

Academics or Entrepreneurs? Entrepreneurial Identity and Invention Disclosure Behavior of University Scientists

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Motivation of paper

- Burgeoning literature in academic entrepreneurship – patents, licenses, start-ups
- Missing from this conversation is a social-psychological focus on a key actor contributing to this phenomenon – i.e., the scientists themselves
- Investigation of scientist’s “sense-making” process
- This is key to establishing micro-foundations of the nature of academic entrepreneurship

Role Identities

- Roles
 - Social positions that carry expectations of behavior and obligations to others (Merton, 1957)
- Identities
 - Orientation of individual to the context, giving meaning to experience and guiding action (Gecas, 1982)
- Role Identity
 - Socially defined elements that underlie a role and an individual's own idiosyncratic interpretation of that role (McCall & Simmons, 1966)
- Possible selves and current behavior
 - Possible future identities influences current behavior (Markus & Nurius ,1986)

Role identities and entrepreneurship

- Recent research conceptualizes becoming an entrepreneur as involving a transition in role identity (Hoang & Gimeno, 2005)
 - adopting an entrepreneurial identity as a discrete choice
- We propose an alternate conceptualization of this process within the context of academic entrepreneurship
 - adopting multiple identities

Research Questions

- Why do scientists become involved in entrepreneurial activity?
- To what extent do they take on multiple identities – i.e. do they view themselves as entrepreneurs?
- How do they address their multiple identities?

Data

Two-part inductive-deductive study

- Interviews of university scientists and technology transfer office personnel (40 hours)
- Historical interviews (30 hours)
- Survey data (n = 796)
 - Single research institution

Changing nature of university scientist role identity

- Scientists ethos as disinterested, organized skepticism, universalism (Merton, 1968)
 - Suggests a complete distinction between commercial and scientific interests
 - Places emphasis on publications, academic prestige
- Changing landscape of academic science
 - “ The fundamental issue at that time [a decade ago] was that people were very uncomfortable with the prospect of faculty or students, or anybody doing work with university facilities that could personally benefit anybody. Now that has changed.”

Factors enabling adoption of multiple identities

- Nuanced economic reasoning

“ For me, I don't mind doing work in the public interest, for which I don't directly get compensated, but if somebody else is earning a large profit on it that seems a little wrong to me.”

- Non-monetary reasons

- Custodian of nascent technology

- Leverage invention to generate greater social impact

Impediments to adopting multiple identities

- Amount of time and effort
 - Appropriateness of activity
 - Skills required for entrepreneurial activity quite different from being a scientist
- “ You accomplish a lot by publishing papers and doing technology development...you're moving knowledge forward and there's high value in that. It's when you decide that this kernel is one that needs to be a commercial product – that's when the fun starts. Or that's when the trouble starts.”

Perceived institutional support and adoption of multiple identities

- Norms for participation in entrepreneurial activity vary across departments
- Scientist's perception of the efficacy of the technology transfer office
 - complementary business-related skills
 - ability to decrease demands of time/effort required by inventors

“Unintended” entrepreneurial intent and adoption of multiple identities

- Rather than have clear intent of becoming an entrepreneur someday, many university scientists had taken on entrepreneurial activity “by accident”

“Working with industry was very good as long as we were trying to bring incremental developments to the market, but as soon as you had something disruptive there was no interest. The preferred path would have been through industry leaders, but that wasn’t working. So finally we came back to, “if you’ve got to do it, you’ve got to do it”

Addressing multiple identities

- In most cases, scientific identity remained focal; entrepreneurial identity peripheral

Tactics employed

- minimize/deny entrepreneurial identity
- let TTO take over key facets of commercialization
- “fusion” of two identities

Predictors of Disclosure Activity	Model 1	Model 2	Model 3
Number of External Patents	.696***	.300*	.255†
Faculty	.512*	.311	.451
Administrative Position	-.509*	-.247	-.232
Engineering	.559**	.251	.275
Life Sciences	.469*	.143	.109
Graduate School Funding	1.22***	.271	.018
Industrial Funding	.660***	.539***	.471**
Department Support (1 = No)	.637	.456	.823
Procedure Awareness (1 = No)	.208	-.487	-1.59†
Perceived Enablers		.195***	.177***
Realized Licensing Income		1.78***	1.54***
Perceived Impediments		-.881***	-.975***
Institutional Receptiveness		.520***	.485***
Entrepreneurial Intent		.446	-1.97†
Intent x Perceived Benefits			.022
Intent x Realized Income			1.04
Intent x Perceived Costs			-1.21***
Intent x Institutional Receptiveness			.468**
Log Likelihood	-627.02	-273.72	-258.80
Pseudo R ²	.14	.62	.64
χ^2	195.78***	902.37***	932.22***
$\Delta\chi^2$ (over previous model)		270.34***	24.54***

Key Findings

- Non-monetary factors as correlate of adoption of multiple identities
 - Consistent with sociology of science but not necessarily with economic perspectives
- Entrepreneurial intent did not have a main effect on disclosure level
- Institutional Factors
 - Positive effect on disclosure levels
 - Positive interaction with Entrepreneurial Intent

Theoretical Insights

Role Identity and Entrepreneurship

- Adopting entrepreneurial identity as a transformation, rather than transition of existing role identity
- Tactics used in maintaining multiple identities
- Role of institutional factors (TTO's)

Academic Entrepreneurship

- Need to consider non-monetary incentives
- “Accidental” nature of entrepreneurial intent
- Maintain primacy of scientific identity over entrepreneurial identity

Predictors of External Patents	Model 1	Model 2	Model 3
Disclosure Activity Level	.754***	.509***	.451**
Faculty	.854*	1.06**	1.15***
Administrative Position	.229	.394	-.283
Engineering	.399	.359	.369
Life Sciences	-.296	-.254	-.244
Graduate School Funding	.356	-.077	-.140
Industrial Funding	.209*	.325**	.359***
Department Support (1 = No)	-.268	-.507	.033
Procedure Awareness (1 = No)	-.190	.209	-.461
Perceived Benefits		.138***	.160***
Realized Licensing Income		-.172	.098
Perceived Costs		-.047	-.043
Institutional Receptiveness		-.167**	-.180*
Entrepreneurial Intent		-.200	-.474
Intent x Perceived Benefits			-.166*
Intent x Realized Income			-.861
Intent x Perceived Costs			-.594**
Intent x Institutional Receptiveness			.303***
Log Likelihood	-250.12	-231.37	-223.18
Pseudo R ²	.25	.30	.33
χ^2	166.87***	204.37***	220.77***
$\Delta\chi^2$ (over previous model)		38.34***	15.95**

Framing the Issues

- Why are disclosures important?
 - The conduct of science
 - Tech transfer (University perspective)
 - Licensing revenues support University (\$50 Million)
 - Technical advance (Industry perspective)
 - Supply of new ideas
 - Policy perspective (Patenting quality)
 - Improved quality / lower fragmentation of rights
- Why should we as social scientists care?
 - The bad “entrepreneurial” university
 - The inherent conflict of interest
 - The good “entrepreneurial” university
 - The emergence of the “entrepreneurial professor”
- Academic entrepreneurship
 - As balancing multiple role identities

Table 2
Comparison of Responses by Entrepreneurial Intent

Variable	No Intent	Entrepreneurial Intent	Difference in Means	t-statistic
Disclosure Activity Level	.44 (.84)	1.02 (1.27)	-.58	-4.54***
Number of External Patents	.09 (.50)	.21 (.74)	-.12	-1.62
Perceived Benefits	-.30 (4.20)	2.09 (5.09)	-2.39	-4.59***
Realized Licensing Income	.05 (.23)	.13 (.34)	-.08	-2.27*
Perceived Cost	.19 (2.50)	-1.26 (3.23)	1.45	4.41***
Institutional Receptiveness	-.06 (1.14)	.11 (2.00)	-.12	-.61

Note: N = 796, of which respondents with entrepreneurial intent = 105 (no intent = 691)

Means are reported and stand deviations are in parentheses

Based on Levene's test, equal variances are not assumed

