 outlines this hierarchy, divided into spectator activities, transitional activities, and gladiatorial activities. The activities at the bottom of the pyramid are more common. In the simulation, the pyramid is used in a slightly modified version. Most notably, at the bottom of the hierarchy are added apathetic citizens, as well as non-voters who are, in contrast, at least exposed to stimuli. In this paper, the levels of having a discussion and trying to talk somebody into voting a particular way are merged, due to the lack of a clear distinction in the book. Milbrath’s original (1965) pyramid also included a level of attending a strategy meeting just above active party membership, but did not treat this item

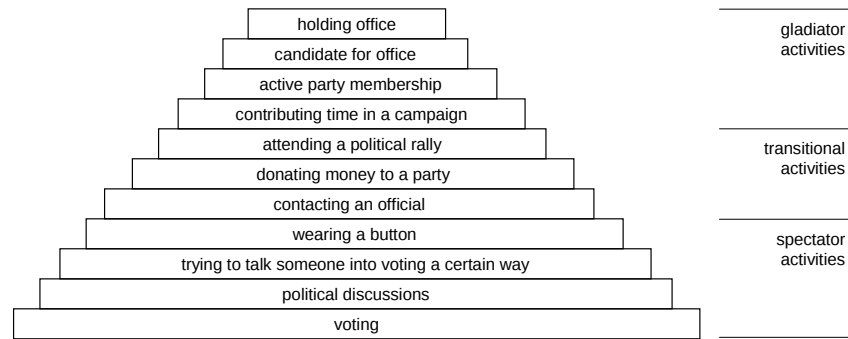


Figure 1: Political participation can be conceptualized in a hierarchical manner. Political involvement is understood in terms of different levels (adapted from Milbrath, 1965, p.18).

subsequently.

The qualitative description of the mechanisms involved in Milbrath (1965) can be used to build a systematic simulation of the framework (Chattoe, 2005), although the choice of numerical values can be crucial (Agar, 2003). The computer simulation approach was chosen over advanced statistical methods due to general limits of such methods, particularly given the feedback loops involved. Abbott (1988) outlines many of these limits—assumptions of fixed entities, or singular independent causal patterns—some of which simulations can overcome.

Methodologically, this paper follows the approach to computer simulation as outlined by Gilbert and Troitzsch (1999, 2005). In order to keep the simulation manageable, Milbrath’s model is implemented in a slightly simplified version. The key elements are nonetheless maintained: political participation

is an individual affair, individuals communicate with each other, they are also subjected to external political stimuli, people have different characteristics, these characteristics mean that the impact of the stimuli and interaction varies from person to person (perceptual screen). The impact of personal interaction is stronger than that of external stimuli (Milbrath & Goel, 1977), reflecting the importance of social capital.

The parameter estimates of the computer simulation are compared to both survey data and qualitative accounts of political participation. This enables to make statements of validity (Gilbert & Troitzsch, 1999; Carmines & Zeller, 1979).

Moving from one level to the next in the hierarchy is dependent on the individual characteristics and understood in terms of thresholds. For example, an extremely passive citizen is unlikely to become involved in politics in the first place, or someone not comfortable with overt political acts is unlikely to put a sticker of the chosen political party on her or his car. The idea of thresholds in participation is supported by qualitative accounts of political participation (Parker, 1972; Schulz & Adams, 1981).

As outlined in figure 2 the simulation follows a simple order of events, allowing for feedback loops to work. Each individual starts in a certain state (setup), originally assigned to randomly. In each cycle, the individuals are subjected to certain stimuli (p), and also set to interact with a certain probability (q), both of which affect the citizens and their characteristics. With a certain probability (r), individuals also move, meaning that they lose their contacts in the community. As a consequence, the likelihood of moving up or down the ladder of political participation is affected by interpersonal interaction and external stimuli. At the end of each cycle, the level of participation

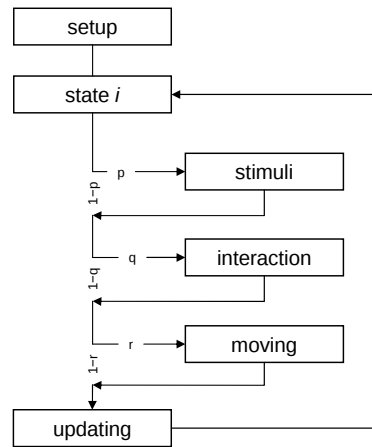


Figure 2: The basic procedure of the simulation: people interact with a given probability (q) and are exposed to external stimuli with a certain probability (p). Individuals also sometimes move and lose their local contacts (r). After each cycle the level of political participation is recalculated for each individual. The values for p , q , and r are determined by the political environment chosen.

is recalculated for all individuals, based on the changed characteristics. The levels of involvement follow set rules, but stochastic elements are also present, catering for unmeasured variability.

The values for p , q , and r can be changed to reflect different political environments. For example, the fact that political stimuli are more intense before an election (Parry *et al.*, 1992; Pennock & Chapman, 1975) can be reflected by increasing the value for p —more political stimuli are sent. Repressive regimes often restrain interaction (Bienen & Morell, 1975), something that can be modelled by reducing the value for q .

In the computer simulation used, the agents are conceptualized as individuals with a range of characteristics that affect their propensity to get involved in political acts. With the exception of felt duty to participate, all these characteristics are more or less open to change according to the dynamics of the system. Depending on the individual traits, an agent is more or less prone to such changes. The characteristics modelled are based on Milbrath (1965) as follows, given with their opposites in square brackets: active [passive], overt [covert], autonomous [compliant], approaching [avoiding], continuous [episodic], out-taking [inputting], expressive [instrumental], and social [non-social]. Each characteristic is modelled as a continuous variable for each agent. Appendix 1 outlines these variables in more detail.

In addition to the personal characteristics, for each agent a number of factors are recorded: the socio-economic status (SES), the number of contacts in the community, as well as the time spent in the community. Just like the personality traits, these are understood as a continuum, represented in the simulation as a single floating number. Floating numbers are used so that small influences can accumulate over time. For aspects such as duty or

eligibility to vote, a binary variable is used; time and number of contacts in the community are not restricted, although—being sufficient—whole numbers are used. This approach results in profiles unique to each agent. The level of political involvement itself can also be represented as a single number: from 0 for apathetic citizens to 10 for those holding office.

3 Is the Framework Valid?

Having designed the computer simulation, the first step is to examine whether the framework leads to valid estimates. A number of hypotheses are formulated and used to test Milbrath's (1965) framework of political participation. All these hypotheses are split into smaller testable statements.

Different political environments affect the aggregate outcome of political participation. In particular, *more stimuli are thought to lead to more participation overall* (Milbrath, 1965; Milbrath & Goel, 1977) (H1).

In order to test the effects of different political institutions on political participation (H1), three different environments were run for 250 cycles. Each cycle is thought to represent a week. An environment is operationalized as a particular combination of the key parameters p, q, and r. For example, the number of stimuli sent is varied. Different political environments consistently lead to substantially different outcomes ($p < 0.001$).

A key argument of Milbrath's approach is that participation in politics is dynamic. In particular, Crouch (1977) argued that *whereas people sometimes miss a vote, there is relative long-term stability in patterns of participation* (H2). This expectation is also supported by qualitative studies of participation (Andrew, 1991).

In the simulated data an average 0.117 level-changes were observed for every cycle: a change every 8.52 weeks. For any value of not dynamic in terms of changes fewer than every 12 weeks, the observed difference is statistically significant ($p < 0.05$). Figure 3 visualizes the dynamic nature of simulated political participation at the aggregate level. A typically observed dynamic equilibrium is achieved. With a particular eye to Crouch's (1977) statement, the history of individual participation can be examined. Only looking at the changes involving voting and non-voting, it is apparent that people sometimes miss a vote: there are not many persistent abstainers. The history of individuals over a period of 104 cycles was analysed, and it was found that 53.3% are always involved to the level of voting or above, making use of their political rights. At the same time 37.4% at some stage fall below that threshold at least once ($p < 0.001$). There are 9.3% persistent abstainers who never reached the level of voting.

Having established that the simulated framework leads to dynamic patterns of political participation, the results of the simulation are also tested in terms of how well they fit data reported from surveys. In order to achieve this, the distribution of participation levels after 500 cycles with elections every two years was established. These data were then compared to data cited in the literature (Milbrath, 1965; Lane, 1959; Birch, 1959; Crouch, 1977; Mabileau *et al.*, 1989; Muller, 1979; Verba *et al.*, 1971, 1978, 1987; Parry *et al.*, 1992). This step is therefore a test of criterion-related validity. The simulated data and the observed survey data do by and large coincide ($p < 0.001$). In many cases, however, the range of values suggested in the literature is very generous.

Trying to cater for the argument that political participation occurs in

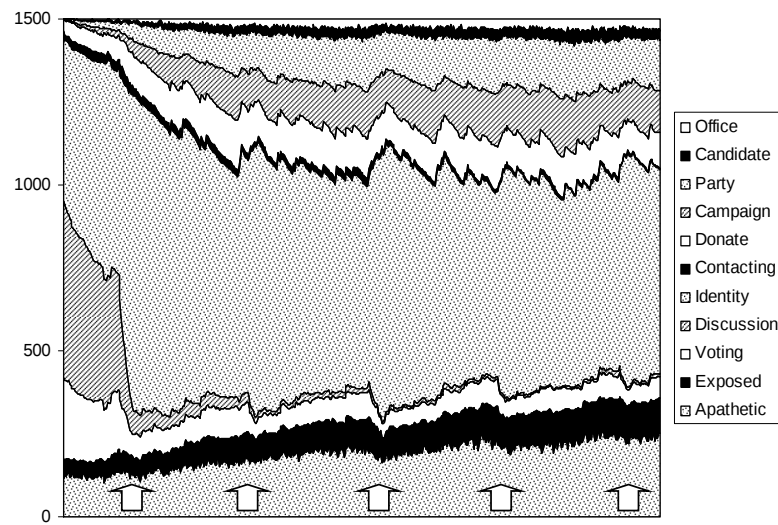


Figure 3: The distribution of the different levels to which individuals are involved in over the course of time with elections every 2 years. Elections are indicated with arrows. The simulation was run for 500 cycles, leading to a typically observed dynamic equilibrium. $N=1500$.

different modes, I attempted to reduce the simulation to a single mode. To this end, the levels of voting and contacting a politician were turned off. This should approximate a single mode as outlined by Verba *et al.* (1971). However, once switching off some of the levels in the simulation, the fit with survey data at other levels is reduced. The expected added benefit from modelling only a single of multiple ladders of participation cannot be replicated in the simulated data. This finding may be interpreted as a challenge Verba *et al.*'s (1971) clear boundaries between different modes of political participation.

The simulated data were also compared to the survey data cited by Milbrath (1965). In this case the range of suggested values is smaller. The best fit was achieved where all levels were included ($p < 0.05$). When some of the levels were turned off, the simulated data no longer fitted the data cited by Milbrath. The simulation with all levels active slightly over-estimates the number of individuals engaged at the highest levels of participation: gladiatorial activities. This might be an indication that the simulation underestimates the costs of participation at the highest levels, or the opportunities available.

According to Milbrath (1965), *more stimuli should lead to more participation, particularly at the higher levels* (H3). This argument reflects the perceived influence of media messages (Cohen & Young, 1973). In order to test the effects of stimuli, the distribution after 250 cycles of an ordinary environment were compared to the same environment with all stimuli turned off. The two cases are significantly different for all levels ($p < 0.001$). More stimuli are associated with more participation, but substantively only at the lower ends of the hierarchy. At the higher end of the hierarchy, the observed difference is small. This might suggest that for higher levels of participation, stimuli are not the key contributors to participation. Although not

acknowledged as such by Milbrath (1965), interaction between individuals is implicitly described as a positive feedback loop, driving those already involved more deeply so. Milbrath's framework has the advantage of somewhat catering for the fact that people are selective in what kind of messages they receive, an effect often left out in other studies (Huckfeldt *et al.*, 2004; Iyengar & Reeves, 1997). With this in mind, Milbrath's expectation that the effects of more stimuli should be particularly marked at the higher levels needs to be qualified: It is the effects of stimuli reinforced by personal interaction that appears to lead to increased participation.

The socioeconomic status (SES) and education of an individual are thought to be key factors determining political participation (Lane, 1959; van Deth, 1997; Verba *et al.*, 1995; Crotty, 1991). In particular, *low levels of education are expected to be associated with low levels of political participation* (Milbrath, 1965; Milbrath & Goel, 1977.) (H4). High levels of SES, on the other hand, are expected to lead to high levels of participation (*ibid.*; Lane, 1959). In fact, *the higher the SES, the more likely participation at high levels can be expected to be* (H5).

In this article, these two hypotheses (H4, H5) cannot be treated separately, as the simulation only includes education as part of its parent concept socioeconomic status. The observed relationship between levels of participation and socioeconomic status is significant ($p < 0.001$). Whereas for those not involved (levels 0 and 1) there is no significant difference, the highest levels are almost exclusively for those with high SES. In the middle levels, a split between different levels of SES can be observed. This suggests that individual at the lowest levels of political participation are equally likely to come from a background with much or little SES, contradicting the expectation in

H4. However, when looking at levels higher than being merely exposed to political messages, an association of low SES and lower levels of participation can be observed. In a similar vein, for the higher levels of political participation, particularly gladiatorial activities, high SES almost appears to be a prerequisite.

The above findings indicate clearly that socio-economic status (SES) is a key factor influencing participation in politics. These findings fit well with the literature (Milbrath & Goel, 1977; Lane, 1975, 1959; Crotty, 1991; Wolfinger & Rosenstone, 1980). The understanding that SES is of great importance when it comes to political factor is one that has been upheld has the studies of political participation evolved (Uhlener, 2004).

In addition to the validity tests, a sensitivity analysis was carried out in order to test whether all the variables in the framework are necessary. This was done by holding each of the variables constant in turn, and running in the simulation a set pattern of five elections with more quiet times in between. None of the variables could be left out without leading to significantly different results with regards of the distribution of the population at the different levels ($p < 0.000$).

Section Summary

In this section it was demonstrated that Milbrath's model of political participation leads to valid results. Using a sensitivity analysis it was found that all the variables included contribute towards the result. A number of hypotheses were used to compare simulated data against survey data on political participation. The simulated data also show dynamic features: a few weeks can mean a great deal of difference in terms of participation. Events such as an

election have immediate (short-term) effects, but long-term effects can also be observed, where small influences accumulate over time. Here, different political environments lead to different results. This means that Milbrath's (1965) framework of political participation leads to valid estimates.

4 What Else Can We Learn?

Having established that Milbrath's framework of political participation provides valid results, in this section I will use the computer simulation to test a number of hypotheses on political participation: the aim is to see what else can be learnt using the simulation of political participation.

4.1 Political Institutions

The level of *economic development is often found to be linked to overall levels of participation* (Verba, 1961) (H6). Problems exist with counterfactuals, since as a country develops economically, other aspects of the political life often also change. Using the simulation, only the variables of interest can be changed. In order to test whether increases in economic development mean higher levels of political participation, the same political environment was run twice. In the first case, the simulation was run for the equivalent of 500 weeks. In the second case, the level of SES was increased continually, in order to simulate growing development. The results indicate that overall, after the observed period, no significant differences between these two cases can be determined ($p > 0.05$). However, looking at individual levels in the hierarchy, notable exceptions can be determined: As the country developed, the levels of voting decreased significantly ($p < 0.05$), whilst the number

of people donating money increased ($p < 0.05$). These decreases in voting mean increases in participation at higher levels, since the levels of the lower levels are unaffected. This indicates that the results are in line with the expectations, but the differences are statistically insignificant.

Looking at a cross-section of the population, Lane (1959) argued that *citizens with higher levels of SES should be expected to be more likely to donate money* (H7). Looking at the results of the equivalent of 500 weeks, the likelihood of a person with high SES is not significantly greater to donate money than that of a person with medium or low SES ($p > 0.05$). At first sight, this finding is counter-intuitive, contradicting the established literature (Verba *et al.*, 1995; Lane, 1959). However, when trying to emulate a developing economy in the previous section, the one level where participation increased noticeably—albeit not statistically significant ($p > 0.05$)—was that of donating money. Taking both findings into account, this suggests that with an overall growth of SES in all spheres of the population, political donations increase; but it is not only the richer ones who are more likely to give.

The effects of the media and other political messages on individuals are often disputed, ranging from almost insignificant to critical (Frizzell & McPhail, 1979; Chomsky, 2002; Klapper, 1960). The media and their political messages are summarized as stimuli in the simulation, and the results above seem to indicate that it is the combination of stimuli and personal communication that is significant.

As visible in figure 3 above, elections—as indicated by an arrow—have a substantial impact on political participation. In the simulation, elections are characterized by an increased number of stimuli, and the number of citizens identifying with a political party is increased significantly ($p < 0.001$). This

effect is greater where the election is a close one, as reflected by a greater number of stimuli than in ordinary elections ($p < 0.001$). Figure 3 also illustrates that the increases of identification found during the time of election campaigns are temporary in nature, with a dynamic equilibrium achieved after about 3 elections. The effects of elections on other levels are not significant ($p > 0.05$). The nature of Milbrath's (1965) framework means that those citizens apathetic to politics are unaffected by stimuli, and thus their number is unaffected by whether an election takes place or not.

In contrast to the effects of the media, *the regulation of elections is almost always thought to be a major factor determining the levels of political participation* (Milbrath, 1965; Milbrath & Goel, 1977; Powell, 1986) (H8). Regulations are thought to both facilitate and impede participation, depending on their nature. In order to test the role of regulation, the time needed until an individual is allowed to participate was varied. This reflects the registration laws in different places. For spectator and transitional activities, a significant difference can be observed ($p < 0.001$), but for gladiatorial activities no significant difference can be found ($p > 0.05$). This suggests that once citizens have reached a level of participation that requires a great deal of effort anyway, the regulations at the basic level appear insignificant. This is not to say that regulation in terms of registering as a candidate, for example, can be ruled out as having an impact, simply because this was not tested. The difference in participation is substantively only very pronounced for spectator activities. These results fit well with international comparisons of political participation, where it is suggested that the different political environments—and with that differences in regulation—are the key to different levels of participation in different places (Almond & Verba, 1989; Verba

et al., 1987). More and better data are required to test these results in a more substantial way, such as the suggestion put forward by the simulation in this paper that regulation largely affects spectator activities, but higher levels of participation are largely unaffected. Most data available in this regard focus on voting—a spectator activity (Anderson & Zelle, 1998; Bartels, 1993; Burdick & Brodbeck, 1959; Kleppner, 1982).

Whilst regulation is often thought of as a key part of political environments, the duty people feel to vote is surely a different aspect. It reflects facets of moral obligations in citizenship, although in most societies there is no legal requirement to participate in politics or civil society. The simulation can test different political cultures in that the number of people feeling a duty to participate can be varied. The results differ significantly ($p < 0.05$), with the level of apathetic individuals and voters being affected most. However, smaller yet significant differences at higher levels can also be found at higher levels: particularly for the level of party membership. This finding supports the argument that political cultures exist.

With higher levels of felt duty, the overestimation of participation at higher level grows slightly, as compared to survey data. For this reason, whilst institutions clearly seem to have an impact on political participation, in terms of magnitude the results of the simulation may be unreliable. However, it might be the case that with levels of felt duty to participate set at over 60% of the population, the scope of the simulation may be exceeded. Combining the results of this section with those of the impact of regulation, it seems that cultural and institutional factors can have the same effect on political participation.

4.2 Social Capital

The importance of social capital on political participation is sometimes noted (Krishna, 2002; La Due Lake & Huckfeldt, 1998; Putnam, 2000), but often the exact mechanism involved is hazy. This might well be linked to the general difficulty of capturing the nature of social capital (Portes, 1998). In this section I operationalize social capital in a number of ways, trying to examine in what form social capital affects political participation.

The role of neighbourhoods and communities on political participation is sometimes stressed: *those with roots in a community are found to be more politically involved* (Milbrath, 1965; Peterson, 1990; Lane, 1959; van Deth, 1997; Verba *et al.*, 1995) (H9). Roots in the community can be thought of as more specifically the time spent in a community (Stone & Schaffner, 1988; Davidson, 1994; Peterson, 1990; Warr, 1970). Consequently, the time spent in a community can be expected to be linked with political participation. In fact, *those who have spent more time in a community are generally expected to participate more* (Milbrath, 1965; Milbrath & Goel, 1977; Crouch, 1977; Lane, 1959, 1962) (H10). The intuition is that with more time spent in the community, the individual identifies with the place, and thus cares more about the locality. With that, the likelihood of political participation is increased.

Using the simulation, this relationship can be tested simply by comparing the level of participation after a given time with the time spent in the current community. The levels of participation after 500 cycles of an ordinary environment with regular elections were compared with the time spent since last moving. The results suggest that there is no association between political participation and time spent in a community: those individuals having spent

a long time in the same place are not necessarily more likely to participate ($p > 0.05$).

The effects of roots can also be tested in a slightly different way at the aggregate level, by preventing individuals from establishing roots. This is achieved by moving the citizens to another place at a frequent rate. In fact, individuals were moved at artificially high rates, so as to highlight the differences. The overall pattern of participation, however, does not differ; and most of the differences are not statistically significant ($p > 0.05$). This means that in a place where people move more frequently than in another place, the levels of participation are not significantly different.

Alternatively, roots in the community—and with that the level of social capital—can be understood as interpersonal communication, reflecting active investment in the community. In particular, *the more contacts an individual has, the higher the level of political participation is expected to be* (Berelson *et al.*, 1954; Lane, 1959) (H11). The number of personal contacts may be a better indication of how well an individual is integrated in the community, and with that how likely he or she is to care about the place. The correlation between the number of contacts and the level of participation is strong ($r = 0.601$, $p < 0.001$), suggesting that personal contacts go hand in hand with increased participation. In fact, after controlling for the time spent in the community, the correlation increases to 0.746, suggesting that the role of personal contacts is indeed substantive. The time spent in the community as such is only very weakly correlated to the level of participation ($r = 0.028$), statistically not significant at the 0.05 level.

The simulation can also be used to manipulate the rate of interpersonal communication directly. With that, the ability of individuals investing into

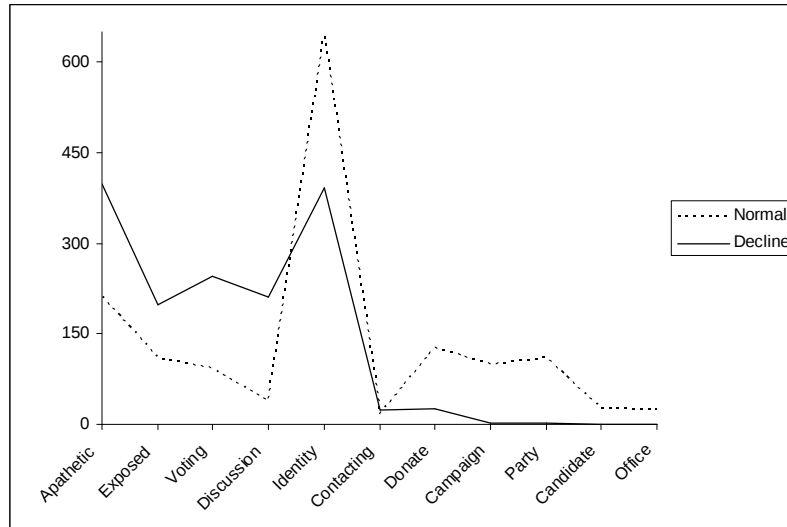


Figure 4: Reducing interaction between individuals leads to lower levels of political participation. The results are significant ($p < 0.001$), except for contacting. $N=1500$.

the local community is affected.

Figure 4 outlines the effects of a decline in personal communication in graphical form. A normal environment with elections every two years was run for 250 cycles, and the results compared at the end. In one case, the simulation was changed to reduce the levels of interaction. Except for the level contacting, the difference at every level of political participation are significant ($p < 0.001$). Overall, a clear decline in political participation can be observed, especially at the gladiatorial levels, where participation is reduced to very small levels.

By changing the parameters for interaction and how often people move,

the simulation can follow the literature that suggests that falling levels of social capital lead to lower voter turnout (Teixeira, 1987). This paper suggests that it is the lower investment in communities rather than the time spent in a place as such that is the driving factor behind this development. In the same vein, increasing the likelihood that people move after each cycle leads to no significant difference.

At an individual level, the histories of participation of each agent can be examined. In terms of quality, these histories look reasonable, and fit qualitative descriptions of political participation (Andrew, 1991). Individuals gradually build up to participation at a higher level, and there are generally no large jumps from a higher level to a substantively lower level or vice versa. This pattern of participation may be understood as individuals building the social capital required to participate in politics. It also reflects the understanding that people are selective in receiving political messages—external stimuli. Apathetic individuals are from time to time exposed to political stimuli, but they normally quickly fall back into the former state.

It is sometimes argued that citizens with more contacts are likely to be opinion leaders in their community (Lane, 1959; Valente, 1996; Scott, 2000). It is further thought that opinion leaders are less swayed and thus can be identified by a more stable history of political participation. For this reasons, *those with more contacts are expected to have a more stable history of participation* (Lane, 1959) (H12). A stable history of participation means that individuals who participate to a certain level, remain at the same level for a long period of time. In contrast, those with a less stable history of participation, may be mobilized into say donating money one day, but do not sustain such an effort. To this extent, the number of level changes was

looked at, following the history of participation of individuals over 104 cycles. The number of level changes does not correlate significantly with the number of individual contacts ($r=0.204$; $p > 0.05$). This may either suggest that opinion leaders are as likely to change their level of political participation, or that the number of personal contacts is not a sufficient indication of whether an individual is in fact an opinion leader. There may simply be more to an opinion leader than just the number of contacts. Such an understanding is important in terms of the increased application of network analysis in political participation (Uhlaner, 2004).

Section Summary

In this section I suggest that social capital is a significant contributor to political participation. This appears to be particularly the case for the higher levels of participation. Looking at individual histories, it appears that social capital builds gradually. In contrast to the common assumption in the literature, it is not the time spent in a community that is the significant factor. Whilst the time spent in a community may help to create links with others in the place, it is suggested that there are other factors—individual personality—that are more important. It is the number of personal contacts that is linked with political participation. Having more contacts itself is not linked to having a more stable history of political participation: an indication that there is more to opinion leaders than the number of personal contacts. In one sense this section supports the view that social capital is a significant contributor to political participation, but at the same time it is suggested that the time spent in the community in itself is the wrong proxy of social capital.

5 Discussion

In the first part of this article I tested the validity of Milbrath's (1965) model of political participation. By comparing the estimated numbers of participation at different levels from the computer simulation with survey data, I argued that despite its age, the model generally provides a good fit. This means that Milbrath's model as implemented in this simulation leads to valid results.

Interestingly, trying to incorporate theories on multiple ladders—done by switching off certain levels arguably independent from the other forms of political participation—however, worsened the predictions. This might be an indication that the notion of different ladders is indeed fuzzy and perhaps that there are not that many distinctively different ladders as outlined by Verba *et al.* (1971).

The simulated results are slightly less accurate at higher levels of participation. This might indicate that the model used in this article underestimates the cost involved at these levels. Milbrath possibly called them gladiatorial for a reason. I could remedy this by simply changing values in the simulation—making participation at higher levels more costly—, but there is no compelling reason to do so on empirical or theoretical grounds. It might be that the high cost and challenge of higher levels of political participation is what attracts individuals to these posts (Oliver, 1984), and therefore simply changing the values in the simulation would be inappropriate (Gilbert & Troitzsch, 1999, 2005; Epstein & Axtell, 1996). A tweaked version would compromise the modelling process and removes the advantage of simulation of not relying on a black box principle: A simulation tweaked to match the output removes the link to what is known about the micro-processes involved;

and indeed it is often possible to produce a whole range of models that match certain data (*ibid.*). The understanding of how this may work in reality is lost in such approaches. Instead, better data on the processes involved need to be collected, leading both to a better understanding of political participation, as well as an improved computer model.

Rather than focusing on the cost of participation, it is possible that the lack of consideration for opportunities is the reason for the reduced accuracy of the model at higher levels. The computer simulation simply assumes that if someone is willing to take part in a campaign, that there is an opportunity to do so. This assumption can be problematic, depending on the chosen political environment simulated. A right to participate in politics does not necessarily mean an opportunity to do so.

The simulation does well in replicating other aspects of political participation, such as the fact that people rarely completely abstain from voting (Crouch, 1977), and even those involved to a deeper level may miss a vote from time to time (*ibid.*). The dynamic nature of political participation is also well captured.

Milbrath's model of political participation emphasizes personality traits and structures. Part of the theoretical developments since the model was formulated was to pay more attention to individual agency. Some authors argue that Milbrath overemphasizes the role of characteristics (Stone & Schaffner, 1988; Smith, 1968). However, the model—based on personalities and structures—provides surprisingly good results. This might be the case because some of the personality traits considered in the simulation, such as being active and autonomous, are possibly good indicators of individual agency. What is more, focusing on the aggregate level, effects of individual choice may well be aver-

aged out. In this sense, the model outlined in this paper does not completely ignore individual agency, but treats it at the aggregate level.

Whereas for many levels of involvement certain characteristics have been identified as increasing the propensity of participation, work on the negative aspects so far appears to have been neglected—it is not unreasonable to assume that certain characteristics hinder certain forms political action. Further research in this area might provide additional clues to what extent personalities are important in understanding political participation.

The civic voluntarism model by Verba *et al.* (1995) is a recent development that focuses on recruitment and external resources—most notably socio-economic status and civic skills. With *civic skills*, the civic voluntarism model still contains an individual component akin the characteristics suggested by Milbrath (1965). Indeed, more similarities can be recognized: there are individual variables that act as structures (SES, skills), and personal interaction is recognized as an important factor. In the civic voluntarism model, however, this importance is largely restricted to the period of mobilization: possibly a refinement over the model used on this paper.

Rational choice models in contrast focus much more on individual agency, although many such approaches go to the other extreme and neglect constraints on individual acts. Striking the right balance between structures and agency does not mean dropping the work by previous researchers and purely focusing on rational choice, as done in much contemporary work on political participation (Uhlener, 2004). Whilst rational choice models offer deductive elegance, they struggle with empirical weaknesses. Indeed, the results in this paper suggest that a model based on personalities and social capital is useful to predict levels of political participation. In contrast to rational choice

models, the model used in this article does not fail to predict the high levels of political participation—voting in particular is riddled with the free-rider problem. What is more, Milbrath's (1965) model caters well for the finding that individuals are involved in politics to different extents (Scaff, 1975; Fay, 1975; Green & Shapiro, 1994; Laver, 1997; Wallas, 1981).

In line with previous research, this paper can confirm the importance of socioeconomic status, and political regulations. However, I suggest that whilst these factors are clearly important for the level of expected political participation, it is the social character of individuals that makes participation work.

The role of social capital in political participation was highlighted in different sections of the paper. Most importantly in this regard is probably the finding that external stimuli on their own have a very small impact on individual participation. The results outlined in this article suggest that personal interaction—and thus social capital—is necessary for the stimuli to work: It is the combination of social capital and political messages that appears to affect levels of political participation. In some sense, this might indicate some limits of political campaigns.

The use of a computer simulation allowed to further examine the nature of social capital needed for political participation. Following the analyses, I suggest that time spent in a community and roots in said community are clearly different. Overall, the simulation can support the importance of roots (Berelson et. al., 1954; Lane, 1959; Hemmings *et al.*, 2002; Verba *et al.*, 1995), but suggests that individual characteristics—leading to more contacts—rather than time as such are the most important factor. This might highlight a misconception of what constitutes roots in parts of the literature. Merely

living in a community for a prolonged period of time appears to be a poor indicator of social capital. What seems to be missing from such an approach is the actual involvement and investment in the community that leads to the creation of social capital. In contrast, the number of personal contacts appears to be a better measure. This is the case because the number of contacts can be understood as the product of the time spent in a community and a personality leading to more contacts being made. As such, the number of contacts in the community is a better reflection of action involvement.

At the different ends of the ladder of political participation, the driving factors behind participation appear to differ slightly. At the bottom of the ladder, institutions and external stimuli appear relatively strong. At the top of the ladder, in contrast, it is social capital—as in personal contacts and communication—that appear most closely associated with political involvement. Studies focusing only on a single act of political participation—such as voting—will fail to pick up such a pattern. Moreover, as a consequence, the turnout at an election might be a poor indicator of overall levels of political participation.

The observation that personal communication matters at the top levels of political participation reflects the notion of capital as such: it is something that is invested in—over time people create and maintain personal networks—, and also something that can be converted—into a political position. Interestingly, although not acknowledged as such by Milbrath, the framework suggests a positive feedback caused by interpersonal interaction. In other words, the more social capital an individual has, the more likely is he or she to move into a position where this capital is further increased. Once again, this is an indication that the concept of capital might be appropriate.

By highlighting the role of social capital, this paper finds support for Teixeira's (1987) argument that demographic changes can lead to lower participation. The demographic changes that appear to be most damaging for political participation are those that lessen involvement in the community—hindering the establishment of roots. In this sense, I showed that it is not the more frequent moving of people as such that is associated with lower levels of participation, but the reduction in interaction. Of course, in practice, the two mechanisms may well be linked.

However, for those interested in increasing the levels of political participation, it is important that the underlying mechanisms are understood. Psycho-emotional studies of political participation (Braud, 1988), as well as life-course analyses suggest that personal interaction is indeed a key factor in mobilizing people into political action (see also Nedelmann, 1987). Rotolo and Wilson (2004) suggest that a decline in personal interaction occurs, rising concerns for participation in civic society and politics in particular.

The normative questions of increasing participation (Smith, 2004) are further affected by the finding that increasing a sense of duty only appears to affect lower levels of political participation significantly. Together with the found importance of social capital, this may suggest that high levels of participation at higher levels (gladiatorial) as aspired by some writers (von Alemann, 1978; Osbun, 1965) are hard to achieve. The results in this paper suggest that this is the case even if levels of civic duty—the lack of which is often blamed (Teixeira, 1987; Nagel, 1987; Opp, 2004; Putnam, 2000)—were high. In this paper I argue that there are other mechanisms that are more prevalent than felt duty when it comes to shaping political participation.

6 Conclusion

In this paper I have used a computer simulation to demonstrate that a model of political participation based on personality can indeed provide valid results. Moreover, a single mode of conventional political participation appears to work, suggesting that perhaps there are fewer modes of political participation as sometimes suggested. The paper has highlighted the role of social capital in political participation. Social capital appears to be necessary for participation at higher levels in particular. The results of the simulation suggest that social capital is about the contacts in the community—roots—, and that the time spent in a place as such is a poor proxy of the level of social capital.

Whilst the model used in this paper may not excel in terms of elegance, it includes feedback loops and is of dynamic nature: making it realistic. By combining micro-level understandings of participation, the simulation may lead to a better understanding *why* people participate in politics—and by extension civic society—, not only *how*. Better and more data in this form undoubtedly could increase the explanatory power of models of political participation in general, and this computer simulation in particular.

In this paper Milbrath's (1965) model of political participation was tested empirically for the first time. It was found that the model provides valid results and generally fits well with descriptions of political participation. The role of social capital in realizing citizenship rights was highlighted—particular at higher levels—, although it was argued that social capital is reflected in personal contacts, not as such the time spent in a community.

Appendix 1: Characteristics and Variables

Variable	Opposite	Description
Overt	Covert	Acts in public; more rewards ‘open’ people
Episodic	Continuous	Acts at specific events; acts for a short time; conscious decisions; lower costs
Autonomous	Compliant	Not just in response to a request; is not shy of cost
Approaching	Avoiding	Positive valence; contributes even if not asked
Expressive	Instrumental	Showing allegiance; not about party action
Social	Non-social	Involved when interaction is required; extrovert action
Inputting	Out-taking	Accepts cost; not focused on services/benefits in return; regards benefits as externalities of cost
Active	Passive	Acts on her/his own
Time		Time spent in community
Contacts		Number of contacts made
SES		Socioeconomic status
Eligible		Whether individual is allowed to vote or not (legal)
Duty		Feels duty to participate; will at least vote if allowed

Appendix 2: Characteristics at Different Levels

The following is a table of the different characteristics and their role at the different levels. The different characteristics are described in appendix 1.

Variables with a plus sign indicate a positive impact on participation; those with two plus signs indicate a strong impact. Similarly, a minus sign indicates a negative impact on participation; those with two minus signs indicate a strong negative impact. The characteristics needed at each level change are understood in a cumulative manner, and once a certain threshold is reached, the individual is assumed to have reached at least that level of political participation.

Level	Active	Overt	Auton	Appr	Cont	Take	Expr	Social	Elig	Time	SES	Duty
0-1									++			
1-2	++			+								++
2-3	++	++		++				++		++		
3-4			++	++	-	++						
4-5	+			++		--	++	--		++		
5-6		+						+		++		+
6-7			++		++		+			++	++	
7-8					++					++	++	+
8-9	++	++	++	+	++	-		++		++	++	
9-10	++	++	++	++	++	--		++		++	++	

Level 0: apathetic; 1 exposed to stimuli; 2 voting; 3 political discussions; 4 identification; 5 contacting official; 6 donate money; 7 contribute time in campaign; 8 active party membership; 9 candidate for office; 10 holding office. The variables are: active, overt, autonomous, approaching, continuous, out-taking, expressive, eligible, time and contact in community, SES, feeling duty to participate.

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