Ensure biomimicry Incremental Innovation: The New Mission of Intellectual Property Contracts[1]

Betty Menuet

ABSTRACT

Biomimicry is the imminent new way to create sustainable innovations in the future. Its ontology is that Nature's observation can bring us a large amount of innovative solution to face engineering design problems. As biomimicry is changing the rules of the traditional innovation process, Intellectual Property (IP) contracts shall do the same. But it is easier said than done. Biomimicry project tends to have true advantages on the front end of innovation, in terms of performance innovation improvement and sustainability, that IP contracts don't manage to protect efficiently yet. This paper will show that IP contracts must be adapted to the incremental and iterative upfront innovation process of biomimicry projects. If owners and contractors desire to make safe and fruitful these biomimetic innovations, they should both accept incremental and iterative modification of their property contracts and adopt a sustainable vision for a more efficient sustainable patent system.

Key Words: Innovation, Sustainable, Change, Biomimicry, Intellectual Property, Patent.

INTRODUCTION

Human progress in terms of innovative technology and products is getting bigger every single day. However, sometimes even the cleverest expert, engineer, or scientist cannot come up with THE appropriate solution and the project concerned by the issue can be negatively impacted. Biomimicry is a new discipline, assuming that the simple Nature's observation can bring us a large amount of innovative solution to face engineering design problems.

The famous proverb "Nature knows best" is the first principle of biomimicry. Studying the process of nature, for instance, designs and shapes of the environment or how an animal's metabolism supports natural selection, enable to find and adapt ergonomics solution in our

[1] *Editor's note: Student papers are authored by graduate or undergraduate students based on coursework at accredited universities or training programs. This paper was prepared as a deliverable for the course "International Contract Management" facilitated by Dr Paul D. Giammalvo of PT Mitratata Citragraha, Jakarta, Indonesia as an Adjunct Professor under contract to SKEMA Business School for the program Master of Science in Project and Programme Management and Business Development.* http://www.skema.edu/programmes/masters-of-science*. For more information on this global program (Lille and Paris in France; Belo Horizonte in Brazil), contact Dr Paul Gardiner, Global Programme Director* paul.gardiner@skema.edu*.*

man's world. In short, biomimicry draws its inspiration from nature to find sustainable alternatives.

The implementation of biomimetic technology has already allowed us to face a great number of engineering issues that we couldn't solve before. Among them, the Japanese bullet train redesigned observing the kingfisher's beak or the painless syringe copying mosquito's sting. (Photos by Hiromi Okano/Corbis; West Japan Railway)

A recent research realized at GOJO Inc, with the biomimicry Ph.D. program of Akron's University demonstrates that the biomimicry is changing the rules of how goes an innovation. Indeed, the report affirms that biomimicry *"can potentially expand intellectual property, increase energy savings and accelerate product innovation[2]".* Each of these advantages has to be protected and taken into account in the Intellectual Property (IP) contracts established between the owner and the contractor on a given project. But it is easier said than done.

Moreover, the biomimicry project tends to have true advantages on the front end of innovation, in terms of performance innovation improvement and sustainability. And here is the decisive difference with historical or traditional projects. In fact, the latter type of project set up the Intellectual Property landscape in the front end process, and potential innovations are only generated afterward, combining elements taking part in the same technological paradigm. On the contrary, biomimicry projects require to prioritize the solution discovery's approach and then adapt the Intellectual Property contracts in order to protect the best we can this incremental and iterative process of innovation.

The biomimicry is a difficult topic to work on because there are not many data and studies for now on the subject. Our research will try to prove that Intellectual Property contracts should adapt quickly to the innovative biomimicry projects, which could be the coming new main way to innovate in the future.

OBJECTIVE STATEMENT

This paper is going to prove the following statements:

- Intellectual Property contracts have to be adapted to the incremental and iterative up-front innovation process of biomimicry projects.
- Intellectual Property contracts need to adapt to the sustainability of biomimetic innovations, in order to preserve their positive externalities.

FEASIBLE ALTERNATIVES

1. Make the IP contracts adjustable to the incremental and iterative up-front innovation process of biomimicry.
2. Protect the designer of the biomimetic innovation with a long-term patent
3. Create a sustainable patent system for biomimetic innovations.
4. As biomimetic innovations are restrained by Intellectual Property Contracts, it could be a field without property rights.

DEVELOPMENT OF OUTCOMES

1. Make the IP contracts adjustable to the incremental and iterative up-front innovation process of biomimicry.

Basically, Intellectual Property contracts are represented by Patents, trade secrets or trademarks. A patent secures the inventor for a limited time to the exclusive use of this invention, or guarantee him to be asked permission to be used. IP contracts intervene at the beginning of a project, to fix the right property of each part. Thus, incremental and iterative up-front innovation process is constrained because of an unbending legal baseline. Hence, the necessity for IP contracts to change of paradigm. The contracts should be as iterative and incremental as the biomimicry innovation process in order to exploit each biomimetic opportunity and improve performance.

2. Protect the designer of the biomimetic innovation with a long-term patent

Currently, the authors of biomimetic innovations can protect their discovery through the common patent system if they want to. That is to say that once a biomimetic design has been recognized or discovered with a potential market power, applying for property rights should be considered. However, this biomimetic patent will protect the designer of the innovation for a limited period of time, before to be free to use by the public. Knowing that biomimicry is sustainable, create some long-run patent that could embody this innovation's sustainability side could be an alternative.

3. Create a sustainable patent system for biomimetic innovations.

Biomimetic technology questioned the sustainability issue of IP contracts, as highlights this observation on the impact of biomimicry, from Emily Barbara Kennedy & Thomas Andrew*: "Double the intellectual property -- with a greater proportion of the concepts from the biomimicry project converting from notices of invention to patent applications" (2016 - Biomimicry: Streamlining the Front End of Innovation for Environmentally Sustainable Products).* It clearly shows the emergency for IP to create a sustainable patent system able to

take into account and protect the present and future potential impacts of biomimetic innovations. Indeed, biomimicry changes the scope of the patent, that can no longer be a short-term one, neither focus only on the initial biomimetic innovation. A new patent system has to highlights and binds the consecutive patents resulted from a first biomimetic invention, and recognize the value and the role of the procreative one. This sustainable patent system has to included improvement innovation as much as radical innovation.

4. As biomimetic innovations are restrained by IP Contracts; it could be a field without property rights.

Biomimetic processes and products can be seen as the production of a *"generally industrious nature, available to be understood and mimicked" (Biomimicry: new natures for and against capital –Janine Benyus, 2012).* In fact, biomimicry could be perceived as the reproduction of Nature itself. But Nature is the ownership of nobody. Hence, put property rights on sustainable biomimetic innovations seems senseless, because the overall Nature would be potentially IP from this capitalist viewpoint. Biomimicry could be a field without property contracts in order to increase the well-being and the sustainability of innovation for the overall society.

SELECTION CRITERIA

We will conduct the analysis and comparison of the alternatives thanks to 5 attributes that we will compare to our 4 alternatives. We will select the best alternative(s) according to the highest score they will get compared to their attributes' relevance. The attributes are the following ones: Intellectual Property, Performance, Quality, Impact, Legal feasibility.

MADM Scoring Model

5-Excellent/ 4-Good/ 3-Average /2-Fair /1-Poor

Alternatives / *Attributes*	1. IP contracts adjustable to the incremental and iterative up-front innovation process	2. Protect the designer with a long-term patent	3.Create a sustainable patent system	4.Biomimetic innovations without property rights
Performance	*5*	*3*	*5*	*1*
Feasibility	*3*	*2*	*2*	*2*
Quality	*5*	*1*	*4*	*1*
Intellectual Property	*4*	*4*	*4*	*1*
Impact	*3*	*1*	*3*	*2*

Figure 1 – MADM Scoring Table: Quantitative Analysis of the Alternatives evaluated against the Attributes - By Author

To select the best alternative, we will conduct a multi-criteria decision analysis.

Figure 1 shows that the best alternatives seem to be the **alternative 1**: contracts adjustable to the incremental and iterative up-front innovation process, and the **alternative 3**: Create a sustainable patent system.

Now, we will go into the analysis in depth to produce a true ratio scale.

FINDINGS

1. ANALYSIS AND COMPARISON OF THE ALTERNATIVES

Multi-Attribute Decision Making Analysis in ratios

Impact	
High	5
Medium-High	4
Medium	3
Medium-Low	2
Low	1

Alternatives / *Attributes*	1. IP contracts adjustable to the incremental and iterative up- front innovation process	2. Protect the designer with a long-term patent	3.Create a sustainable patent system	4.Biomimetic innovations without property rights
Performance	*1*	*0.6*	*1*	*0.2*
Feasibility	*0.6*	*0.4*	*0.4*	*0.4*
Quality	*1*	*0.2*	*1*	*0.2*
Intellectual Property	*0.8*	*0.8*	*0.8*	*0.2*
Impact	*0.6*	*0.2*	*0.6*	*0.4*
TOTAL	*4*	*2.2*	*3.6*	*1.4*
RANKING	BEST	2nd TO LAST	2nd BEST	WORST

Figure 2 – MADM Scoring Table – By author

2. SELECTION OF PREFERRED ALTERNATIVE

Considering Figure 2, we have a multi-criteria decision analysis that gives us a true ratio scale. It confirms what we found in Figure 1 and we can see that the best alternative is the first one. So the best would be to make the Intellectual Property contracts adjustable to the incremental and iterative up-front innovation process of biomimicry. The best solution will promise an excellent performance and quality of this IP contracts according to the up-front innovation process and should guarantee good safety to the IP.

The first alternative is followed closely behind the second alternative that proposes to create a sustainable patent system. The difference here results in the quality and feasibility of the alternative that would be harder to implement given that a viable sustainable patent system requires the goodwill and transparency of all stakeholders in the innovation chain.

The fourth alternative is the worst one, having poor performance, quality, and intellectual property results.

3. MONITORING POST EVALUATION PERFORMANCE

In this paper, we found that the best alternative is the first: make the IP contracts adjustable to the incremental and iterative up-front innovation process of biomimicry. If somebody were to choose another alternative, it should be the second one, proposing a sustainable patent system that could work too. However, the alternatives 3 and 4 will be failures and we don't recommend them. The good point is that if the first alternative doesn't work, you can try the second one.

CONCLUSION

This paper aimed to prove the following statements:

- Intellectual Property contracts have to be adapted to the incremental and iterative up-front innovation process of biomimicry projects.
- Intellectual Property contracts need to adapt to the sustainability of biomimetic innovations, in order to preserve their positive externalities

As a result, we finally proved that is necessary for Intellectual Property contracts to adapt to the biomimetic innovation process. If owners and contractors desire to make safe and fruitful these biomimetic innovations, they should both accept incremental and iterative modification of their property contracts and adopt a sustainable vision for a more efficient sustainable patent system. To enable a worthwhile and valuable biomimetic innovation's production in the long run, to modify the Intellectual Property contracts and get more agile agreements is an absolute necessity.

FOLLOW ON RESEARCH

The logical follow-up to this paper would be to do an in-depth analysis of the two main alternatives, providing a technical insight on the feasibility and productivity of these two solutions. A huge research on the next perspectives of the biomimicry market could be relevant too.

BIBLIOGRAPHY

-Emily Barbara Kennedy & Thomas Andrew Marting (2016), Biomimicry: Streamlining the Front End of Innovation for Environmentally Sustainable Products, Research-Technology Management, 59:4, 40-48 Retrieved October 25, 2017, from *http://www.tandfonline.com/doi/full/10.1080/08956308.2016.1185342*

-Michael J Maglic. – (February 2014) Biomimicry: Using Nature as a model for design; Retrieved October 25, 2017, from *http://scholarworks.umass.edu/cgi/viewcontent.cgi?article=1984&context=theses*

-USPTO -the United States Patent and Trademark Office) [online pdf] The Patents and Trademarks of Biomimicry: Inspired by Nature One Invention at a Time. Retrieved November 07, 2017 from *https://www.uspto.gov/kids/Biomimicry.pdf*

- Contract Standards - Intellectual Property Ownership. (n.d.). Retrieved November 07, 2017, from *https://www.contractstandards.com/clauses/intellectual-property-ownership-ownership*

- Janine Benyus – Biomimicry Institute. (n.d.). Retrieved November 07, 2017, from *https://biomimicry.org/janine-benyus/#*

-Hennighausen, A., & Roston, E. (2015, February 23). 14 Smart Inventions Inspired by Nature: Biomimicry. Retrieved November 07, 2017, from *https://www.bloomberg.com/news/photo-essays/2015-02-23/14-smart-inventions-inspired-by-nature-biomimicry*

- Christopher M. Kalanje[1], Consultant, SMEs Division, WIPO - Role of Intellectual Property in Innovation and New Product Development (n.d.). Retrieved November 08, 2017, from *http://www.wipo.int/sme/en/documents/ip_innovation_development_fulltext.html*

- Planning Planet. (n.d.). Retrieved November 08, 2017, from *http://www.planningplanet.com/*

- Benyus, J. (n.d.). Biomimicry in action. Retrieved November 08, 2017, from *https://www.ted.com/talks/janine_benyus_biomimicry_in_action*

- Daly, S. (2013, April 26). How intellectual property could save the economy. Retrieved November 08, 2017, from *https://www.theguardian.com/sustainable-business/blog/intellectual-property-design-sustainable-innovation*

- Editors, A. (2017, August 03). 5 Ways AIA. Retrieved November 08, 2017, from *https://architizer.com/blog/aia-docs-sustainable/*

- Intellectual Property and Engineers. (n.d.). Retrieved November 16, 2017, from https://www.asme.org/career-education/articles/legal-issues-for-engineers/intellectual-property-and-engineers

About the Author

Betty Menuet

Lille, France

Betty Menuet is a 21-year-old French woman, currently involved in the Master of science *'Project and Programme Management and Business Development'* in SKEMA Business School. She has been the co-founder and President of HOPE (Humanitarian Association Promoting Equity), leading a team of 90 people and 5 projects simultaneously in Vietnam, Cambodia, Senegal and France. Passionate about the discovery of multicultural environments, she travels in countries such as Colombia, The Netherlands, Peru, Ecuador, Bolivia or England. She also fulfilled of a 2-month humanitarian mission in Vietnam, near to 6 orphanages in Kon Tum's region. Betty can be contacted at betty.menuet3@orange.fr.