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Professional identity in institutions of higher learning in Israel*

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Abstract. Members of the faculties of Engineering and Sciences were surveyed at the Israel Institute of Technology (N = 247) and Tel Aviv University (N = 112) as to identification with, criticism of, and feelings about their respective institutions, as well as recommendations for possible improvement. Findings showed that a strong professional identity coexists with a pronounced critical stance. Findings are consistent with Herzberg's two-factor theory of work motivation that views higher-order "motivators," such as the professional identity here assessed, as relatively independent of lower-order "hygiene" needs, mainly working conditions. The strong professional identity of engineering and science faculties would seem to minimize the likelihood of a massive exodus to industry.

The most crucial component of every institution of higher education responsible for its current as well as future functioning is its academic faculty. For several years now there has been a growing feeling at the Israel Institute of Technology (Technion) that its future as an elite institution might be endangered by the perceived tendency of faculty members as well as of potential candidates to opt for more challenging and lucrative positions in industry. Similar problems are known to exist at other institutions and in other countries (Perrucci & Gerstl, 1969).

As a first step towards attempting to deal with the situation, the "Committee on Engineering Education and Technion Policy 2001" requested a survey among faculty members in order to assess their attitudes towards the Technion and towards themselves as professional engineers and scientists. To provide a wider scope of opinions and to permit comparisons, it was decided to administer the survey questionnaire among the engineering and science faculty of the Tel Aviv University (TAU) as well.

Prior findings show that job satisfaction among teaching personnel appears to be strongly associated with professional identity. Elementary and high school teachers are more likely to claim "burnout" (Hofman & Kremer, 1985), or to think of leaving their job (Kremer & Hofman, 1985), if their professional identity is relatively defective. Professional identity, following a series of studies in social identity (Hofman, 1977, 1985) may be construed as the extent to which

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someone thinks of his or her professional role as being important (Centrality), attractive (Valence), and in harmony with other roles (Consonance). Self Presentation and Solidarity are among further dimensions of Professional Identity.

The sharp criticism voiced by members of the faculty of their respective institutions is often viewed with alarm by administrators fearful of losing their personnel to industry or government. This prospective is especially threatening at technical institutes due to the incentives offered by industry. It is, however, distinctly possible to have expressions of dissatisfaction along with a sense of attachment to the present or anticipated way of life. A strong professional identity will block a tendency to leave higher institutes of education and may, as will be hypothesized, coexist with considerable criticism of those institutes.

Method

Instrument

Based on an a-priori conceptualization of professional identity (Hofman & Kremer, 1985) and extensive interviews with members of the Technion, a survey instrument was developed that consisted of four parts: (1) Biographical data; (2) A 37-item, 4-step Likert-type attitude scale containing statements of professional identity and of satisfaction/dissatisfaction with several aspects of the Technion or of Tel Aviv University (See Appendix A for English translation); (3) An 8-item Semantic Differential type scale measuring aspects of morale (Appendix B); and (4) A 16-item list of recommendations for improvement, again using a Likert-type 4-step format (Appendix C).

Sample

The questionnaire was administered anonymously to all engineering and science department faculty members at both the Technion (N = 415) and TAU (N = 159). At the Technion 247 usable questionnaires were returned (60%), at TAU – 112 (70%). Table 1 contains background information about the respondents.

The distribution of ranks among the Technion sample was similar to that of the Technion population, though lecturers were somewhat under-represented (6.1 vs 10.0%). Correspondingly, professors were over-represented (30.0% vs 25.0%). At TAU, there was no particular sampling bias.

Table 1. Technion Professional Identity Study (TPIS).

		1985 – 1986	
		Technion	Tel Aviv University
Age		247 48.2 9.0	112 45.0 9.1
Year of Ph.D.		247 1969.1 8.4	112 1970.4 8.4
Since when here?		247 1970.6 9.0	112 1974.8 6.5
		(Percentage)	
Sex	Males	87.0% (N = 215)	83.0% (N = 93)
	Females	7.7% (N = 19)	10.7% (N = 12)
	Unknown	5.3% (N = 13)	5.4% (N = 6)
First degree	Israel	81.0% (N = 200)	71.4% (N = 80)
	Abroad	17.8% (N = 44)	28.6% (N = 32)
	Unknown	1.2% (N = 3)	None
Ph.D.	Israel	52.6% (N = 130)	51.8% (N = 58)
	U.S.A.	32.4% (N = 80)	26.8% (N = 30)
	Other	10.9% (N = 27)	16.1% (N = 18)
	Unknown	4.0% (N = 10)	5.4% (N = 6)
Rank	Lecturer	6.1% (N = 15)	17.9% (N = 20)
	Sen. Lect.	28.3% (N = 70)	31.3% (N = 35)
	Asoc. Prof.	34.4% (N = 85)	17.9% (N = 20)
	Professor	30.0% (N = 74)	32.1% (N = 36)
	Unknown	1.2% (N = 3)	0.9% (N = 1)

Analysis

As a first step, responses to the 37-item attitude scale were factor-analyzed by principal factor solution with orthogonal rotation. The analysis yielded two relatively independent factors, appropriating 33.1 and 12.1% of the total variance, respectively. The first factor contained professional identity (Items 1, 3, 6, 11, 18, 21, 26, 29) and satisfaction (Items 5, 8, 12, 17, 22, 24, 25, 32, 33, 36) items; the second one, statements of a critical nature (Items 2, 4, 7, 10, 13, 15, 20, 23, 28, 30, 31, 34, 35, 37). The factor pattern approximated simple structure, i.e. the majority of the items load on either one of the factors (Table 2).

As a result of this analysis two subscales were constructed, named Identification (alpha = 0.82) and Negativity (alpha = 0.80), with no additional factor yielding meaningful scales. Identification (18 items) represents the positive aspects of being a faculty member; Negativity (14 items), a critical stance. Identification and Negativity are negatively correlated (−0.38), hence relatively independent of each other, as suggested by the factor pattern.

The 8 items of the Semantic Differential (alpha = 0.73) formed a unidimensional scale called Morale. The 16-item list of recommendations will be reported item by item, the focus in this case being on particular preferences.

Table 2. Factor pattern of attitude items (Orthogonal rotation. Pairwise deletion. N varies between 247 and 257).

	Identification	Negativity	Communality
1. Self Presentation	0.80	0.19	0.67
3 Involvement	0.61	0.12	0.39
5 Suited to University	0.56	0.15	0.34
6 Intellectual curiosity	0.66	0.29	0.52
8 Prestige	0.61	−0.01	0.37
11 Common fate	0.53	0.09	0.29
12 Interest in work	0.63	0.21	0.44
17 Independence and flexibility	0.65	0.29	0.51
18 Challenge of teaching	0.63	0.23	0.45
21 Self Presentation	0.55	0.15	0.32
22 Israel, my home	0.77	0.13	0.61
24 Withstand temptation	0.59	0.12	0.36
25 Positive image	0.61	−0.01	0.37
26 Solidarity	0.56	0.05	0.32
29 Would do it again	0.75	−0.01	0.56
32 Satisfaction	0.69	0.06	0.48
33 Suited to University	0.42	0.23	0.23
36 Free to research	0.68	0.22	0.51
2 Poor education	0.11	0.64	0.42
4 Poor leadership	0.15	0.69	0.50
7 Poor administration	0.14	0.69	0.50
10 Promotion policy	0.17	0.57	0.35
13 Mediocrity among colleagues	0.18	0.58	0.37
15 Overcentralization	0.06	0.57	0.33
20 Poor teaching	0.34	0.60	0.48
23 Would leave, but for benefits	−0.06	0.44	0.20
28 Bad conditions for research	0.16	0.66	0.46
30 Human factor	−0.02	0.64	0.41
31 Humiliation	−0.01	0.55	0.30
34 Administrative load	0.20	0.42	0.22
35 Teaching methods	0.20	0.70	0.53
37 Teaching load	0.11	0.44	0.21

Findings

Mean scores for the Identification, Negativity, and Morale scales are reported in Table 3, by rank and tenure. In the absence of significant differences between engineering and science faculties, and between departments within institutions, results are confined to a comparison between institutions.

One notes that Identification is uniformly higher than Negativism. Also, while there are no differences between institutions in Identification, Technion

Table 3. Positive identification (Scores range from 1 to 4).

	Technion				Tel Aviv University			
	N	M	SD	F	N	M	SD	F
Lecturers	15	2.91	0.34	4.72**	20	3.12	0.42	0.13
Senior Lecturers	70	2.98	0.44		35	3.08	0.35	
Associate Professors	85	3.10	0.34		20	3.08	0.40	
Professors	74	3.18	0.33		37	3.12	0.36	
Have tenure	199	3.09	0.38	1.15	75	3.08	0.36	0.95
Do not have tenure	34	3.02	0.35		32	3.16	0.39	
NEGATIVITY (Scores range from 1 to 4)								
Lecturer	15	2.74	0.30	1.31	20	2.38	0.50	0.72
Senior Lecturer	70	2.81	0.43		35	2.32	0.36	
Associate Professor	85	2.69	0.38		20	2.48	0.43	
Professor	74	2.72	0.38		36	2.43	0.39	
Have tenure	199	2.73	0.40	0.00	75	2.41	0.38	0.87
Do not have tenure	35	2.73	0.36		32	2.33	0.47	
MORALE (Scores range from 1 to 7)								
Lecturer	15	4.65	0.63	4.12**	20	4.88	1.01	1.50
Senior Lecturer	70	4.94	0.84		35	4.77	1.05	
Associate Professor	85	5.14	0.78		20	5.19	0.73	
Professor	81	5.32	0.90		36	5.20	0.97	
Have tenure	199	5.19	0.86	6.38*	81	5.15	0.91	5.93*
Do not have tenure	34	4.80	0.73		33	4.66	1.06	

people are more critical of their institution than are TAU people of theirs. Finally, there is a general tendency for Identification, but not for Negativity, to rise with rank and tenure, again, at the Technion more than at TAU.

It is of some interest to identify the areas of Negativism. High on the list are poor leadership, administration, teaching, promotion policy, and conditions for research. Taken as a whole, complaints seem to focus on matters of academic administration and policy.

As against the ubiquity of criticism, it is important to note that the desire to leave the Technion or TAU, "if I were not concerned over social benefits" (Item 23) is quite low, nowhere above 1.8. If someone really wanted to leave, the social benefits would hardly be powerful enough to prevent the move.

Multiple regression analyses were performed for the pooled samples to assess the influence of background variables. The three equations reported in Table 4 show that the predictive efficiency of background variables is very low. As al-

ready evident from Table 3, Age and Tenure are inversely related to Negativity. The greater Negativity of the Technion underlies the relatively high predictive power of "Institution."

The last part of the questionnaire presented respondents with 16 recommendations for change, derived from interviews with faculty members. There seems to be no overall pattern to the six F-significant differences between means shown in Table 5. Interpretation on these items must be item-specific and is therefore of no general interest. In general, recommendations are endorsed by respondents, that is means are above 2.5, the half-way mark between 1 and 4. Only on three statements did all four sample means fail to reach 2.5: "Make faculty learn about industry during leave of absence" (Item 2), "Cut salary of faculty members who do not contribute to college" (14) and "Grant a general first degree in engineering" (15).

Examples of statements that were strongly endorsed (above 3.0) are: "Pay salaries on individual rather than on a collective contract basis (Item 1)," "Try to

Table 4. Stepwise regressions (All Ss).

Dependent variable	Predictors	Betas	Explained variance
Positivity	Rank	0.24**	2.0%
	Tenure	0.14*	1.0%
			3.0%
Negativity	Institution	−0.37**	13.7%
	Age	−0.14*	1.6%
	Tenure	−0.12*	0.8%
			16.1%
Morale	Rank	0.20**	3.9%

Comment: No other predictor entered regression equation.

Table 5. Recommendations (Scores range from 1 − 4).

	Technion		Tel Aviv University		F
	Engineers N = 193	Scientists N = 54	Engineers N = 48	Scientists N = 64	
1. Pay salaries on individual basis.					
Mean	3.0	2.9	3.2	2.8	1.1 ns
SD	0.52	0.55	0.64	0.57	
2. Make faculty learn about industry during leave of absence.					
Mean	2.4	1.8	2.3	2.0	7.2 $p<0.01$
SD	0.96	0.95	1.06	0.83	

Table 5. Continued.

	Technion		Tel Aviv University		F
	Engineers N = 193	Scientists N = 54	Engineers N = 48	Scientists N = 64	
3. Be stricter about faculty appointments, for better performance.					
Mean	3.0	3.2	3.0	2.9	0.8 ns
SD	0.76	0.84	0.89	0.80	
4. Raise pay and reduce teaching load to successful researchers.					
Mean	3.1	3.5	3.3	3.0	4.0 $p<0.01$
SD	0.89	0.79	0.87	0.90	
5. Try and be an elite institution, even at expense of students.					
Mean	3.2	3.4	3.2	3.1	1.1 ns
SD	0.89	0.79	0.76	0.72	
6. Organize superordinate units of similar interest.					
Mean	3.2	3.1	3.0	3.0	1.1 ns
SD	0.84	0.90	0.77	0.92	
7. Promote not only on basis of publications.					
Mean	3.4	2.9	3.2	3.2	6.7 $p<0.01$
SD	0.73	1.13	0.85	0.83	
8. Accept faculty members on part time basis at proper rank.					
Mean	2.7	2.8	2.7	2.7	0.4 ns
SD	0.94	1.01	0.83	0.87	
9. Create special conditions for new faculty members.					
Mean	3.3	3.5	3.4	3.2	2.1 ns
SD	0.73	0.66	0.68	0.81	
10. Encourage faculty by giving prizes, merit points, and so forth.					
Mean	3.4	3.4	3.3	3.3	1.0 ns
SD	0.76	0.85	0.87	0.79	
11. Pay higher salary to faculty members who do not consult.					
Mean	2.7	3.1	3.1	2.8	4.5 $p<0.01$
SD	1.02	1.02	1.02	1.02	
12. Allow senior faculty to be employed on contract basis.					
Mean	3.0	3.0	3.0	2.7	1.4 ns
SD	0.91	0.95	1.07	0.99	
13. Expand humanistic studies.					
Mean	2.7	2.6	Did not ask.		0.6 ns
SD	0.92	0.83			
14. Cut salary of faculty members who do not contribute to college.					
Mean	2.6	2.4	2.7	2.3	3.0 $p<0.05$
SD	0.94	1.00	0.95	0.85	
15. Grant a general first degree in engineering.					
Mean	2.2	2.2	1.9	2.8	7.9 $p<0.01$
SD	0.85	0.97	0.91	1.13	
16. Enlarge the pool of manpower by training and hiring more women.					
Mean	3.0	3.1	3.1	2.9	0.7 ns
SD	0.95	0.89	0.80	1.12	

Note: N's fluctuate slightly from item to item.

be an elite institution, even at the expense of the number of students (5)," "Raise pay and reduce teaching load to successful researchers (4)," "Promote, not only on basis of publications, but on other bases as well,..." (7)," "Create special conditions for new faculty members (10)." A veritable utopia!

It is encouraging to note that Item 16 ("Train and hire more women...") is strongly endorsed by these almost all-male faculties.

Discussion

As hypothesized, faculty members at the Technion and at Tel Aviv University identify with their respective institutions, while at the same time expressing considerable criticism. Negativism is particularly marked at the Technion, possibly because of its isolation as an engineering college from the wider academic scope to which TAU engineering and science instructors are exposed.

There is in this coexistence of identification and criticism some support for Herzberg's (1966) two-factor theory of work motivation, an offshoot of Maslow's (1943) hierarchical model of human motives. Herzberg claims that the causes of job satisfaction due to higher-order needs of self-esteem and self-actualization are separate and distinct from the lower-order "hygiene" causes of job dissatisfaction such as the basic working conditions one usually complains about. It is possible for University professors to be dissatisfied with everything from the typing service to promotion policy and yet to feel strongly identified with their profession and the institution at which they work.

Findings also support the claim that professional identity predicts job-leaving inclinations (Kremer & Hofman, 1985). Professors are too highly committed to their way of life to leave it for "hygiene" awards held to be lacking in academia. This of course is not meant to imply that industry does not have higher order "motivator" appeals of its own.

In view of the fact that a university is a hierarchically organized bureaucratic structure, it is not surprising that rank and tenure should be positively associated with identification, nor that its methods of administration should come under attack. There is bound to be tension between an autonomy-prone academic faculty and the constraints of bureaucratic structure. It is this tension that shows up in the gap between Identification, on the one hand, and Negativism and Recommendations, on the other.

Criticism in fact centers about leadership and administration, with their attendant evils. Since the pressures of publish-or-perish, precisely one of those evils, may yield research more threat- than goal-oriented, there appears to be a genuine longing for good rather than expedient research. Recommendations to make this possible are heavily endorsed. At the same time, it is also felt that a more relaxed promotion-policy would favor the improvement of teaching excellence, the im-

plementation of projects, and so forth. A striving for quality is consistent with a highly developed professional identity.

The conclusion that emerges from the present survey is that at the two institutions surveyed, and probably at many others as well, there is ample need and readiness for reform, but that any tendency to prefer the more lucrative positions in industry is counterbalanced by a considerable commitment to the academic way of life. While only present members of the faculty were surveyed, one may suppose that the heady mixture of academic freedom, research, and teaching, so characteristic of institutions of higher learning, will find its adherents in the future as well. A fair percentage of the many graduate students now being socialized by the system may well follow in the footsteps of their socializers.

Appendix A

Identification and Negativism (Free Translation)

1. I gladly introduce myself as a member of the Technion (TAU).
2. The... provides inadequate engineering education: It teaches solutions rather than thinking.
3. I feel deep involvement with my task as a member of... faculty.
4. ...lacks suitable leadership.
5. I feel that I am better suited to my work at... than to any other work.
6. What brings people to... is not the pay, but intellectual curiosity.
7. Instead of helping members of the faculty, the administration places obstacles in their way.
8. The prestige I achieve at... compensates for the low pay.
9. One of the mistakes in the promotion procedure is to ask people from other areas.
10. The promotion procedure is replete with poor judgement.
11. When the media criticize..., I feel as if they hurt me.
12. Because of the interest I have in my work, I am more attracted to... than to industry.
13. At... there are many faculty members unworthy of having been accepted.
14. When I am mistaken for someone working in industry, I quickly put the record straight.
15. ...is too centralized.
16. ...would attract good people, if it were not for the low pay.
17. Work at... makes it possible to be independent and flexible to change direction.
18. Teaching at... represents a challenge to me.
19. The work load at... is too great for me.
20. Students are given too many lectures and too little self-work.
21. I feel comfortable when the conversation turns to...
22. Despite all the temptations abroad, I feel at home at...
23. I would change my place of work, if I were not concerned about my social benefits.
24. I gladly do without the improved conditions available outside...
25. The public image of academics in Israel is positive.
26. Among members of my department I feel at home.
27. Economic conditions prevent younger persons from joining...
28. Conditions at... do not encourage one to do proper research.
29. If I started all over, I would again opt for a career at...
30. At..., insufficient attention is paid to the human factor.

31. There is a feeling among faculty members that their presence here is merely tolerated rather than accepted.
32. The satisfaction I receive at... exceeds any reward I might obtain elsewhere.
33. My qualifications will go to waste any place other than at an academic institution.
34. Faculty members are overburdened with administrative tasks.
35. Teaching methods at... are outmoded.
36. At... one is free to do research as one pleases.
37. The teaching load at... is too great.

Appendix B

Morale (Free translation)

The institution at which I work gives me – – –

Prestige	–:–:–:–:–:–:–	No prestige
Satisfaction with teaching	–:–:–:–:–:–:–	No satisfaction with teaching
No satisfaction with research	–:–:–:–:–:–:–	Satisfaction with research
Long term security	–:–:–:–:–:–:–	No long-term security
High quality of life	–:–:–:–:–:–:–	Low quality of life
A feeling of loneliness	–:–:–:–:–:–:–	A feeling of fellowship
Self-fulfillment	–:–:–:–:–:–:–	Lack of self-fulfillment
Satisfaction with development and consulting work	–:–:–:–:–:–:–	No satisfaction with development and consulting work

Appendix C

Recommendations (Free translation)

1. Pay salaries on individual basis.
2. Make faculty learn about industry during leave of absence.
3. Be stricter about faculty appointments, for better performance.
4. Raise pay and reduce teaching load to successful researchers.
5. Try and be an elite institution, even at the expense of number of students.
6. Organize superordinate units of similar scope, to improve communication and reduce redundancy.

7. Promote not only on basis of publications, but on other bases as well, like teaching excellence, industrial projects, software, etc.
8. Accept faculty members on part time basis at proper rank.
9. Create special conditions for new faculty members.
10. Encourage faculty by giving prizes.
11. Pay higher salaries to faculty who do not consult.
12. Allow senior faculty to be employed on contract basis.
13. Expand humanistic studies program.
14. Cut salary of faculty members who do not contribute to college.
15. Grant general first degree in engineering.
16. Enlarge manpower pool by training and hiring more women.

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