

FLOATING ISLAND INTERNATIONAL

INSTRUCTORS' NOTE

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CASE DESCRIPTION

This case is about a small entrepreneurial firm, Floating Island International (FII), that used principles of biomimicry to develop a new product and, potentially, a new industry. The founder, Bruce Kania, invented BioHavens, which are literally floating islands and can be used to help clean water and create riparian habitat. The primary issue in this case is how to develop an appropriate 'blue ocean' strategy to establish this new technology as a vehicle for wastewater treatment and water remediation. Secondary issues include challenges of proving the technology across a variety of applications; being a small entrepreneur; developing appropriate marketing channels; protecting intellectual property; and reaching a global market. This case is intended for undergraduates and MBA students in strategy, entrepreneurship and international business courses, and courses with a focus on environmental sustainability. This case is designed to be taught in three class hours, and students would benefit by an additional six hours of outside preparation.

CASE SYNOPSIS

Floating Island International (FII) explores the challenges faced by a Montana entrepreneur who used principles of biomimicry to invent BioHavens, a potential water treatment technology. A BioHaven floating island is a man-made ecosystem which mimics natural wetlands, and can be used to help clean water and create riparian habitat. After four years of operation, his small company had produced and deployed over 3,000 islands and had established a network of 8 licensees, including 2 outside the US. BioHavens were being used in a variety of ways and settings, but to date the dominant applications were small scale and largely ornamental or aesthetic. However, the potential to use BioHavens as a vehicle for wastewater treatment and water remediation was immense, particularly in smaller communities and/or areas with limited infrastructure. FII had obtained some money for research and field applications, but the islands were a new technology and data documenting their water quality performance was far from complete. Many potential clients weren't interested in buying a technology whose effectiveness was not thoroughly documented. Water treatment represented totally new markets for FII, a 'blue ocean' scenario, and the company and its licensees were unsure how to best proceed. The case encourages students to consider the possibility of a solutions-based business model as one way of moving FII ahead, and to address the challenges of prospering in new markets.

Recommendations for Teaching Approaches

The teaching objective is twofold:

1. to provide insight into an small entrepreneurial company using biomimicry to develop and nurture a new technology;
2. to engage students in the challenges of successfully bringing a unproven technology to new markets ('blue oceans'), relying in part on solutions-based thinking.

In preparation for case analysis we suggest that students read Lovins, Lovins and Hawken, "A Road Map for Natural Capitalism," Harvard Business Review, May-June 1999; summary material on biomimicry, such as Matt Vella, "Using Nature as a Design Guide," Business Week Feb. 11, 2008 (accessed online at [www. Businessweek.com](http://www.Businessweek.com)); and Kim, W.C., Mauborgne, R. "Blue Ocean Strategy: From Theory to Practice," California Management Review, Vol. 47, No. 3 (2005), pp. 105-21.

Discussion questions

1. What are the major challenges (financial, organizational, intellectual property) facing FII in their attempt to commercialize their product? How can FII overcome these challenges?

- a.) Financial. The financial information included in the case indicates that the firm is not yet profitable but is being financed by its founder's other money making endeavors. FII has had some success in attracting outside funding to help support research on BioHaven efficacy, but these funds are limited and inadequate to meet on-going R&D requirements. The company could seek outside money through New Venture Funds or Angel Investors. It might also be a good time for Bruce to sell to a large corporation that could take the company to the next level. Licensing is a slow revenue generator and may stifle growth in the long run.
- b.) Organizational. FII has only a few employees and is not well positioned for supporting growth. Bruce is an inventor, and that is where his attention and interest are focused. On the other hand, FII is building a network of licensees who are an integral part of the organization. Many of the traditional organizational functions (notably marketing and production) are effectively 'outsourced' to the growing licensee network, thus reducing the need for a large organizational staff at FII itself.
- c) Intellectual Property Rights. FII currently has a number of patents related to BioHavens pending, but protecting and defending these will be an ongoing concern, particularly in an international context. FII is only beginning to seriously consider foreign expansion, and the opportunities and challenges of protecting patents in international markets is a major concern for Bruce.

FII needs to make sure that it meets the patent requirements of every market that it is operating in, regardless of the level of intellectual property-rights enforcement. However, the best defense of its intellectual property is product innovation coupled with the company's ability to prove the efficacy of the product to potential customers – particularly government entities. The ability to provide credible studies which back up its

claims will go a long way toward protecting the business's intellectual property in the marketplace.

2. FII and several licensees believe that BioHavens have significant potential as a water quality treatment technology. What are the major opportunities and challenges facing FII in terms of this application and market?

One important realization is that FII has developed a product that represents an innovative approach to enhancing water quality. The last third of the case essentially focuses on this issue. Floating Island has the potential to revolutionize wastewater treatment, pollution control, and water management practices both in the U.S. and overseas. The technology is relatively easy to produce, transport, and deploy. It is 'scalable' and can be applied in a variety of situations. It is particularly well suited for a variety of applications, particularly in rural areas with limited infrastructure. There is data that demonstrates it has water cleaning properties and helps reduce levels of specific nutrients, including copper, zinc, nitrates and Phosphorus.

Opportunities

The stricter EPA standards for wastewater effluent that are pending represent a challenge for rural communities and a terrific opportunity for BioHavens. Traditional methods of treating wastewater (additional treatment ponds; filtering mechanisms; chemicals; etc.) represent significant capital investments, particularly for small communities. The successful introduction of BioHavens as a treatment option to help polish the effluent to meet the new EPA standards would provide a cost effective, ecologically friendly solution for these communities and a great opportunity for FII.

It is significant that there are no directly competing products for BioHavens; in fact, there is nothing quite like them. In essence FII is in the process of creating a new industrial segment, and is literally creating a 'blue ocean'. As Kim and Mauborgne note in their article, blue ocean strategists hold a 'reconstructionist' view of markets, and create new industries and new 'rules of the game.' The process of doing this, however, is relatively uncharted territory.

The principles embodied in natural capitalism also provide strategic direction in this case, specifically the focus on a solutions-based model. In the wastewater industry, potential customers (small communities) are not interested in the aesthetic properties of BioHavens, or even in owning a floating island. Rather, they want the ecological services that BioHavens can provide: the ability to remove or reduce specific nutrients and meet new EPA standards. Instead of selling BioHavens, FII licensees could sell the "clean-up" service provided by the floating islands.

Using these insights, FII's strategy could be to at least initially provide BioHavens to rural communities on a modified lease or pay for performance basis. Nutrient levels in wastewater settling ponds with BioHavens would be monitored on an on-going basis by the municipalities, and FII would be paid on the basis of the reduction in unwanted nutrients, and/or the ongoing maintenance of desired water quality measures. This approach would provide the communities with the ecological service they require, and also help FII gather the data to prove the efficacy of BioHavens in a variety of field settings.

Challenges

There are several major challenges facing FII.

1. There are obvious risks in the pay for performance approach discussed above. Developing the exact parameters for the appropriately sized BioHaven to maximize efficient uptake while minimizing scale (and cost) may take time to refine. In the short term FII may provide more

‘island’ than a particular situation requires (thus increasing their costs), or not enough to completely polish the water. Determining the appropriate pricing for the services of the BioHaven will also require careful calculation.

The advantages of this approach are significant, particularly in the short run. Pay for performance clearly reduces the risk for potential clients in terms of trying the new technology. FII will reap the benefits from entering a new market, gain critical experience and exposure, gather performance data, and be able to position BioHavens as a BMP option for the EPA in the future. With over 400 potential sites in rural communities that will require additional wastewater treatment in Montana alone, the potential local market is large enough to target, but small enough for FII and its Headwater FI licensee to manage in the next several years. In fact, this is just the strategy FII – and Headwaters FI – have chosen to pursue.

2. Biohavens remain a largely ‘unproven’ and relatively unknown technology. For example, FII cannot yet say that, given a wastewater lagoon with particular characteristics, they can guarantee that this configuration of a BioHaven will definitely solve the problem. FII does have research and evidence documenting aspects of effectiveness, but they need more field studies and/or data to be able to document performance for potential clients. Given this level of uncertainty, municipalities or other government entities are unlikely to be willing to purchase a BioHaven. And the EPA will not endorse it as a proven technology, an endorsement that would be very beneficial.

3. In addition to Water Quality, what are some of the potential markets for FII?

Floating Island’s initial success has been in the man-made garden (ornamental) pond market, but BioHavens clearly have potential in a variety of other markets. Given the broad potential applications, developing a strategic focus is an immediate challenge. The Floating Island website (www.floatingislandinternational.com) lists over 25 categories of potential applications. Bruce Kania, as an inventor, has a broad and expansive vision about the possibilities embodied in BioHavens. Because there are so many potential applications, one challenge is deciding where the firm should focus its R&D efforts.

The following chart can be used to help students understand which markets have the most potential, both in economic terms and in terms of the vision Bruce has for the environment. We suggest that instructors sketch out the first rows and then invite students to come up with opportunities and constraints.

Teaching Note Figure 1

Market	Water Quality	Wildlife Habitat	Beautification	Structures	Restoration	Futuristic
Examples	Sewage Storm water Rivers, Lakes, Streams Golf Courses Zoos	Protected species Waterfowl attraction Fish spawning Goose Magnets	Waterscapes Gardens Hiding unsightly areas	Foundation for docks, houses, bridges or walkways	Wetlands Bayous Stabilizing banks Levee control Erosion control Cutbank Creation	Deadzone restoration Creating new floating communities
Opportunities	New EPA regulations in US create strong market opportunities The islands are a simple, elegant, and environmentally appealing way to address water quality issues. Potentially lower cost solution compared to traditional approaches	Already making inroads in this market. Product fits well with each application.	BioHavens can be easily constructed to suit a variety of applications. Easy to build, deploy at this scale.	Relatively unexplored	Relatively unexplored	Unexplored

Constraints	<p>Entrenched Methods of Water treatment already exist</p> <p>Unproven technology</p> <p>New technology, not widely known</p>	<p>Somewhat limited revenue potential (many potential customers non-profits)</p> <p>Cost of Biohaven</p>	<p>Basic ornamental market in US and Canada already under license</p>	<p>Market potential unknown</p> <p>Design, production, deployment more complex: costs of 'failure' high</p> <p>Mechanical evaluation data from Alden Labs will be critical to moving forward</p>	<p>Market potential unknown</p> <p>Design, production, deployment more complex; costs of 'failure' high</p> <p>Mechanical evaluation data from Alden Labs will be critical to moving forward</p>	<p>Need considerable additional R&D; Long term prospect at best</p>
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