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Does a Critical Mass Exist?
A Comparative Analysis of Women's Legislative Representation,
1949-1997

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Abstract

It has often been argued theoretically that a 'critical mass,' ranging from 10 to 35 percent women, is needed before major changes in legislative institutions, behavior, policy priorities, and policy voting occurs. This paper examines one of the less-explored dimensions of the critical mass concept: is there a process by which women reaching a critical mass of the legislature accelerates the election of further women? Using data from the Inter-parliamentary Union and International Institute for Democracy and Electoral Assistance, we analyze this question for 17 industrialized democracies over a period of almost half a century, a longer period than any other relevant research. Descriptive results indicate that gains in women's representation have been incremental rather than a critical mass accelerating the election of women to legislatures. In a multivariate analysis of the percentage of women in the lower house of the legislature, the critical mass is tested against established explanations of women's gains in seats: institutional rules, egalitarian political culture, political parties, women's educational achievements, and economic development. Of two measures of the critical mass theory, one has no impact, and the second results in only a small increase in women's gains. Far from being clearly demonstrated, critical mass theories need empirical testing.

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'The idea of a critical mass is most often applied to situations when women constitute less than 30 percent, in this way explaining why the entrance of women into politics has not made more difference—yet!' (Dahlerup 1988: 276)

'First, 'critical mass' numbers of women are fundamental to transforming policies and politics....In successful countries, 15 percent female representation in cabinets and in national and local councils has been a turning point. Thirty percent representation is a common goal, quota, and sociological turning point in studies of organization.' (Staudt 1996: 38)

'There is a variety of evidence to support the 'critical mass' thesis — that women act more distinctively once their numbers reach a certain threshold.' (Dolan and Ford 1998: 77)

Introduction

In recent years, the idea of a 'critical mass' has entered popular parlance as an explanation for women's legislative representation and behaviour. The assumption is that once a 'critical mass' of elected women is reached, it will lead to changes in political behavior, institutions, and public policy that will radically transform legislatures. This idea has gained increasing currency as women have improved their proportion of representation in legislative bodies all over the world, particularly in the advanced industrial democracies (Inter-Parliamentary Union 2000). Its origins are to be found in sociology (Kanter 1977a; 1977b), and it has attracted increasing attention in political science from the late 1980s (Dahlerup 1988; St Germain 1989; Thomas 1991; 1994; Thomas and Welch 1991; Thomas and Wilcox 1998; Stevenson 1999; Grey 2001). More recently, it has even gained general intellectual currency (Jacquette 1997; Staudt 1996).

Although the idea of a 'critical mass' is now widely asserted, it has not been subjected to the same theoretical or empirical investigation as many other concepts which are commonly employed in political science. There are two major problems with the concept. The first is that the percentage membership in an institution which women must obtain in order to function as a critical mass is often left undefined or

ambiguous. Is there a single level which has universal application, or are there different levels for different types of democracy? The second problem is that, irrespective of what level of membership is chosen, little empirical evidence exists supporting such effects. In short, heretofore the idea of a critical mass constitutes more of a theoretical expectation than a demonstrated effect.

While the idea of a critical mass is usually considered in terms of its presumed effect upon legislative behavior, especially 'style' and public policy, one of the original hypotheses about its effects was that it would encourage and legitimize the presence of women in legislatures, leading to even more women being chosen (Dahlerup 1988). Following this logic, once the critical mass is reached, then women should accelerate their representation in such legislatures. Yet in fact, women's increase in legislative seats, while steady in most instances in democracies, has proceeded via incremental changes rather than geometric progression at various levels of government (Thomas and Wilcox 1998; Studlar and Matland 1998; Kittilson 2001). After a survey of the theory of the critical mass, this paper empirically examines the second, less commonly applied meaning of the term.

Previous cross-national empirical work on factors affecting women's representation in legislatures (Rule 1981; 1987; Norris 1987; Darcy, Welch and Clark 1994; Matland 1998; Siaroff 2000; Norris and Franklin 1997; Reynolds 1999; Norris and Inglehart 2000) largely ignores the question of a critical mass (but see Davis 1997). Now that women have been present in substantial numbers in several national legislatures for as long as a quarter century, with 20 percent women not uncommon and up to 40 percent present in legislatures in Finland and Sweden, this question can be addressed empirically. Does a critical mass of women in the legislature lead to an accelerated increase in women elected to that body? If this does occur, what level of women's representation constitutes a 'critical mass?'

The Critical Mass and Women's Share of Legislative Seats

Most discussions of the critical mass focus on such matters as gender differences in legislative style (Thomas 1994; Kathlene 1998), policy priorities (Thomas 1994), bills sponsored (Thomas 1994), policies adopted (Thomas 1994; Berkman and O'Connor 1994) and the content of legislative debates (Trimble 1998;

Broughton and Palmieri 1999; Grey 2001). But the early formulations of the concept of the critical mass in social science included the idea that once that point was reached, the increase of women members in a legislature would be self-sustaining. The implication was that both the selectorate and the electorate would come to view women's participation as normal and that capable women candidates would step forward in greater numbers (Dahlerup 1988; Davis 1996). In other words, both the supply and demand problems in women's representation would be simultaneously solved.

Although often cited as the earliest source on the topic, Kanter (1977a; 1977b) did not use the term 'critical mass,' but instead discussed differences in behavior in organizations resulting from skewed sex ratios (as well as from other identifiable ascriptive characteristics). Kanter's (1977b) rather tentative formulation identifies four types of groups with different majority/minority ratios: (1) uniform, with no significant minority; (2) skewed, with a minority of perhaps up to 15 percent; (3) tilted, with perhaps a 15-40 percent minority, and (4) balanced, perhaps with a minority of more than 40 percent. From this work, other scholars deduced the concept of a critical mass.

Several scholars have attempted to calculate at what level the critical mass is formed. Dahlerup (1988) argues that the critical mass for women occurs when they constitute about 30 percent of an organization. In a discursive analysis, she surveys what differences the presence of this proportion of women in almost all Nordic legislative bodies by the mid-1980s has had for the political influence that women can exert (the empowerment of women).¹ She asks, 'Are we in Scandinavia witnessing a critical mass at work?' (Dahlerup 1988: 276). As noted below, others have suggested a figure lower than 30 percent. After women rose to 18 percent in the British House of Commons in 1997, Lovenduski (1997: 718) commented, 'Whilst much has been achieved, it is not even clear that the critical mass, the movement from a small to large minority that made a difference in other countries, has been achieved.'

Moreover, Dahlerup is unable to isolate the critical mass as the key process in her list of possible changes benefiting women. She argues that the analogy to physics should be discarded in favor of the idea of 'critical acts,' decisions that

change the position of the minority and lead to further changes. 'Most significant is the willingness and ability of the minority to mobilize the resources of the organization or institution to improve the situation for themselves and the whole minority group' (Dahlerup 1988: 296; see also Bystydzienski 1995: 6). Thus, it is not the threshold of a critical mass but the willingness of women politicians to recruit other women as candidates that is most important. Kittilson's (2001) analysis of how change occurs in women's legislative representation levels in advanced industrial democracies provides some support for this point of view, with women in party leadership roles and the adoption of quotas/targets for women candidates being significant factors.

The concept of the critical mass was first brought into the study of U.S. politics by St. Germain (1989) who argued, based on her study of the Arizona state legislature, that once women reached 15 percent of the legislature, they were more inclined to push 'women's issues.' But probably the most influential work on the critical mass in political science is Thomas (1991; 1994), who focuses on the effects of different proportions of women on legislative style, procedures, and public policy in twelve U.S. state legislatures. She finds some impact of more women on style, policy priorities, and policy outcomes, especially bills concerning women, children, and the family, but not on legislative procedures. In legislatures with over 20 percent women, they were more likely both to sponsor and shepherd such legislation to passage.

These findings suggest that a critical mass may exist in the 15-20 percent range. Thomas (1994), however, also argues that an organized women's caucus can serve much the same purpose even without these shares of women in the legislature. Later she suggests three different measures of the critical mass. First, she speculates that once women reach 35-40 percent of legislatures, then more changes will be evident. Next, she endorses another study that found women's legislative behavior altered at the 25 percent level. Finally, she argues that the 'critical point for making a priority of legislation to help women' may vary over time and location (Thomas 1994).

A recent compendium on the state of women in U.S. legislatures in the 1990s (Thomas and Wilcox 1998) contains eleven index references under "critical mass,"

plus five more under the associated term of "tokenism." But there is no consistency in use of the term among the contributors. In the introduction, Thomas (1998: 13) says that "theories of critical mass suggest that when a large enough group of newcomers or a unified group is present in an organization, their attitudes and behaviors will permeate the mainstream." Dolan and Witt (1998: 77) and Kathlene (1998: 197) also have a broad concept of the term. Other contributors to the book use the term more precisely, but in different ways, ranging from ten percent to numerical equality with men (Clark 1998: 119; Norrander and Wilcox 1998: 103; Whicker and Jewell 1998: 168; Schroedel and Mazumdar 1998: 211). Furthermore, despite this book's unparalleled embrace of the concept of the critical mass, no empirical tests of the concept are performed.

On the comparative level, Davis (1997) also supports the idea of a critical mass. Unexpectedly, she found that the percentage of women in parliament was more important as an influence on women's share of cabinet positions in Western Europe over the 1968-92 period than was women's proportion of the governing parties. Along with party competition, a critical mass effect is a possible alternative explanation for these results. For Davis, critical mass means 'an irreversible process of change' (Davis 1997: 64) rather than an acceleration of the rate of change. Thus she does not test the concept formally as a threshold, but instead argues, in linear fashion, that the more women in the legislature, even in opposition parties, the more likely women are to hold cabinet positions.

The critical mass concept has also been applied to studies of developing democracies in Latin America (Staudt 1996; Stevenson 1999). Using a highly modified version of the critical mass concept, Stevenson (1999) indicates that the concept of having 30 percent women has become a rallying cry internationally for activists pursuing greater women's political participation, but her own empirical work in Mexico suggests that, combined with other facilitating factors, a 'critical mass' of as little as 13 percent 'is sufficient to allow the effective legislation of gendered policies for women' (Stevenson 1999: 81). The problem with applying the critical mass concept in Latin America is that several pieces of women-friendly legislation, including quota systems, have been adopted without anywhere near 30 or even 15 percent of the legislature being women (Htun and Jones 2001).

Studies by other scholars in various countries and jurisdictions have cast doubt on the implications of a critical mass. In their study of the impact of women on U.S. state abortion policies, Berkman and O'Connor (1994) find some effect for a critical mass, measured as the logarithm of the number of women in the legislature, on parental notification policies, but none on public funding for abortions. Comparing two U.S. state legislatures, Reingold (1992) found that women in the Arizona legislature, with 30 percent of the seats, were, in fact, less united in political attitudes than their sisters in the California legislature, with only half that amount. Kathlene (1994) found that men in Colorado state legislative committee hearings reacted to increasing numbers and authoritative positions on committees by becoming verbally aggressive in an attempt to control the meetings. In contrast to the interview reports of Thomas and Welch (1991), she found that observation of actual behavior indicated that 'the more women on a committee, the more silenced women became' (Kathlene 1994: 573). Reingold (2000) also found that legislative behavior of women often did not match their expressed interest in women's issues.

Rosenthal's (1998) study of the effects of women in leadership positions in state legislatures draws on the implications of Kanter's (1977a; 1977b) analysis, especially for minorities as they move beyond 'token' status in numerically skewed groups. She posits that women making a difference is not merely a question of numbers but involves power, that is, what leadership positions women hold to shape the behavior of others. Following Blau (1977), Yoder (1994), and Duerst-Lahti and Kelly (1995), she considers nothing inevitable about women's gains beyond the 15 percent level of token representation. In fact, the dominant group in the legislature, men, may feel threatened by the rising numbers of a previously weak minority and take action to isolate and limit their influence. But this depends, among other things, on women's power. Although she avoids use of the term 'critical mass,' in order to test some hypotheses about competitive versus integrative leadership styles, Rosenthal (1998: 88-89, 203) divides legislatures into 'skewed' (less than 18 percent women), 'tilted' (18-28 percent), and 'balanced' (more than 28 percent). Yet she finds no clear pattern of effects.

Some empirical studies also have cast doubt on the claims for a critical mass. Bratton's (2000) study of three U.S. state legislatures – California, Illinois, and

Maryland--found that passing a 15 percent threshold did not significantly change the proportion of women-related bills that feminine legislators introduced or that were passed. In a broader theoretical and methodological critique, Weldon (1999) argues that the idea of a critical mass relies on a mis-specified model based on numbers alone without attempting to account for the interactions which actually occur in a legislative body--a fallacy of aggregation. Her research, encompassing both cross-state and cross-national studies, finds that passage of 'women's concern' policies is unrelated to the presence of more than 15 percent women in the legislature as well as 15 percent women among government ministers. Several other studies have searched in vain for threshold or critical mass effects on agenda-setting, legislative voting, and policy outcomes in various countries (Skjeie 1991; Whip 1991; Considine and Deutchman 1996; Norris 1996; Young 1997; Trimble 1998; Broughton and Palmieri 1999). In explaining her negative findings, Whip (1991) argues that there is 'no necessary magic' in numbers and suggests that institutional norms might long outlive more obvious indications of gender inequality. Reingold (2000) contends that as more women are elected, diversity in other characteristics increases and women's sense of unity decreases.

This overview suggests that the concept of the 'critical mass' has a vague and shifting meaning as well as a surprising paucity of empirical support. Properly, it should refer to a threshold beyond which there is a change of behaviour through acceleration ('chain reaction'), not just incrementalism. At some point, the characteristics of women become subject to a group dynamic that increases their influence on various political phenomena. We test for the existence of a critical mass across the central legislatures of advanced industrial democracies by examining whether there is such an acceleration effect for the election of women legislators at different levels.

Our study offers a dynamic analysis of what affects women's representation over a much longer time period, almost half a century, than any other published thus far. In Norris and Franklin's (1997) terms, this is a study of the aggregate demand side only for women representatives and does not consider the supply side (candidates). Unlike many other such studies, it takes the idea of a critical mass seriously as an explanation to be tested.

Modeling the Increase in Women's Representation

Despite the lack of attention to critical mass in explaining women's representation, there is now a vast literature attempting to explain women's legislative representation cross-nationally over the past two decades. Following Dahlerup (1988), our contribution is to assess whether the critical mass also affects women's numerical representation. Although the literature on women's representation largely agrees in finding electoral systems to have the greatest cross-national effect, but several other factors have been found to be influential. These include district magnitude, party ideology, legislative turnover, education, women's work force participation, and cultural attitudes towards gender equality. But there is still variation to be explained. Furthermore, these empirical studies of women's numerical representation do not extend further back than 1960 (Rule 1981; 1987; Norris 1987; Matland 1998 ; Norris and Franklin 1997; Reynolds 1999; Darcy, Welch and Clark 1994; Siaroff 2000; Norris and Inglehart 2000; Caul 2001).

Drawing on these previous studies, our model incorporates the following factors. First, we predict that institutional rules will influence the proportion of women who are elected. This is reflected most obviously in the effect of the country's electoral system on women's representation, especially the favourable impact of party list PR, one of the most consistent findings of cross-national studies of women's representation (Rule 1981; 1987; Norris 1987; Norris and Franklin 1997; Matland 1998; Siaroff 2000). We differentiate among families of electoral systems (see International Institute for Democracy and Electoral Assistance 1997b: 18) through a series of dummy variables, separating party list systems from other forms of proportional systems (i.e. the mixed member proportional system used in New Zealand and Germany, and the single transferable vote system used in Ireland) and between plurality first-past-the-post systems and other plurality forms (i.e., the alternative vote system in Australia, the second ballot used in France, and the semi-PR system used in Japan).²

Other aspects of institutional rules, in addition to the electoral system, also may be important. Women have been found to be elected in greater numbers where competition for seats is less (Darcy, Welch and Clark's 1994; Matland 1993). We

expect that countries with legislatures having fewer average constituents per district would lead to more women elected. There would be a closer link between the representative and the local constituency, thus reducing competition for nomination. Similarly, we include measures of the competitiveness of the party system and popular participation in voting. We expect that the more competitive the party system, measured by lower percentages of votes for the largest party, the more women who would gain election. With a more competitive party system, there are more incentives for parties to search for new voters, which might lead to a contagion of women candidates among parties (Matland and Studlar 1996; Norris 1993; for a different view, see Reynolds 1999). Turnout and voter registration are differentially located among social groups, as a consequence of political interest and involvement. This could have a negative influence on women's representation, especially in earlier years when women tended to vote less frequently than men (Norris 2001).

A second set of variables incorporated into the model concerns the existence of an egalitarian political culture in the country in question. There is some evidence to suggest that the earlier women gained political rights, the greater their share of seats (Rule 1981; Reynolds 1999; Siaroff 2000); other indicators of cultural egalitarianism have also been found to have an effect (Norris 1987; Matland 1998; Norris and Inglehart 2000). We have two measures of egalitarian culture, (1) the period of time since women were first enfranchised (which, averaged across our sample of countries, is just over half a century before), and (2) the period of time since the first woman became head of the legislature. The latter is a much more contemporaneous measure of women's political advancement; of the 17 countries, five (Belgium, France, the Netherlands, New Zealand and the USA) have not yet had a woman as head of their national legislature. By contrast, Austria had a woman in such a position as early as 1927, just eight years after the first woman was elected.³

A third set of variables measures efforts by political parties to promote women. Leftist parties have been found to be more active in furthering women's rights (Norris 1987; Norris and Franklin 1997; Siaroff 2000; Caul 2001); we include a measure of the ideological position of the incumbent government. The most direct means of promoting the role of women in politics is, of course, for legislative bodies to reserve a certain number of seats for women. To date, no OECD country has

adopted this method.⁴ More common, particularly in recent years, has been the establishment of quotas or targets by political parties, to ensure a particular proportion of women candidates and, as a consequence, a greater proportion of women elected members. Quotas have been shown to have a measurable impact in increasing women's parliamentary representation, both by themselves and through emulative behaviour by other parties in the system (Matland 1993; Matland and Studlar 1996; Kittilson 2001).

Social and economic development also are important for women's political advancement. Women's education is one of the indicators of social development found to be influential (Rule 1981; 1987), here it is measured as the proportion of tertiary students who are women. Much of the impetus for women's groups, such as the Women's Electoral Lobby in Australia (Sawer and Simms, 1993: 244-5), has come from younger professional women, who entered the labour market in ever greater numbers during the late 1960s and 1970s. <Put following material into a footnote.> We have no measure of another variable often considered important, women's lobby group activity (Gelb 1989; Costain 1992; Weldon 1999). The long time period under examination would make any measures of this variable problematic.

A variety of studies have identified the economic development of the country in question to be positively related to women's representation (Matland 1998; Reynolds 1999), although this has not been done in a closely-specified manner. Accordingly, we test this possibility by including a measure of the per capita gross domestic product, measured in US dollars.

Our model first specifies the effects of these four categories of established variables upon women's numerical representation during the past half century. Then we add the critical mass variable in an attempt to discover whether this has an additional significant effect upon women's representation.

Data and Measurement

Data. To test the idea of a critical mass in women's representation, we initially considered all 30 countries that are current members of the OECD. In addition, we added three further criteria: that the country had to be continuously

democratic since 1949; had granted women the vote from at least the same year; and had a population of more than 1 million electors.⁵ As a result of these three criteria, 12 of the 30 countries were excluded, nine of them (the Czech Republic, Greece, Hungary, Korea, Mexico, Poland, Portugal, Spain and Turkey) because they had not been continuously democratic since 1949, one (Switzerland) because women were not granted the vote until 1971, and two because their electorates numbered less than one million (Iceland, Luxembourg). In addition, Israel was excluded because of the semi-permanent nature of its conflict with the Arab world. The universe for the study is therefore 17 countries, covering the 49 years between 1949 and 1997, yielding a total of 833 cases.

Measurement. To measure the concept of the ‘critical mass’ we use two dependent variables. The first is the proportion of women elected representatives in the national legislature. During the period 1949 to 1997, the mean representation of women across the 17 countries was 9.7 percent. Once a significant number of women are elected, the critical mass hypothesis predicts that it provides the basis for a ‘take-off’ in female representation. This is measured by a second variable, the change in the proportion of women elected representatives between the two most recent elections. Also included is a squared term, to capture any non-linearities in the relationship.

Few countries have changed their electoral system in the postwar period until recently. Italy, Japan, and New Zealand made changes in the 1990s. Although France has mainly been a plurality-second ballot country since 1958, it did use PR for one legislative election, in 1985. District size is measured by thousands of electors for each elected representative; party system competitiveness by the percentage vote for the largest party in each national election; and turnout as the percentage of the registered electorate who voted. The period since women’s enfranchisement and the first woman head of the national legislature are measured in years; the former usually refers to the lower house of the legislature (if bicameral), and the latter to either the upper or lower house, whichever came first. All of these measures come from the databases of the Inter-Parliamentary Union (1997; 2000) and the International Institute for Democracy and Electoral Assistance (IDEA) (1997a; 1997b), updated from their web sites and other sources where appropriate.

Data on the ideology of incumbent governments come from Schmidt (1996), and are updated where appropriate. Left parties are defined as those which are linked to the Socialist International, and the ideological alignment of the parties is measured by their policies on such questions as privatisation and welfare. UNESCO statistical yearbooks provide the information used to estimate the proportion of tertiary students who are women. The series did not commence until 1964, and estimates for the 1950s and early 1960s are often reported at five-year intervals. In these cases, annual estimates have been extrapolated from trends. Quotas and targets (which are treated equally, though they reflect different levels of commitment and enforcement) for women in the main political parties are taken from the IPU, updated and supplemented from country sources. To measure quotas and targets, we estimate the proportion of the major parties within each party system using quotas or targets for the year in question.

Table 1: Variables, Definitions, Means

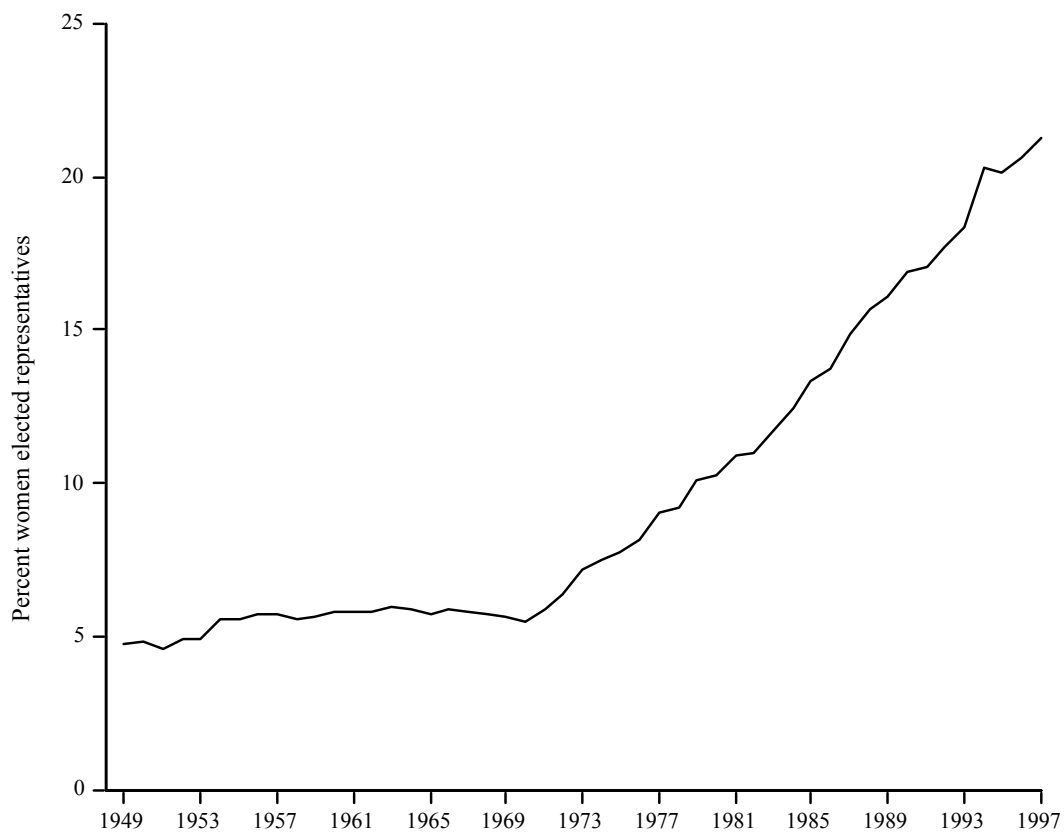
Variables	Definition	Mean	Std dev
<i>Women's Representation</i>			
Women elected	Percent women in national legislature	9.7	9.1
Change in women	Percent change in women elected	1.3	2.4
Change in women, squared	Percent change in women elected, squared	7.3	16.2
<i>Institutional Rules</i>			
Electoral system			
PR list	1= PR list elections, 0=other	.48	.50
PR other	1= other PR types elections, 0=other	.19	.39
Plural FPTP	1=FPTP elections, 0=other	.23	.42
Plural other	1= other plural elections, 0=other	.10	.31
District size	Thousands of voters per representative	61.5	71.4
Turnout	Percent registered electorate voting	81.5	10.9
Party system competitiveness	Percent vote for largest party	40.3	8.9
<i>Egalitarian Culture</i>			
Enfranchisement	Years since women's enfranchisement	51.9	20.8
Woman legislative head	Years since first woman legislative head	5.3	13.0
<i>Political Parties</i>			
Government ideology	From 0 (left) to 10 (right)	3.1	3.8
Women tertiary students	Percent of tertiary students women	37.4	10.5
Quotas	Percent major parties with women quotas/targets	13.4	23.1

N = 833, representing 49 national elections across 17 countries.

Results

If there is a critical mass, we would expect a slow period of growth in the numbers of women legislators followed by a sizeable increase across a relatively small number of elections. Figure 1 suggests that there is little evidence to support the critical mass hypothesis, at least when all of the 17 countries are combined. There is a period of relative stability (or even slight declines in the 1950s and 1960s) when women's representation in legislatures is around five percent overall, extending from the beginning of the period in 1949 until 1969. Thereafter, rather than being curvilinear, the increase is linear. There is, then, no *prima facie* evidence across all of the countries that there is a critical mass.

Figure 1: Women's Representation, 1949-97



Note See text for details of countries and coding.

Figure 2 shows the annualised change in the proportions of women elected representatives across the 17 countries. Elections are occurring in individual countries at different times, of course, which means that the legislators in some countries in a particular year will be largely carried over from an election as many as four years previously while others are chosen more recently. The pattern is similar to Figure 1, albeit with greater movement about the curve, due to the changes induced by particular elections in individual countries. The percent change has only increased from slightly above zero in the 1950s to around four percent in the 1990s. During the 1960s and early 1970s, the net change in several years was for an overall decrease in the proportion of women elected representatives. Once again, the early 1970s is a turning point, with consistent if incremental increases in the rate until the early 1980s, when the trend stabilised, to be followed by another increase in the rate in the early 1990s. Overall, in terms of the percentage of change, as much progress was achieved in women's representation in the period of the 1970s to early 1980s as it has been subsequently, with the rate of increase moving from zero to 2.5 percent earlier, and then to 4 percent in the latter period.

Figure 2: Changes in Women's Representation, 1949-97



Note See text for details of countries and coding.

These findings confirm the common perception that there was a 'second wave feminist movement' (the first wave was the suffrage movement), stemming from developments in the 1960s and usually manifesting itself in legislative representation terms starting in the 1970s (Randall 1987). Sometimes obscured by the total numbers and overall percentages of women in contemporary legislatures, however, is the fact that women's overall advancement was as swift in the early 1970s as more recently. In recent years women's share of some legislatures with high percentages, such as Sweden, Finland, and Norway, has stabilized, but this is also true in some legislatures in which their percentage is considerably smaller. For instance, the overall percentage gain for women in U.S. state legislatures, advancing at about a rate of about 2 percent per year from the 1970s to the early 1990s, has more recently stabilized.

Table 2 Explaining Changes in Women's Representation

	Eq 1		Eq 2	
	b	Stand.	b	Stand.
<i>Critical Mass</i>				
Change in women's representation	– na –		.06 ^{ns}	.02 ^{ns}
Change in women's representation, squared	– na –		.11	.20
<i>Institutional Rules</i>				
Electoral System (PR-list excluded))				
Plural-FPTP	-10.5	-.33	-10.2	-.47
Plural-other	-11.5	-.39	-10.7	-.36
PR-other	-7.8	-.34*	-7.9	-.34
District size	-.02	-.18	-.02	-.19
Turnout	-.15	-.18	-.15	-.18
Party system competitiveness	.03 ^{ns}	.03 ^{ns}	.02	.06
<i>Egalitarian Culture</i>				
Enfranchisement	.15	.34	.13	.30
Woman legislative head	-.08	-.11	-.07	-.10
<i>Political Parties</i>				
Government ideology	-.66 ^{ns}	-.04 ^{ns}	-.01	-.01
Women tertiary students	.13	.15	.11	.13
Quotas	.07	.18	.05	.12
<i>Economic Development</i>				
	.32	.26	.30	.25
Constant	11.5		11.7	
R-squared	.78		.82	
(N)	(833)		(833)	

ns, not significant at $p < .01$, two tailed.

Note Ordinary least squares regression predicting the proportion of women elected representatives in 17 countries between 1949 and 1997. Estimates are partial and standardized coefficients. See Table 1 for details of independent variables and scoring.

What factors are most important in increasing the proportion of women elected representatives? The results in Table 2 show two equations: the first includes only the variables with established relationships to women's representation; the second equation adds the two critical mass measures.

Overall, the R-squared estimates for both equations indicate a good model fit for what explains women's representation. Unsurprisingly, the results indicate that

the major effects on women's representation over the postwar years are due to the electoral system. Compared to party list systems (which constitute nearly half of the elections here), women's representation decreases with the use of any of the other three groups of electoral systems. The largest decrease is caused by plurality systems, with non-first-past-the-post systems being slightly more important than FPTP systems. For example, the first equation suggests that women's representation could be expected to be reduced by just over 10 percent in a FPTP system, compared to a party list system, net of other things.

In addition to the electoral system, other aspects of institutional rules are important predictors. As hypothesised, the larger the district, the lower the level of women's representation, with each extra 10,000 constituents per elected member decreasing the proportion of women legislators by 0.2 percent, other things being equal.⁶ Turnout has a substantial negative effect, with each percentage reduction in turnout reducing women's representation by 0.15 percent, net of other things. Perhaps this is an artifact of women's representation being low in compulsory voting countries. An alternative explanation is that women may have benefited from the recent fall in turnout in many democracies (Wattenberg 1998), even as men and women's mass turnout rates have converged. The final measure of institutional rules, party system competitiveness, has no significant effect.

Although an egalitarian political culture, as measured by the history of women's advancement in each country, has a strong influence in increasing women's representation, its impact is less than institutional rules. Early enfranchisement of women is the major component; each additional year that women have possessed the vote increases their representation by 0.15 percent, net of other things. By contrast, having a woman as head of the national legislature actually has a negative impact on women's representation, although the effect is not a strong one. This position is often more symbolic than powerful, serving largely as a referee for partisan conflict on the floor of the legislature. The results may be disproportionately affected by the few early countries having women in this position.

The stronger promotion of women by various groups increases their representation, but through the proportion of woman tertiary students and quotas rather than via the political complexion of the incumbent government. In other

words, over time once other variables are taken into account, governments of the right and left are equally likely (or unlikely, as the case may be) to secure larger numbers of women legislators. Although quotas matter, it is perhaps surprising that they do not matter more.⁷ The answer lies in the fact that quotas have been introduced most widely in countries where the position of women has already been extensively promoted, as in the Scandinavian countries. For example, the use of quotas correlates strongly with the years since women were enfranchised ($r = .39$) and the use of party list systems ($r = .29$); once these and other factors are taken into account, the impact of quotas of women's representation is much reduced. Finally, as other studies have shown, economic development promotes the representation of women.

When the model is re-estimated, this time including the two measures of change in women's electoral representation, there is only a marginal improvement in the overall fit of the model, from an R-squared estimate of .78 to .82. Moreover, the coefficients for the main variables change little. The squared measure of change in women's representation has a small positive effect on women's representation, but one that is relatively weak among variables with significant influence. There is little support for the critical mass hypothesis from either analysis.

Conclusions

We have incorporated the concept of the critical mass in order to ascertain its effect in helping explain both women's representation and changes in that representation in Western democracies over an extended time period. In line with several other studies, we find that the electoral system is the strongest contributor to women's representation. An egalitarian political culture also is a major influence. Intriguingly, turnout also has an effect on women's representation, but not always in the expected direction.

Most importantly, through a variety of tests we found little cross-national evidence that having a critical mass of women legislators is a substantial contributing factor to either women's representation levels or change in those levels. Taking up Dahlerup's (1988) challenge, we have found the process of women gaining more seats across Western democracies to be incremental rather than an accelerated one

dependent on a critical mass. At best, having a critical mass of women legislators adds marginally to women's representation levels, not what the hypothesis predicts.

Even though we have tested only one dimension of the critical mass concept, the results suggest more caution than has been practiced by its proponents. Now that women have achieved a substantial, even if not equal, share of legislative seats in many countries, the effects of the critical mass should be empirically tested rather than being an article of faith. Based on our analysis, the impact of the critical mass may be inflated.

More generally, the critical mass concept suffers from what Weldon (1999) calls the individualistic fallacy, namely, the assumption that mere numbers of women, no matter what their political or ideological views, will affect legislative behavior and public policy. This is probably related to its origin and development mainly in the U.S. context by U.S. researchers. U.S. legislatures, federal and state, are unusual in the degree to which legislative behavior is relatively unconstrained by the demands of party cohesion and executive support although, to be sure, party is still the major determinant of votes (Welch 1985; Thomas 1989; Swers 1999). Even in the U.S., however, the critical mass concept tends to inflate the individualism of legislators, the binding nature of gender identity to the exclusion of other legislator characteristics, and the additive, rather than interactive, effects of more women in the legislature (Bratton 2000; Reingold 2000; Weldon 1999).

In non-U.S. contexts, the critical mass argument is even more suspect, because of the overwhelming influence of party loyalty on agenda setting and voting. Scholars have searched for women's legislative cohesion in a variety of industrialized democracies. At best, it has been found to be a minimal feature of legislative life. To be sure, women sometimes manifest different attitudes on policy issues than men, especially on issues particularly close to them, such as abortion, childcare, and women's rights (Skjeie 1991; McAllister and Studlar 1992; Norris 1996; Young 1997). However, often they are able to have a policy impact on such issues only through private members' bills and/or free votes, both of which are rare in most parliamentary systems. Even free votes are usually party-dominated (Pattie, Johnston and Stuart 1998; Overby, Tatalovich and Studlar 1998; Broughton and Palmieri 1999). In legislatures the voices of women, especially feminist women, are

muffled by the roar of the party machine.

This may change to some degree in the future as women achieve more senior positions in parliament and government. Whether even the power exercised by individual women in important positions will 'transform the legislative agenda' in line with the claims of some researchers remains to be seen (Duerst-Lahti and Kelly 1995; Rosenthal 1998). The operating assumption of such work is that women will retain or reveal a greater gender consciousness and change the institutions in which they serve. But such an expectation conflicts with the generally accepted socialization processes in legislatures: the longer people serve, the more they become enamored of the existing procedures and the less willing they are to change them.

As long as party is the dominant force in legislative behavior, it will be difficult to generate women's unity. Any changes in behavior that occur are likely to be incremental, brought about through wider patterns of mass socialization for both women and men. Tremblay and Pelletier's (2000) study of Canadian legislative candidates concludes that an increase in feminist attitudes is more important than simply adding to the number of women in the legislature. Gendered political institutions are unlikely to change significantly without a broader social transformation. What is required is not a critical mass of women, but a critical mass of feminists.

Footnotes

¹ Dahlerup (1988) identifies six possible areas for analysis: (1) changes in the reaction to women politicians; (2) changes in the performance and efficiency of the women politicians; (3) changes in the social climate of political life (the political culture); (4) changes in the political discourse; (5) changes of policy (the political decisions); and (6) increases in the power of women (the empowerment of women).

² Preliminary analyses used much finer distinctions between the families of electoral systems, but yielded results little different from those reported here. In the interests of parsimony we have therefore opted for a simpler measurement of electoral system.

³ One obvious measure is the period of time since the first woman was elected to the national legislature. However, this is highly correlated ($r=.74$) with the period of time since women were first enfranchised, and for that reason we use the more important measure of enfranchisement.

⁴ Three countries currently operate such systems: Bangladesh (30 seats reserved for women out of a total of 330); Eritrea (10 out of 105); and Tanzania (15 out of 255) (IPU, 1997a).

⁵ 1949 is taken as the starting date because several countries, notably Germany, reinstated democratic elections after World War II following interruptions preceding and during World War II.

⁶ The calculation is the partial coefficient of .02 multiplied by 10, representing 10,000 constituents.

⁷ The zero-order correlation is .61.

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