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What Should the Goals Be? Employment Equity for Female Faculty in Canada

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ABSTRACT

This paper investigates the process of setting employment equity goals and timetables for female faculty in Canadian universities. First, the paper identifies the conditions under which a goal of a 50-50 balance between men and women faculty members by the year 2000 can be achieved. Second, it identifies criteria for evaluating the reasonableness of this goal. Third, given that such criteria as external availability, impact on labour demand and fairness suggest that this goal may not be reasonable, the question becomes: what should the goals be? The paper addresses this question by analyzing the impact of alternative hiring targets (reflecting alternative assumptions about external availability) on the gender composition of faculty in the year 2000. These hiring targets range from an extremely conservative 16.8% female to an optimistic 44.4% female. Under appropriate assumptions, these yield gender composition estimates ranging from 17.5% to 35.4%. While recognizing that availability will vary across universities, it is hoped that the estimates provided herein will inform debates on setting employment equity goals: 1) by illustrating and elaborating on a methodology for establishing goals and timetables; and 2) by providing lower-bound and upper-bound estimates (along with estimates based upon moderate assumptions) to illustrate the range of possibilities under Canadian employment equity policy.

RÉSUMÉ

Cet article porte sur le mode d'établissement d'objectifs et de calendriers relatifs à l'équité en matière d'emploi pour les professeurs féminins dans les universités canadiennes. Il définit d'abord dans quel contexte on peut réaliser d'ici l'an 2000 l'équilibre entre le nombre d'hommes et celui de femmes chez les professeurs d'université. Il établit ensuite des critères servant à déterminer si cet objectif est

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raisonnable. En troisième lieu, puisque des critères comme la disponibilité externe, les effets sur la demande de professeurs et la justice laissent supposer que cet objectif pourrait ne pas être raisonnable, la question devient celle-ci : quels objectifs devrait-on fixer? Le document traite de cette question en analysant les effets de différents objectifs en matière d'embauche (reflétant différentes hypothèses quant à la disponibilité externe) sur la composition d'après le sexe du corps professoral, en l'an 2000. Ces objectifs en matière d'embauche varient d'une proportion extrêmement conservatrice de 16,8 % de femmes jusqu'à une proportion optimiste de 44,4 % de femmes. Des hypothèses valables nous donnent des estimations variant de 17,5 % à 35,4 %. Tout en reconnaissant que la disponibilité variera d'une université à l'autre, on espère que les estimations fournies permettront des discussions éclairées sur l'établissement d'objectifs relatifs à l'équité en matière d'emploi 1) en élaborant et en illustrant une méthodologie pour définir des objectifs et des calendriers, et 2) en fournissant des estimations extrêmes (ainsi que d'autres fondées sur des hypothèses modérées) afin d'illustrer les diverses possibilités qui s'offrent dans le cadre de la politique canadienne sur l'équité en matière d'emploi.

INTRODUCTION

There has been considerable activity in recent years directed at establishing and implementing employment equity for women in Canadian universities. Much of this activity can be traced to recent Federal Government initiatives designed to provide redress to the systemic discrimination experienced by members of certain designated target groups (including women) in our society. As Boyd (1987:1) points out, Canadian universities are affected by the Federal Contractors Program. This program requires employers with over 100 employees who seek to secure contracts equal to or in excess of $200,000 with the Federal Government to implement an employment equity policy. Most Canadian universities meet these size criteria and seek Federal Government contracts, and are thus very likely required to implement employment equity for women and for other designated target groups.

One dimension of the universities' responsibilities under the Federal Contractors Program is that contractors must include in their employment equity policy the "establishment of goals for the hiring, training and promotion of [female] employees." (CEIC, 1986). This issue generates considerable controversy. On one hand, the Council of Ontario Universities Handbook on employment equity for women (1988: 74) devotes no more than one-half of one page to the question of goals and timetables and provides no specific information on what these goals might be or how they might be decided. On the other hand, some proponents of employment equity and affirmative action have offered very precise targets and timetables. For example, in a 1988 report to the president of the University of

Western Ontario and in a subsequent newspaper article, Constance Backhouse asserted that "a balance of 50-50 between men and women faculty members by the year 2000 would be a reasonable target" (*The Globe and Mail* May 30, 1988).

The Council of Ontario Universities regards goal-setting as a consultative process whereas Backhouse regards goal-setting as essentially synonomous with setting quotas. The former relies on various types of information (including departmental priorities, current workforce composition, availability in the external workforce and any special measures already in place), whereas the latter relies on only one type of information – i.e. that extraordinary measures should be taken to ensure that female university faculty representation is set equal to the representation of women in the general population in as short a time period as possible. In short, the former treats the goal-setting process as being largely dependent upon organizational and environmental contingencies, whereas the latter postulates a single goal within a single timeframe which is then applied to all situations.

Between these two extremes, it is possible to identify a middle position. Specifically, it can be argued that certain analytical and methodological issues are common to most situations (see, for example, Phillips, 1985; and Harvey and Blakely, 1985) and thus that there are certain similarities in what the goals will be in various organizational settings. What varies across organizations, however, are certain organization-specific parameters. Thus, while it is not possible to postulate a single universally applicable goal, it is possible: 1) to use existing information to make assumptions about the values these organization-specific parameters may take in some future time period; 2) to vary these assumptions over a wide range of values; and 3) to perform analyses based upon these assumptions as well as existing information in order to identify lower-bound, upper-bound, and "most probable" estimates of what the representation of female faculty will be in Canadian universities in some future time period and under alternative proposals for implementing and achieving employment equity.

This paper illustrates, and discusses some implications of such an analysis. The starting point for the analysis will be Backhouse's (1988) proposal for achieving "a balance of 50-50 between men and women faculty members by the year 2000". Her proposal is being singled out for analysis because she is perhaps the first to provide specific goals and timetables – and this makes it possible to empirically evaluate her proposal. This part of the paper will identify the conditions that would have to be in place in order for Backhouse's goal to be achieved, and then it attempts to define criteria for evaluating the reasonableness of this goal. The next section is based on the premise that these conditions may not be reasonable. Given this, the question becomes, what should the goals be? The paper addresses this question by defining alternative scenarios for the future, and by projecting the gender composition of female faculty in Canadian universities under each of these scenarios. These scenarios represent a range of conditions which likely encompass lower-bound and upper-bound estimates of what the future will look like, as well as some "more probable" estimates. It is hoped that this analysis of what the goals

should be will inform debates among academics and policy-makers who are most familiar with the constraints and opportunities for achieving equity for women in a university setting.

REASONABLENESS OF A 50-50 BALANCE BY THE YEAR 2000

Backhouse's proposal and assumptions of the analysis

Backhouse's objective is to achieve 50-50 balance in the gender composition of faculty in Canadian universities by the year 2000. She would achieve this objective by increasing the proportion of newly hired female faculty to all faculty hires to a level that is somewhat above 50%. Specifically, she makes three proposals. First, 50% of replacement hires over the 1985-2000 period (the period of her analysis) would be women. Second, 50% of any new hires would be women. Third, she proposes an affirmative remedy to redress the discriminatory implications of the "almost impenetrable job security to a male dominated faculty" provided by the institution of tenure. She suggests that faculty be subject to a five year review process in which those who do not measure up to an adequate standard of research, teaching and administrative work would be dismissed. She proposes, moreover, that the vacated positions should be filled only by women.

Given this proposal, the extent to which the proportion of female faculty hires to all faculty hires is greater than 50% depends upon the severity of her proposed tenure review process. If a small proportion of the existing stock of faculty fails this tenure review process, attrition rates would be relatively low and the proportion of female faculty hires would be only slightly above 50%. If a large proportion of the existing stock fails this tenure review process a large number of positions reserved exclusively for women would open up and the proportion of female faculty hires would be significantly above 50%.

This evaluation of Backhouse's proposal makes four sets of assumptions. First, the study assumes that there are no significant differences between men and women in retirement behaviour, in the decision to leave academia before the "normal" retirement age, or in the achievement of tenure. These assumptions are invariant across each scenario. This, in turn, allows us to analyze the independent effects of alternative hiring targets on the gender composition of Canadian university faculty in the year 2000, controlling for the effects of retirement and tenure decisions on the gender composition of Canadian university faculty. (1)

Second, given the assumption that there are no significant gender differences in retirement and turnover, the study makes alternative assumptions about the nature and extent of faculty turnover. Specifically the assumptions about faculty turnover (which is defined for the purposes of this study as the decision to leave academia) range from a "no-attrition" assumption to a 15% attrition assumption. The no-attrition assumption states: 1) that everyone retires at age 65; and 2) that no one leaves academia before they reach the age of 65. The 15% attrition assumption states: 1) that everyone retires at age 65; and 2) that over each five-year period between 1985 and 2000, 15% of the stock of university faculty who do not reach

Table 1

Current and projected stock of full-time Canadian university faculty by 5-year age groups

Age	Year											
	1985-86			1990-91			1995-96			2000-01		
	M	F	Tot	M	F	Tot	M	F	Tot	M	F	Tot
<25	23	15	38	0	0	0	0	0	0	0	0	0
25-29	462	250	712	23	15	38	0	0	0	0	0	0
30-34	2139	781	2920	462	250	712	23	15	38	0	0	0
35-39	4197	1171	5368	2139	781	2920	462	250	712	23	15	38
40-44	6115	1226	7341	4197	1171	5368	2139	781	2920	462	250	712
45-49	5731	897	6628	6115	1226	7341	4197	1171	5368	2139	781	2920
50-54	4437	576	5013	5731	897	6628	6115	1226	7341	4197	1171	5368
55-59	3106	518	3624	4437	576	5013	5731	897	6628	6115	1226	7341
60-64	1982	295	2277	3106	518	3624	4437	576	5013	5731	897	6628
65+	311	40	351	0	0	0	0	0	0	0	0	0
Total	28503	5769	34272	26210	5434	31644	23104	4916	28020	18667	4340	23007

Source for current data: Statistics Canada, Teachers in Universities (Ottawa: Supply and Services Canada, 1985-86).

retirement age during that five-year period leave academia. The most probable attrition rate over the 1985-2000 period is likely to be somewhere between these two extremes. However, by varying the attrition assumptions over a relatively wide range, it is possible to assess the implications of any proposal to increase the attrition rate by replacing the institution of tenure with a periodic tenure-review process. (2)

A third set of assumptions pertains to the actual availability of women for faculty positions. This issue does not enter directly into the evaluation of Backhouse's proposal, but it is discussed in some detail in the latter part of the paper.

Fourth, assumptions need to be made about the nature and amount of new and replacement faculty hiring over the 1985-2000 period. Specifically, for new hires, the paper assumes that the recent past is the best predictor of the near future. Over the past few years, an average of 375 new faculty positions have been created each year. This analysis assumes that 375 new faculty positions will be created each year between 1985 and 2000. For replacement hires, the paper assumes that there is a one-to-one correspondence between retirements/attrition and replacement hires – that is, for each person who retires or leaves academia, someone is hired in their place. It should be acknowledged that some forecasters (e.g. von Zur-Muehlen, 1987) believe that replacement hires will be somewhat lower than the retirement/attrition rate and that new faculty hires may drop below traditional levels. Given that these issues are open to debate (see also NSERC, 1985; SSHRC, 1985), the principal rationale for these assumptions is that they are simplifying assumptions, and that alternative assumptions have relatively little bearing on the principal findings of this study.

Table 2

Projected stock of full-time Canadian university faculty, assuming 50% hiring targets for replacements of retirees and of new hires

		Male	Female	Total	% Female
A.	1985 stock of faculty members	28503	5769	34272	16.8
B.	Stock of 1985 faculty members expected to still be teaching in 2000	18667	4340	23007	18.9
C.	Difference (A-B)	9836	1429	11265	12.7
D.	Replacement hires 1985-2000 reflecting a hiring target of 50% female	5632	5633	11265	50.0
E.	2000 stock of faculty members reflecting survival of 1985 stock and replacement hires (B+D)	24299	9973	34272	29.1
F.	New hires 1985-2000 reflecting a hiring target of 50% female (and assuming 375 new hires/year)	2813	2812	5625	50.0
G.	2000 stock of faculty members reflecting survival of 1985 stock, replacement hires and new hires (E+F)	27112	12785	39897	32.0
H.	Total hired	8445	8445	16890	50.0
I.	Gender composition of hires needed to achieve 50-50 gender composition by the year 2000	1281	15609	16890	92.4

Main estimates

Using data on the age and gender composition of Canadian university faculty in the 1985-86 academic year (the most recent year for which data are available), the question to be answered is what proportion of vacancies created between 1985 and 2000 under this staffing policy would have to be filled by women in order to achieve a 50-50 gender balance by the year 2000?

This question can be answered in two steps. The first involves subtracting the number of university professors who are expected to leave academia between 1985 and 2000 from the existing stock and adding the number of university professors who are expected to enter academia between 1985 and 2000 to the existing stock. Tables 1 and 2 present this analysis. Table 1 shows the actual age and gender composition of professors employed full time in Canadian universities in 1985. The table also projects the age and gender composition of the population for each five-year interval to the year 2000 under two assumptions: 1) that everyone retires at age 65; and 2) that no one leaves academia before they reach the age of 65. The bottom row of the table shows the number of the 1985 stock of male and female faculty members who are expected to still be in academia in the year 2000 under the given assumptions. For example, of the 28,503 male faculty members in 1985, 18,667 of them are still expected to be teaching in the year 2000; of the 5,769

female faculty members in 1985, 4,340 of them are still expected to be teaching in the year 2000.

Table 2 shows the impact of 50% female hiring targets for replacement hires and new hires in the gender composition of university faculty in Canada in the year 2000. Rows A and B show the gender composition of the 1985 stock of faculty members in 1985 and 2000. The far right entries in rows A and B show that the natural attrition of the 1985 stock of faculty members in itself accounts for an increase in the proportion of female faculty – from 16.8% to 18.9%.

Row C shows that 11,265 replacement vacancies are expected to arise (under the given assumptions and assuming that all replacement vacancies are filled) from the existing stock of 34,272 faculty members. If, as the target states (row D), 50% of replacement hires are women, this will have the effect of adding over 5600 new female faculty members to the 4,340 of the 1985 stock who are expected to survive to the year 2000. As the far right cell of row E shows, this implies an increase in the proportion of female faculty from 18.9% (row B) to 29.1%.

Given the assumption that 375 new faculty positions will be created each year between 1985 and 2000, 5,625 new faculty positions will be created over the 1985-2000 period. If, as shown in row F of table 2 a 50% female hiring target for new faculty positions is achieved, another 2,812 women will be added to the projected stock of female faculty. As the far right cell of row G shows, this increases the proportion of female faculty from 29.1% (row E) to 32.0%.

In total, table 2 shows that under the given assumptions and 50% female hiring targets for replacement hiring and new hiring, the gender composition of female faculty will increase from 16.8% in 1985 to 32.0% in the year 2000. Put another way (row I), a 50-50 gender composition may be achieved by the year 2000 if the 50% hiring rules were abandoned in favour of a rule whereby 92.4% of all faculty positions were filled by women.

It is possible, however, to move closer to a 50-50 balance in the stock of faculty in the year 2000 by making policy decisions that accelerate the rate of attrition among the 1985 stock of faculty members and/or by increasing the proportion of female hires. This is where Backhouse's affirmative remedy comes in. Her proposal was to replace the process of granting tenure with a five-year review process where those who do not measure up to an adequate standard of research, teaching and administrative work would be dismissed from their faculty positons. Moreover, the proposal suggests that vacancies created in this way should be filled only by women. The second step of the analysis, therefore, is to evaluate the proportion of females that would be hired and the gender composition in the year 2000 under alternative attrition assumptions, to see what combination of female hires and attrition rates bring us close to a 50-50 gender composition in the year 2000. Again, this assumes that all vacancies created by the current stock of faculty failing this proposed five-year review process are filled by women.

Table 3 presents this analysis under two different assumptions about the attrition rate – a 10% attrition rate for each five-year period for the 23,007 academics who will not have retired by the year 2000, and a 15% attrition rate (3). In order to

Table 3

Projected stock of full-time Canadian university faculty, assuming hiring targets for women of 50% for vacancies arising from replacements of retirees and of new hires and of 100% for vacancies arising from attrition from the current stock of faculty

	Attrition rate							
	10%				15%			
	M	F	Tot	%F	M	F	Tot	%F
J. Stock of 1985 faculty expected to still be teaching in 2000	13608	3163	16771	18.9	11464	2666	14130	18.9
K. Difference (B-J)	5059	1177	6236	18.9	7203	1674	8877	18.9
L. Repalcement hires for faculty expected to fail 5-year review	0	6236	6236	100.0	0	8877	8877	100.0
M. Replacement hires for faculty expected to fail 5-year review expected to still be teaching in 2000	0	5592	5592	100.0	0	7479	7479	100.0
N. Replacement hires for 1985-90 cohort of replacement hires who are expected not to survive to 1990-95	115	115	230	50.0	259	259	518	50.0
O. Replacement hires for 1990-95 cohort of replacement hires (N) expected not to survive to 1995-2000	11	12	23	52.2	39	39	78	50.0
P. Replacement hires for 1985-90 cohort of replacement hires expected not to survive to 1995-2000	104	103	207	49.8	220	220	440	50.0
Q. Replacement hires for 1990-95 cohort of replacement hires expected not to survive to 1995-2000	103	104	207	50.2	220	220	440	50.0
R. Replacement hires for retirees 1985-2000 expected to still be teaching in 2000	5202	5202	10404	50.0	4996	4996	9992	50.0
S. Replacement hires for 1985-90 cohort of replacements for retirees expected not to survive to 1990-95	131	132	263	50.2	197	197	394	50.0
T. Replacement hires for 1990-95 cohort of replacement hires (S) expected not to survive to 1995-2000	13	13	26	50.0	29	30	59	50.8
U. Replacement hires for 1985-90 cohort of replacement for retirees expected not to survive to 1995-2000	118	118	236	50.0	168	167	335	49.9

	Attrition rate							
	10%				15%			
	M	F	Tot	%F	M	F	Tot	%F
V. Replacement hires for 1990-95 cohort of replacements for retirees expected not to survive to 1995-2000	181	181	362	50.0	272	272	544	50.0
W. New hires 1985-2000 expected to still be teaching in 2000	2540	2540	5080	50.0	2412	2412	4824	50.0
X. Replacement hires for 1985-90 cohort of new hires expected not to survive to 1990-95	94	94	188	50.0	140	141	281	50.2
Y. Replacement hires for 1990-95 cohort of replacement hires (X) expected not to survive to 1995-2000	10	9	19	47.4	21	21	42	50.0
Z. Replacement hires for 1985-90 cohort of new hires expected not to survive to 1995-2000	84	85	169	50.3	120	119	239	49.8
A' Replacement hires for 1990-95 cohort of new hires expected not to survive to 1995-2000	94	94	188	50.0	140	141	281	50.2
B' Stock of 2000 faculty reflecting attrition assumptions, survival of 1985 stock, replacement hires, new hires and replacements for replacements and new hires	22374	17523	39897	43.9	20608	19289	39897	48.3
C' Total hired	9503	15741	25244	62.4	10270	19148	29418	65.1

clearly show that the analysis in table 3 is a continuation of what was presented in table 2, the labelling of the rows starts from where table 2 left off (i.e. rows J to C'). The calculations are derived from the data in table 1, given the assumptions presented in the body of the paper. Sample calculations and verbal descriptions of the methods of calculation are presented in the Appendix.

Looking first at the impact of a tenure review process that induces a 10% attrition rate for each five year period, the representation of female faculty in the year 2000 increases from 32.0% (row G in table 2) to 43.9% (row B' in table 3). This is the result of a policy whereby the 6,236 members of the 1985 stock of university faculty who do not reach age 65 by the year 2000 (5,059 men and 1,177 women) and who fail the tenure review process are replaced by women. Some of these women will in turn fail the 5 year review process (e.g. 10% of the cohort of 1985-90 hires may not survive the 1990-95 review, and 10% of the remaining survivors may not survive the 1995-2000 review). Since, however, the policy

presumably redresses past discrimination inherent in the tenure granting process (and not expected discrimination in the future) the analysis assumes that replacements for these replacements will be hired on the basis of a 50-50 gender breakdown. Similarly, replacements for the new hires and replacements for the retirees' replacements are assumed to be hired on the basis of a 50-50 gender breakdown (4). Under these conditions, a gender composition of 43.9% female will be achieved by the year 2000. Moreover, 62.4% of all faculty positions that open up between 1985 and 2000 will be filled by women (row C'). 25,244 different people (9,503 men and 15,741 women) will have filled faculty positions for at least one five year period between 1985 and 2000 – 23,126 of them (B' – J) will be part of the stock of faculty members in the year 2000.

The right hand side of table 3 performs the same analysis, this time assuming an attrition rate for each five-year review process of 15%. Again, the hiring policy implies that members of the 1985-86 stock of faculty who do not reach age 65 by the year 2000 and who do not survive the five-year review processes are replaced by women. Replacements for the new hires and for the retirees' replacements who do not survive the five-year review processes are hired on the basis of a 50-50 balance of men and women. Under these conditions, a gender composition of 48.3% female will be achieved by the year 2000. Moreover, 65.1% of all faculty appointments between 1985 and 2000 will be filled by women (row C'). 29418 different people (10,270 men and 19,148 women) will have filled faculty positions for at least one five year period between 1985 and 2000. 25,767 of them will be part of the stock of faculty members in the year 2000.

The analysis of these two scenarios suggests that a target of a 50-50 balance in the gender composition of university faculty by the year 2000 is theoretically possible. It can be achieved either by increasing the proportion of women hired to well over 50% over the 1985-2000 period, by increasing the attrition among the 1985-86 stock of faculty members who do not reach normal retirement age by the year 2000, or some combination thereof. The question is whether this target is reasonable in light of the staffing (hiring, firing) policies that would be required to achieve these targets. The question can be answered by considering the following criteria:

1. What is the availability (both current and future) of female faculty in the general population? This point has been hotly debated. Can *current* availability be represented by the proportion of women currently employed in full-time faculty positions, by the proportion of the flow of recent doctoral graduates who are women, by the proportion of recent doctoral enrollments who are women, or by some combination thereof? von Zur-Muehlen (1987: 23) notes, moreover, that only two thirds of the entry positions likely to open in the near future will require doctoral qualification (although at least some of these positions may require completed doctorates later). This suggests that availability estimation processes should also take account of the availability of women in related jobs and occupations.

With respect to future availability, there is somewhat less debate. Employment equity analysts generally assume that availability in the longer term will be somewhere around 50%. If we assume, however, that long-term availability is 50%, it must still be decided how quickly hiring targets should and could move towards these long-term availability assumptions. That is, should a 50% hiring target be established immediately for all future hires? Should a 50% hiring target be phased in over a four or five year period – representing the minimum amount of time that would be required to graduate a cohort of graduate students who have been selected into graduate school on the basis of a 50-50 gender composition? Or should a 50% hiring target be phased in over an even longer period?

2. What are the implications of the alternative staffing policies on the overall demand for university faculty? A comparison of the total number of hires under the no attrition assumption in table 2 and the 10% and 15% attrition assumptions in table 3 shows that the proportion of women in faculty positions can be increased by increasing the number of opportunities that are available to men and women. Under the 0 attrition assumption, 16,890 people are expected to be hired into faculty positions. However, that increases to 25,244 under the 10% attrition assumption and 29,418 under the 15% attrition assumption. If, as von Zur-Muehlen (1987) predicts the supply of doctoral degrees (including Canadians returning from abroad) is 1,500 degrees awarded each year, then a total of 22,500 new doctorates will be available over the 1985-2000 period. Therefore, the effect of an employment equity policy which increases opportunities by increasing attrition could be to change the longer-term supply-demand outlook from a projected surplus (i.e. 22,500 new doctorates vs. 16,890 new hires) to a shortage 22,500 vs. 25,244 or 29,418). It should be noted, moreover, that any shortages could be much more severe than these figures indicate, since it has been estimated that perhaps one-half of all new doctorates are actually available for university teaching (von Zur-Muehlin, 1987). Finally, it should be noted that the shortages for female faculty may be most severe because non-university employers, with their own employment equity programs, may be competing for the availability of female doctorates.

3. What are the implications of the variation in the gender composition of faculty members across disciplines on the overall hiring targets? As table 4 shows, the gender composition of female faculty in 1985-86 varies from a low of 2.3% in engineering and applied sciences to a high of 25.9% in education. Our analysis, on the other hand, suggests than an overall hiring target in excess of 65% is necessary to achieve a 50-50 gender composition by the year 2000. If we set an overall female hiring target of 65% and if we grant that it will take longer to achieve this target in some disciplines than in others, then the overall target can be achieved only by setting targets in some disciplines that are well over 65%.

4. What are the implications of hiring targets that exceed availability on the fairness of the employment equity policy? We can draw on the American experience with equal employment opportunity and affirmative action to argue

Table 4

Gender composition of full-time faculty members by field of study

	Male	Female	Total	% Female
Education	2257	787	3044	25.9
Fine and applied arts	1117	342	1459	23.4
Humanities	4474	1177	5651	20.9
Social sciences	7181	1378	8559	16.1
Agriculture and biological sciences	1955	385	2340	16.5
Engineering and applied science	2597	60	2657	2.3
Health professions	4346	1316	5662	23.2
Math and physical sciences	4377	254	4631	5.5
Not reported	211	78	289	27.0
Total	28515	5777	34292	16.8

Source: Statistics Canada, Teachers in Universities (Ottawa: Supply and Services Canada, 1985-86).

that quotas that are substantially higher than external availability may be an appropriate remedy to extreme and persistent forms of employer discriminatory practices (e.g. Arnold v. Ballard, 1975; Commonwealth of Pennsylvania v. O'Neill, 1972). However, they are likely to be considered appropriate only for relatively short, limited time periods. For example, the widely cited case of AT&T's consent decree mandated hiring targets that exceeded external availability in certain occupations for a fixed five year period (Wallace, 1976). In the case of university faculty, however, a 50-50 gender balance will be achieved by the year 2000 only by setting hiring targets that exceed availability for at least a 15-year period. If we grant that the principle of affirmative remedies is an appropriate response to persistent and extreme discriminatory employer behaviour, it still must be determined whether it is appropriate in practice over extremely long periods of time.

ALTERNATIVE SCENARIOS

The analysis suggests it is at least theoretically possible for a 50-50 gender composition to be achieved by the year 2000. The reasonableness of this goal, however, depends upon several factors. First, while the fact that hiring targets would have to exceed availability estimates does not in itself mean that the goal is unreasonable, it must be decided how much hiring targets can exceed external availability and over what time period affirmative measures should be allowed. That is, the reasonableness of a 65% hiring target may depend in part upon whether external availability is in the 50% range or in the 20% range. As hiring targets

exceed external availability by greater amounts, the more difficult (and less desirable) it is to sustain these affirmative measures over the longer term. Second, while policies which accelerate the attrition of the existing stock of faculty would appear to be particularly effective in equalizing the gender composition, it should be noted that most forecasts suggest that we are entering into a period of faculty shortages (SSHRC, 1985; NSERC, 1985). In the context of faculty shortages, it may not be desirable to over-emphasize policies which promote attrition. Third, while it indeed may be feasible to achieve a 65% hiring target in some disciplines, it clearly isn't feasible in others. It does not seem appropriate to increase the hiring targets in some disciplines beyond 65% in order to compensate for those disciplines where the target clearly isn't feasible.

If, however, a 50-50 gender balance by the year 2000 is not a reasonable target, then the question is, what should the goals be? This question is open to intense debate. This is the case particularly because there is little consensus on the nature of current and future availability, nor is there any consensus over what the rate of attrition among the existing stock of university faculty ought to be. We can begin to answer this question, however, by defining alternative feasible hiring targets and predicting their impact on the gender composition of university faculty in the year 2000.

The following analysis focuses on six different hiring targets reflecting six different scenarios with regard to the availability of female faculty over the 1985-2000 period. Ranging from lowest to highest these are: 1) the assumption that availability over the 1985-2000 period is equal to the current stock of female faculty; 2) the assumption that availability is equal to the current proportion of new doctorates who are female; 3) the assumption that availability is equal to the current proportion of full-time doctoral enrollments who are female; 4) the assumption that availability is equal to a weighted average of entry level and senior hires reflecting rapid increases in entry-level and senior availability over the 1985-2000 period; 5) the assumption that availability is equal to a weighted average of entry level and senior hires reflecting rapid increases in entry-level and senior availability over the 1985-2000 period, as well as a broader definition of the applicant population; and 6) the assumption that availability is equal to a weighted average of entry level hires reflecting a rapid increase in entry-level availability over the 1985-2000 period.

Scenario # 1: Availability equals the current stock of female faculty. In 1985-86 (the most recent year for which data are available), 16.8% of full-time faculty in Canadian universities were female. This scenario suggests that the only hiring target that universities should be required to achieve is that the proportion of female hires should be no lower than the proportion of female faculty in the current population. This is an extremely conservative scenario. It assumes that the external labour market does not reflect gender bias – merely that the staffing policies of individual universities which employ women in fewer than 16.8% of full-time faculty positions *may* reflect bias against women. Analysts of the enforcement mechanisms of Canadian employment equity policy have suggested

Table 5

Predicted gender composition of full-time faculty in Canada in 2001 with hiring targets reflecting alternative assumptions about external availability--by attrition rate

Scenario	Hiring target (%Female)	Attrition rate		
		0%	10%	15%
1.	16.8	18.0% (1)	17.7%	17.5%
2.	26.4	22.1	23.2	23.7
3.	33.1	24.9	27.1	28.1
4.	35.2	25.8	28.3	29.4
5.	38.5	27.2	30.2	31.5
6.	44.4	29.7	33.7	35.4

Note: (1) The values in the table represent the projected percentage female of full-time faculty in Canadian universities in the year 2000 under alternative hiring target and attrition rate assumptions.

that only individual employers which are substantially below the average of all employers on the basis of these stock comparisons may be deemed not to be in compliance with relevant anti-discrimination laws (Bevan, 1987: 302-303).

The projections based upon this scenario (and all other scenarios) are presented in table 5. They show that this scenario could in fact promote greater inequality against women. Under the 0% attrition assumption, the gender composition of female faculty declines from 18.9% to 18.0%; under the 10% and 15% attrition assumptions, the gender composition declines to 17.7% and 17.5% respectively. This occurs because the *flow* of faculty hires (i.e. of younger, more mobile faculty who are more likely to be looking for jobs and to be hired) clearly reflects a much higher proportion of female faculty than the existing stock. The practical implication of this scenario is that availability standards could conceivably be set too low. That is, it is conceivable that availability defined in terms of this scenario may in effect allow discriminating employers to continue to discriminate against women, and thus to promote greater inequality against women.

Scenario # 2: Availability equals the current proportion of new doctorates who are female. In 1985-86, 26.4% of all persons who successfully completed doctoral programs in Canada were female. This scenario suggests that the hiring target should be no lower than the current proportion of female doctorates. Since one may reasonably expect that the proportion of new female doctorates will increase over the 1985-2000 period, this may be regarded as a conservative estimate of the current and future flows of faculty hires. As table 5 shows, the effect of a 26.4% hiring target would be to increase the gender composition of female faculty in the year 2000 to 22.1% under the 0% attrition assumption, and to 23.2% and 23.7% under the 10% and 15% attrition assumptions.

Scenario # 3: Availability equals the current proportion of full-time doctoral enrollments who are female. In 1985-86, 33.1% of full-time doctoral students in Canadian universities were female. This scenario suggests that the hiring target should be no lower than the current proportion of female doctoral enrollments. As table 5 shows, the effect of a 33.1% hiring target would be to increase the gender composition of female faculty in the year 2000 to 24.9% under the 0% attrition assumption and to 27.1% and 28.1% under the 10% and 15% attrition assumptions respectively.

Scenario # 4: Availability equals the weighted average of entry level and senior availability over the 1985-2000 period. This is the first of two scenarios which considers two different types of hires: 1) entry-level, which is likely to be represented by an estimate of the proportion of female enrollments; and 2) senior appointments (i.e. inter-university transfers). Historically, entry level hires have constituted 50% of all hiring decisions (Statistics Canada, various years). For this 50%, an optimistic availability estimate was assumed (44.4%) (see scenario # 6). For the other 50%, a composite availability estimate of 25.9% was derived, representing three equally-weighted components: 1) the current stock of associate professors (15.7%); 2) the current stock of assistant professors (28.9%); and 3) the current stock of doctoral candidates (33.1%) who will be ready to consider junior faculty appointments and at least one promotion by the year 2000. The weighted average of these two components is 35.2%. As table 5 shows, this increases the gender composition of female faculty in the year 2000 to 25.8% under the 0% attrition assumption and 28.3% and 29.4% under the 10% and 15% attrition assumptions respectively.

Scenario # 5: Availability equals the weighted average of entry-level and senior availability over the 1985-2000 period, reflecting a broader definition of the applicant population. This scenario considers entry level and senior hires. For each, a proportion of the hires are assumed to be drawn from the general population while the rest are drawn from the academic job market. For the 50% of all hires that are entry level, one-half are based upon an optimistic availability estimate of 44.4% (see scenario # 46) and the other half are based upon an availability estimate drawn from the general population (i.e. 50%). The weighted average availability estimate for entry-level hires, therefore, is 47.2%. For the 50% of hires that are at more senior levels 84% are based upon the composite availability estimate of 25.9% derived in scenario # 4. The remaining 16% are drawn from the general population where female availability is assumed to be 50%. The weighted average for senior hires, therefore, is 29.8%. The weighted average of these two components is 38.5%. As table 5 shows, this increases the gender composition of female faculty to 27.2% under the 0% attrition assumption, and 30.2% and 31.5% under the 10% and 15% attrition assumptions respectively.

Scenario # 6: Availability equals the weighted average of entry level hires reflecting a rapid increase in entry-level availability over the 1985-2000 period. This scenario assumes that the proportion of female doctoral graduates character-

izes external availability and that this proportion will increase rapidly to 50% over the 1985-2000 period. That is, this scenario assumes that it will take five years to graduate a cohort of doctoral candidates who were selected on the basis of a 50-50 gender composition. Thus, over the 1985-90 period availability is assumed to be 33.1% (based upon current enrollments); over the 1990-2000 period, it is assumed to be 50%. The weighted average availability estimate over the 1985-2000 period is 44.4%. As table 5 shows, this increases the gender composition of female faculty to 29.7% under the 0% attrition assumption, and 33.7% and 35.4% under the 10% and 15% attrition assumptions respectively.

CONCLUSIONS

The purpose of this paper was twofold: 1) to investigate the reasonableness of a goal of a 50-50 gender balance among full-time faculty in Canadian universities by the year 2000; and 2) to investigate the impact of alternative hiring targets on the gender composition of faculty in Canadian universities in the year 2000. The results suggest that a 50-50 gender balance can be achieved if hiring targets that are greater than 65% females are established and if policies to accelerate attrition among the current stock of faculty are implemented. An analysis of such criteria as external availability, impact on labour demand and fairness suggests that the goal of a 50-50 gender balance by the year 2000 may not be reasonable. When alternative hiring targets which were based upon alternative definitions of external availability were considered a range of estimates of the gender composition of Canadian university faculty in the year 2000 were derived. These ranged from 17.5% under the high attrition assumption and the most conservative availability estimate to 35.4% under the high attrition assumption and the most optimistic availability estimate.

It is hoped that these projections can inform debate over what the goals in employment equity programs in Canadian universities ought to be. The analysis shows, for example, that both upper-bound and lower-bound projections of the representation of female faculty in the year 2000 reflect employment equity policy proposals which may not pass simple tests of reasonableness. Specifically, the lower-bound estimate (based upon an availability assumption of 16.8% female representation) appears to be a gross under-estimate of true availability. It is conceivable that any employment equity policies based upon this assumption could in fact promote even greater inequality against female faculty. On the other hand, the objective of a 50-50 representation by the year 2000 appears to be beyond reach because there is no evidence to support the contention that women are available to fill at least 65% of all faculty hiring that takes place between 1985 and 2000. Between these two extremes, however, there are some "more probable" scenarios. These reflect hiring target assumptions ranging from a conservative availability estimate of 26.4% to an optimistic availability estimate of 44.4%. These result in gender composition estimates in the year 2000 which range from 22.1% to 35.4%.

The utility of projections such as these is that they raise more questions than they answer. Specifically, they raise questions about what policy proposals should be considered, and about the relative feasibility (and costs) associated with particular proposals and particular goals. For example, is it feasible to increase the availability pool by practicing affirmative action in graduate school enrollments as a means of increasing the proportion of female faculty hires in some future time period? Do such policies as tenure review or early retirement offer any identifiable benefits in terms of their impact on achievement of certain employment equity goals? Are they desirable? The analysis can be used to identify the constraints and range of possibilities associated with any one proposal. These can then be weighed against alternatives.

Finally, questions can be raised about the assumptions that underlie projections such as these. Given the projection methodology outlined in this paper, however, it becomes a relatively easy task to fit alternative parameter assumptions into the analysis. Indeed, as more information becomes available through debates among academics and policy-makers and through further research, it should over time become possible to make further refinements to the analysis. Specifically, as the concept of employment equity takes hold and as we learn more about the causes of, and remedies for, discrimination against women, it will also become easier to identify specific goals and timetables given the specific constraints and opportunities confronting each of our universities.

NOTES

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1 It should be noted that these assumptions do not have to be correct for the analysis of the reasonableness of a particular target to be useful. The assumption of gender neutrality in tenure and retirement is saying, in effect, that university employment equity policies are (or can be) effective and that the only policy issue relates to hiring policy. If, on the other hand, there is a disparate impact in tenure decisions or retirement behaviour, this increases the pressures on the hiring policy. If, for example, the hiring targets are unreasonable when we assume gender neutral tenure and retirement patterns they will be even more unreasonable if there is a disparate impact in these areas. It should also be noted that the analysis outlined in this paper can be adapted to analyze the impact of employment equity policies in the tenure and retirement areas.

2 Of course, attrition can be enhanced in other ways – for example, by early retirement programs. The effects of alternative attrition policies are very similar to those outlined in this paper.

3 Under the 10% attrition assumption, 2301 will fail the first review process, 2071 will fail the second review process and 1864 will fail the third review process. Under the 15% attrition assumption, 3451 will fail the first review process, 2933 will fail the second review process and 2493 will fail the third review process.

4 If replacements for all replacements and new hires were women then the stock of male faculty members in the year 2000 would be reduced by 1024 to 21350 and the stock of female faculty would be increased by 1024 to 18547 (i.e. 46.5% of the total). This implies that 1058 fewer men will have been hired (i.e. 8445 rather than 9503) and that 1058 more women will have been hired (i.e. 16794 rather than 15741 – i.e. 66.5%).

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APPENDIX

Sample calculations (for females assuming 10% attrition)
and description of analysis in exhibit 3

J. Stock of 1985 faculty members expected to still be teaching in 2000.

$$4340 - (434 + 391 + 352) = 3163$$

where $434 = (.10)(4340)$;
$391 = (.10)(4340 - 434)$
$352 = (.10)(4340 - 434 - 391)$

10% of the 1985 stock of university faculty are assumed to leave academia during each 5-year period – i.e. 434 between 1985-90; 391 during 1990-95; 353 during 1995-2000.

K. The number of the 1985 stock of faculty who leave academia due to the 5-year review process is the number of faculty expected to be teaching under the no attrition assumption minus the number of faculty expected to be teaching under the 10% attrition assumption – i.e. Row B − Row J = 4340 − 3163 = 1177.

L. Replacement hires for faculty members who failed 5-year review process. 6236 men and women are expected to leave academia due to the review process (1177 women and 5059 men). The hiring policy that is being evaluated assumes that all of these vacancies are filled by women.

M. Replacement hires for faculty members who failed 5-year review process expected to still be teaching in 2000. Not all of the replacement hires defined in L will survive the five year review process.
Specifically:
$.10 \times 2301 = 230$ (see N) of the 1985-90 cohort will not survive the 1990-95 review;
$.10 \times 2071 = 207$ (see P) of the 1985-90 cohort will not survive the 1995-2000 review;
$.10 \times 1072 = 207$ (see Q) of the 1990-95 cohort will not survive the 1995-2000 review.

$6236 - (230 + 207 + 207) = 5592.$

N. Replacement hires for 1985-90 cohort of replacement hires who did not survive to 1990-95. The hiring policy that is being evaluated assumes that 50% of these hires (i.e. $.50 \times 230 = 115$) are female.

O. Replacement hires for 1990-95 cohort of replacement hires who did not survive to 1995-2000 (i.e. $.10 \times 230 = 23$). The hiring policy that is being evaluated assumes that 50% of these hires (i.e. 12 after rounding) are female.

P. Replacement hires for 1985-90 cohort of replacement hires who did not survive to 1995-2000. The hiring policy that is being evaluated assumes that 50% of these hires (i.e. $.50 \times 207 = 203$) are female.

Q. Replacement hires for 1990-95 cohort of replacement hires who did not survive to 1995-2000. The hiring policy that is being evaluated assumes that 50% of these hires (i.e. $.50 \times 207 = 104$) are female.

R. Replacement hires for retirees 1985-2000 expected to still be teaching in 2000. First, estimate the number of replacement hires in each 5-year period, then estimate the attrition for each cohort:

1985-90: $34272 - 31644 = 2626$ (# of replacement hires)
1990-95: $31644 - 28020 = 3624$ (# of replacement hires)
1995-2000: $28020 - 23007 = 5013$ (# of replacement hires)

Total number of replacement hires: $2626 + 3624 + 5013 = 11265$

Attrition: $2626 - (263 - 236) = 2129$
$3624 - 362 = 3262$
$5013 = 5013$

Stock of replacement hires after taking account of attrition: $2129 + 3262 + 5013 = 10404$. 50% (i.e. 5202) are female.

S, T, U, V – similar to N, O, P, Q.

W. New hires 1985-2000 expected to still be teaching in 2000. For each cohort, there are 1875 new hires. Therefore:

1985-90 cohort: 1875 − (188 + 169) = 1518
1990-95 cohort: 1875 − 188 = 1687
1995-2000 cohort: 1875 = 1875

Stock of new hires after taking account of attrition:
1518 + 1687 + 1875 = 5080. 50% (i.e. 2580) are female.

X, Y, Z, A' – similar to N, O, P, Q

B' Stock of university faculty in the year 2000 reflecting attrition assumptions, survival of 1985 stock, replacement hires (and replacements for replacements and new hires): J + M + N + P + Q + R + S + U + V + W + X + Z + A' = B'

C' Total number of new hires: D + F + L + N + O + P + Q + S + T + U + V + X + Y