

Habitat for Innovative Milieu: A Place-Making Study of University and Start-up Enterprises Relationship

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Abstract. Milieu is ecological verb to explain how innovation sustain and development through innovative milieu. Responding the innovation park issues as place for innovation, this paper studies how places contribute as habitat for transforming knowledge to business through innovation. By Actor-Network Theory (ANT) approach, this research investigates the relationship between start-up enterprises, university, their place-making, traces how knowledge is produced and consumed. It is found that there are three kind of relationship: linear, eventual mutual, and continuing mutual. Linear relationship is usual relationship between university and alumni. Eventual mutual relationship where mutual relationship between start-up enterprises and university constructed in certain events. Continuing mutual relationship is happen when start-up enterprises create permanent interaction with university. It is also found that laboratory is delegated artifacts as mediator for transforming research to innovation. Several start-up enterprises are generated by entrepreneurship events, but most of them do not have mutual relationship with the university anymore. It is recommended that successful innovation park is the capability to create intensive interaction among start-up office, laboratory, and classroom as places of innovative milieu. This research is hope to contribute real-practice innovation description, in order to support innovation park development program to build habitat that create innovative milieu.

1. Introduction

Innovation discourse has its ecological verb to explain how innovation can sustain and develop: innovative milieu. In ecological term, milieu is defined as the environmental setting to support the species to breed and develop. So, innovative milieu is understood as how environment -physical and social- support innovation to survive, sustain, and develop.

Innovation is the source for entrepreneurs to empower their competitiveness to exploit change as an opportunity for a different products or services. Entrepreneurship itself emerged in society to create more adaptive economic activities while the industrial economy is going to be stagnant [1]. Innovation occurs where entrepreneurial act consists to produce a new method of a commodity [2]. Schumpeter argued that innovation -based on knowledge and technology- has been main factor of national economic development and criticized the neo-classical focus on capital and labour as productive factor accumulation. Etzkowitz [3] formulated the innovation economic as a Triple-helix: synergize of industry who generate economic activities, universities who produce knowledge, and government who regulate the development.



Etzkowitz's Triple-helix stimulated the emergence of special place to incubate innovation through industry, universities, and government collaboration, commonly called innovation park. There were many success stories, also failure ones, of innovation park. Etzkowitz identified that the success or failure of innovation park was depend on creation of consensus space, where actors is attracted and committed to run innovation together.

This paper is based on research to uncover the place-making for innovative milieu by tracing university and start-up enterprises relationship. Institut Teknologi Bandung (ITB) and several start-up enterprises founded by its alumni -which are chosen by faculty proportion and recommended by "innovative" lecturers- are chosen as research case. It is assumed that innovative milieu is constructed depend on the intensity of mutual relationship between university as knowledge production agent and its entrepreneur alumni as knowledge consumers for their business purposes.

Research is conducted by Actor-Network Theory (ANT) method to describe how place is constructed by the relation of actors and artefacts. This method is exercised to explain social assemblage of informal place-making [4], to uncover collaborative atmosphere of coworking space [5], and to develop design strategies among many actors [6]. It is hope ANT method is useful to describe place that is constructed by actor-artefacts relation, in order to answer where consensus space is happen in real practice of innovation.

2. Innovative Milieu, Innovation Park, and Consensus Space

Innovative milieu is an idea that drives many researches about innovation related to spaces and environment [7]. Ideas to build innovation parks, which is later known as science or technology park, is an effort to create a place where innovation activity is being handled carefully, as a place where intensified interaction between researchers, industrial decision makers, and government happened to build innovative milieu. In certain places, these innovation parks built in city-scale, which involving local government, local universities or research bureau, and local industry. Later on, these efforts known as techno-polis, which means technological parks in city-scale [8]. These innovative milieu, in few particular cases, not only contribute to local economic growth, but also taken a significant role in local economic security when critical condition occurs [9].

Innovation parks cannot be understood separately from innovation concept itself. In the last three decades, understanding about innovation as a subject has been greatly improved. The most recent understanding that has been widely used is Triple Helix Theory by [3]. His books became widely used models by various institutions related to innovations. Government, academics and industry became the tip of the spear for the innovation that is yet to come. In the end, this could be seen as renewal of certain values in broader society.

Collaboration between three institutions became the start and the primary key of innovation. Etzkowitz argues that innovation needs a neutral place, where every involved actors that have different background, can be involved deeply in development of new ideas that drives economic growth Etzkowitz [3]. Etzkowitz called these neutral places as Consensus Space. Various discussions about consensus space is being carried by many institutions, there are those who succeed, many who fails. Many different factors when brought about success and failure of this consensus space initiatives, but all comes down to one single reason: strength of relations between actors in innovation processes.

One of many examples of successful consensus space is the infamous Silicon Valley in Stanford. An experimental company carried out in this place eventually became huge business and creates many world-class companies that operate globally. From the founding of Stanford because lack of manpower in the United States, until the founding of Joint-Venture Silicon Valley (JVSV), is not a momentary achievement. Many relations are forged and many are disconnected in the process of building JVSV. In this regard, analysis of JVSV cannot be performed under specific point of time, disconnected from the bigger picture.

There are bad stories of efforts to copy JVSV. Such as discussion in New York Academy of Sciences, it is performed to accommodate certain action plan in technology application. This effort to create a consensus space in high level has been meeting a dead end. The failure mainly related to

creates a consensus space to foster innovation, one needs interest of the opposite parties, other than credibility and ability in decision making, to fill the consensus space and not only planned it [3].

Triple Helix argues that creating consensus space in regional innovation, there is an “office” that specifically handles technology transfer, this office also known as Technology Transfer Office [3]. Later on, this office became an institution where convergence of technology, needs of society and industrial necessity meets and seek mutual benefit, which is the end is utilization of knowledge. The only down point of this theory is lack of reasoning on how relevance or hybrids of academics that put science as their primary goals, government that gives public services, and industry that seeks profit became related and durable during their synergy.

The concept about innovation park that suggested by Etzkowitz ended in something later known as “Technopolis”. Whatever the label, the meaning is to form consensus space that foster innovation. If techno is attached in innovation process of a region, then what kind of innovation that has to be done? How can this technorelated innovation can solve local society needs? How can we validate these things?

The same criticism answered by the concept of Pro-Innovation Situation [10]. An effort to expand network that support the needs of academics, society needs and industrial enrichment also became important factor, besides adapting the market demand. This effort has to be done with proper methods, with regard to where consensus space is created. In this method, many things need to be considered when creating a consensus space. Besides people that involved in creating consensus space, there is also local non-governmental organization, local institution, to global development agendas that are related become very important when calculating consensus space.

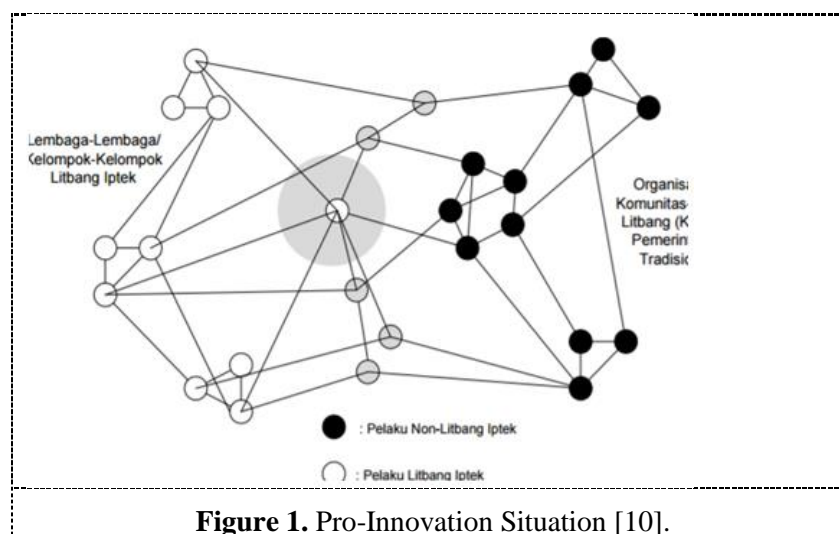


Figure 1. Pro-Innovation Situation [10].

Broader social analysis, than only observing human actor, is needed in pro-innovation situation analysis. Diversity of defining elements, such as choosing a location, is rarely defined by humans. Defining a location for pro-innovation situation mainly based on earth’s surface. Institutional relatedness, generally represented by specific landmark, such as industrial area or campus, Technology intensive-activity that is done by available resources, such as WiFi, electricity, distance to center of crowd, All of these is forming pro-innovation situation, and not only depend on human.

The involvement of many technical objects is what makes ANT relevant to be used in this research. ANT relied on concept of translation [11] to explain how relations between entities established. Latour argues that translation is transform action into a format that supported by another actor in achieving goals. This kind of transformation needs a medium that also active in transform its goals, this medium can be non-human. Because of this medium is active in transforming the goals of actors, then this transformation that needs a deeper analysis. The conformity of this transformation between actors with

their specific goals, until the process of fulfilment of the needs itself become accommodated with ANT's concept on translation. To differentiate those who analyze and analyzer without disregarding transformation that being done by non-human actor, on this case, ANT give a name for actor that transform with the name of Mediator [12]. In short, ANT is an analysis of transformation by mediators that build relations among them.

3. University, Entrepreneurship, and Start-Up Enterprises

The idea of entrepreneurship development at Bandung Institute of Technology (ITB) has been going on for a long time. It is realized that science, technology, and art (ipteks) will be more effectively useful in society if it can be developed through business activities or entrepreneurship that will provide economic value added. In the field, this activity has been going on lecturers personally or in groups in a particular study or laboratory group. Officially, a few years ago ITB established Business Incubator Center (PIB) to bridge ideas of science-based innovation into business, and then transformed into ITB Innovation and Entrepreneurship Development Institute (LPIK) ITB.

ITB alumni are many who become businessmen by setting up start-up enterprises this happens because of the very real role modeling of their senior who managed to build big companies that contribute to the national economy. Each faculty in ITB actively produces to alumni who established the start-up company. ITB Alumni who founded a start-uping company that started from LPIK-ITB support and some who founded his company independently after graduating ITB. The data from ITB tracer study in 2012, 2013, 2014, 2015 show some alumni recorded to set up a start-uping company.

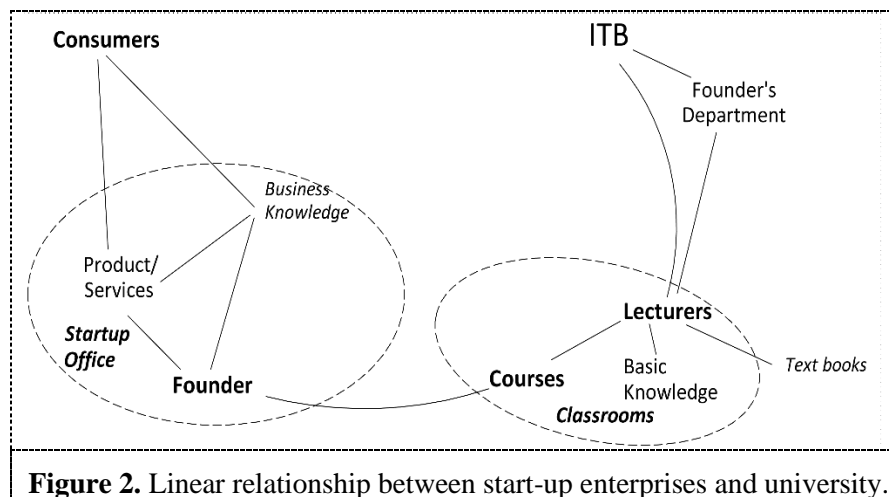
This research took the case of 24 alumni pioneer company Institut Teknologi Bandung (ITB). The selection of cases is based on the representation of the faculties that produce alumni who choose a career as an entrepreneur based on the results of the tracer study. The case of the start-up company studied was traced through lecturers of the program study who were considered pro-innovation (consistently conducting research and business activities), in the hope that the start-up company was still linked to the almamater. Data retrieval is done through structured interviews, with question structures adopting the Network-Actor Theory, with the founder of the start-up company as a respondent.

In general, start-up company profiles are viewed from a long range of standing, number of permanent employees, and product type selected. The data obtained is expected to provide an overview of the stability of the business from the start-up studied. The ranges of long standing startups vary from 1 to over 15 years. The number of permanent employees also varies, from less than 5 people to more than 25 people, depending on the type of business selected. The type of product selected also shows variations, from services, software, food and clothing products, and hardware. Judging from the age of the company, it appears dominantly under 5 years old, and this can be interpreted that the strengthening of entrepreneurship issues in universities that strongly influence the student is still ongoing not long enough, and has not been able to produce stable start-up companies in running their business. However, judging by the number of permanent employees and the type of product chosen, it appears to have the courage to take risks, and this shows a strong entrepreneurial ethos from the founders of the start-up company studied.

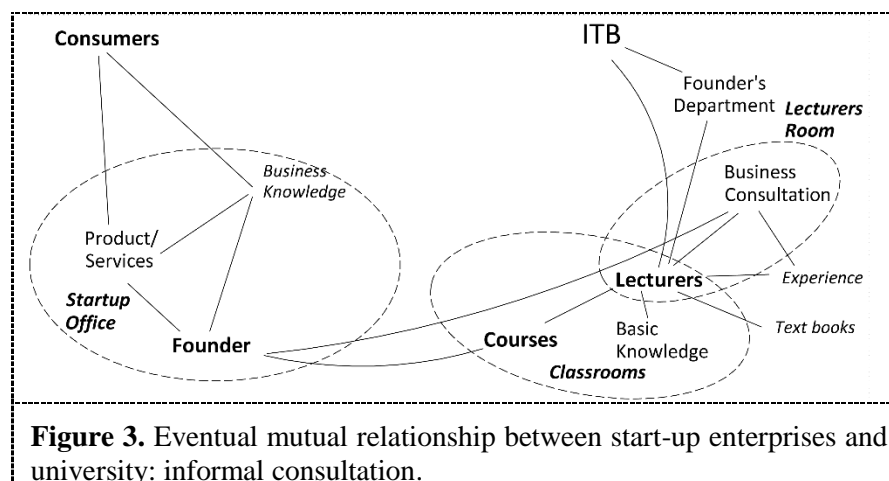
4. University and Start-up Enterprises Relation: Sociotechnogram Analysis of Place-Making

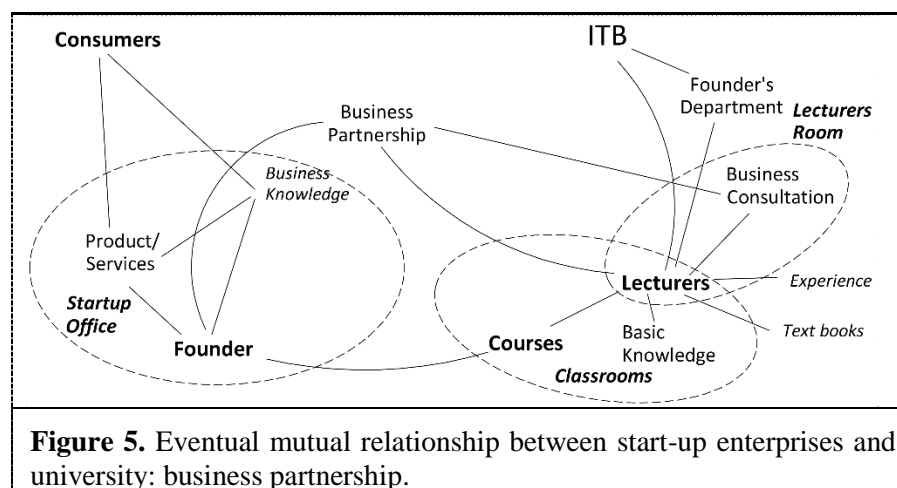
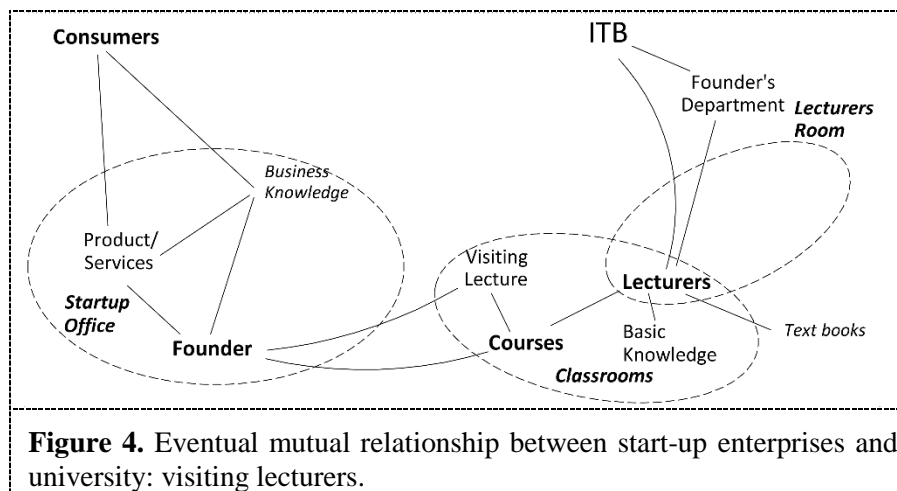
Relationship between university and start-up enterprises is important to trace the innovation in practice, by assumption that start-up founders use knowledge produced in university to improve and develop their business. In university, knowledge is produced through several ways: textbooks interpretation taught in the classroom, reflection of practical knowledge, and scientific knowledge extracted from research activities. By Yuliar's pro-innovation situation model, it is assumed that innovation milieu strength is depend on the intensity of mutual relation between start-up enterprises as knowledge consumers and university as knowledge producer. By case of observed start-up enterprises, it is mapped 3 type of relationship based on interaction intensity: linear relationship, eventual mutual relationship, and continuing mutual relationship.

Linear relationship is usual relationship between university and its alumni, whatever alumni's choice of work. Students got basic knowledge taught by lecturers in the classroom (figure.2). After graduation, they became alumni and some chose to be entrepreneurs by founding start-up enterprises. Their business knowledge is developed through practical experience by solving consumers or products/ services problems. There are no significant feed-back connection to the university. Most of observed start-up enterprises (42%) is shown have linear relationship with their alma mater.

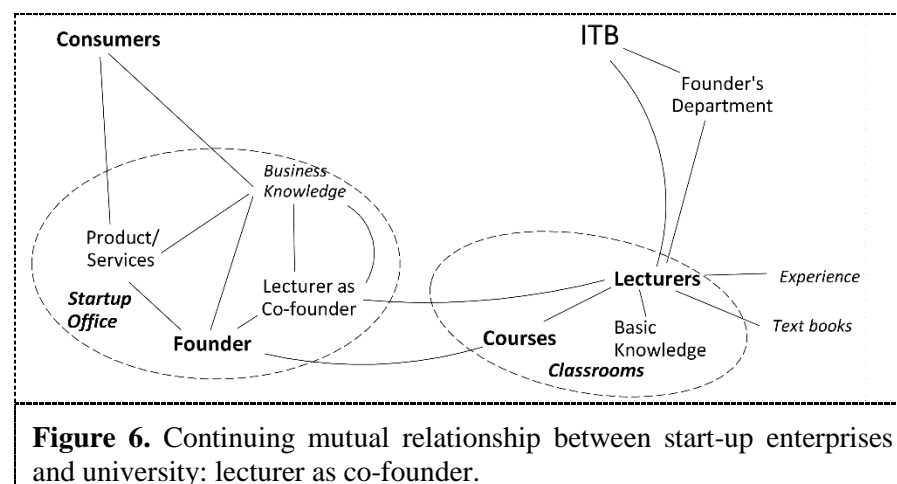


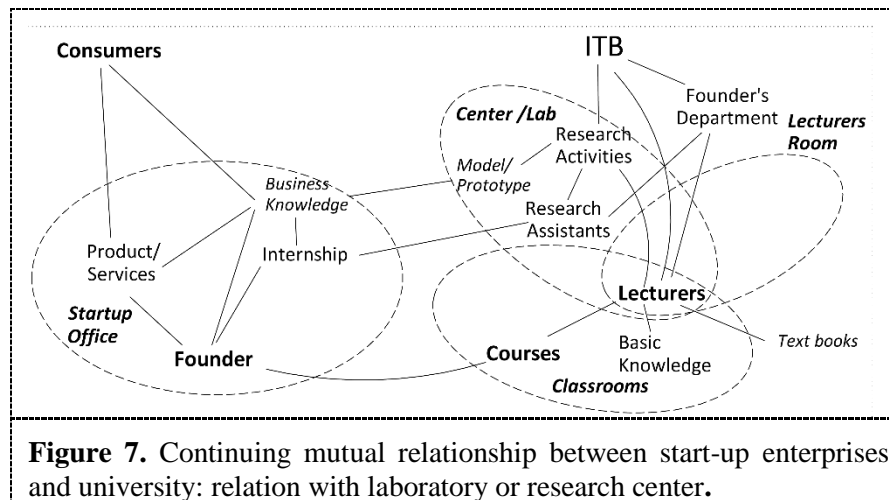
Eventual mutual relationship where mutual relationship between start-up enterprises and university constructed in certain events (figure.3,4 and 5). Several observed start-up enterprises (33%) shows this relationship. There are three variants here: relationship through informal consultation with the lecturer, as visiting lecturer in student courses, and business partnership with lecturers.





Continuing mutual relationship is happen when start-up enterprises create permanent interaction with university. There are 21% observed start-up enterprises have this kind of relationship. Two variants is shown: lecturer as co-founder, and relation with the laboratory or research center. In first varian, knowledge production refers to lecturer personal practical experience, while in second varian knowledge is produced through research activities (figure.6 and figure.7).





In continuing mutual relationship, interesting finding is shown in Dycode enterprise. Although the founder do not have any relation with lecturers yet, Dycode office is used as internship place for the laboratory's research assistants. Indirectly, university research based knowledge is used to develop Dycode business through discussion among interns, founder, and community. Here, laboratory become the lecturer delegated artefacts as mediator for transforming research to innovation.

This finding shown that entrepreneurship events, by case of ITB, have not strongly relate yet with knowledge production activities through lecturers or laboratories/ research centre. These events are taken place but have not successfully create consensus space between business and research actors in order to transform university's knowledge into start-up enterprises' innovation. It is worried that will be the other kind of knowledge economy bubble [13]. Any kind of entrepreneurship events are able to attract public attention broadly, but just gives a little impact to create innovative milieu.

By ANT's sociotechnogram analysis, this research delivers important findings about real practice of innovation place-making. Start-up offices, laboratories/ research centre, classrooms, and lecturer rooms are important places to mediate the knowledge production and consumption. It is recommended to govern these places relationship as consensus spaces as the key factor to create innovative milieu of innovation park.

5. Conclusion

This research argues that relation among start-up enterprise offices, laboratories/ research centres, lecturer rooms, and classrooms become significant places to create innovative milieu for knowledge production and consumption mutual relation between university and start-up enterprises. Laboratories and research centres can be delegated as mediators to transform university's knowledge into start-up enterprises' innovation. Several entrepreneurship events are able to generate start-up enterprises, but have not to be able yet to create mutual relation with university's knowledge production especially based on research activities

The problem of entrepreneurial university programs in Indonesia emerges from disconnection between institutional policy and real-practice of innovation. Drucker said that innovation and entrepreneurship appeared as adaptive economic effort to respond industrial stagnancy. Innovation park should be designed as a place with intensive activities, as habitat for innovation to survive, sustain, and develop

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