Forging the Synergy between Anticipation and Innovation: The Futures Action Model

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Abstract

This paper presents the theory and practice of the Futures Action Model (FAM). FAM has been in development for over a decade, in a number of contexts and iterations. It is a creative methodology that uses a variety of concepts and tools to guide participants through the conception and modeling of enterprises, services, social innovations and projects in the context of emerging futures. It is used to generate strategic options that people can utilise to build opportunities for value creation as they move into the future. This paper details examples in its development, and provides theoretical and practical guidelines for educators and business facilitators to use the FAM system in their own workplaces.

Keywords: Foresight, Design, Innovation, Entrepreneurship, Action Learning, Wicked Problems, Leadership, Change Strategies

Introduction

The need to develop new enterprise, social innovation and initiative models that can address the emerging social needs and social challenges of the near and long-term is very well-established. The world is facing a litany of sustainability challenges that will require dramatic innovation - novel and bold approaches to address these challenges. One basis for sustainability can be understood to be resilience and adaptive capacity. Diverse enterprise / initiative responses to our emerging challenges is one of the key pillars for creating the conditions of adaptive (social) capacity, and hence sustainable futures (Gunderson 2002). In more Schumpeterian terms, emerging enterprises create the conditions for economic and industrial transformation. Research and corporate strategies point toward eco-social sustainment as a critical thematic foundation for the next wave of industrial and social transformation (Dunphy,

2007, Fredrick 2010, Woodfield 2010).

FAM was developed to address the critical gap between enterprise creation strategy, service and social innovation, and the emerging futures that today's enterprises and organizations are expected to thrive in. It aims to help close a gap between theoretical or abstract thinking processes about emerging futures and concrete and practical views about the present.
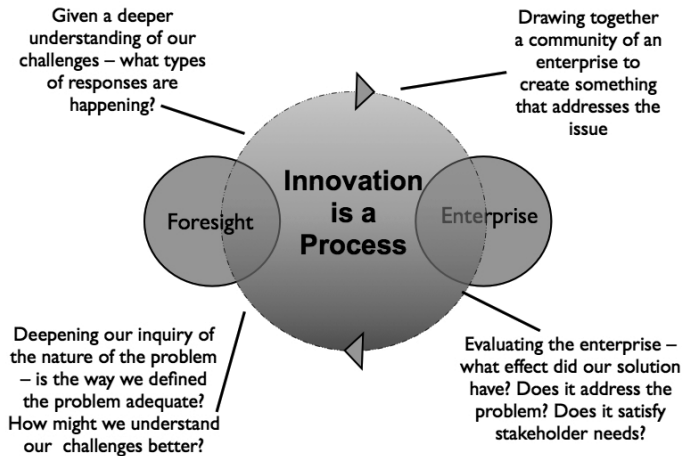

Given a deeper understanding of our challenges – what types of responses are happening?

Drawing together a community of an enterprise to create something that addresses the issue

Innovation is a Process

Foresight

Enterprise

Deepening our inquiry of the nature of the problem – is the way we defined the problem adequate? How might we understand our challenges better?

Evaluating the enterprise – what effect did our solution have? Does it address the problem? Does it satisfy stakeholder needs?

Figure 1. Dynamic relationship between foresight and action

Figure 1 provides a representation of the relationship between thinking about the future in a robust and structured way to inform the process of innovation which a management or leadership team can use to adapt an enterprise or initiative to future opportunities and conditions for success.

Many political, social and economic mega-trends indicate that success in this 21st Century will require people to explicitly bring emerging futures knowledge into enterprise, initiative and social innovation design. The flip-side of this is that futures thinking that remains detached or disconnected from practical social innovation and enterprise creation may be seen as not just under utilized thinking, but even dissociated thinking – thinking disconnected from practical experience and action. The deep knowledge of 21st century's big challenges can be a powerful resource for conceiving of new enterprises and initiatives. It is therefore incumbent upon us to draw together futures thinking, innovation and enterprise / initiative modeling into a virtuous cycle of value creation that not only sustains the present but the futures as well.

Organization of this paper

This paper begins by detailing the various instances where the FAM approach has been used, as well as the methodological process in its use. The paper proceeds by providing two case examples, real situations where a team of four people used the methodology to address a particular problem / issue. The paper concludes with an extended discussion: the importance of methodological design for addressing

wicked problems, the role of action learning / research strategies, the importance of relational and socio-ecological frameworks, and finally the importance of pattern recognition as a foundation for considering the twining of futures / foresight and action oriented / enterprise strategies.

FAM Methodology

FAM has been developed through five instances and continues to be used today. In 2002 an initial model was applied in a pilot project at the University of Melbourne, in collaboration with Adam Leggett of Increasing Returns Ltd. for second year science students (a program called Univator, an 8 week, one session per week program). In 2004 it was used in collaboration with Dr. Allan O'Connor of SME Innovations, for the Science Works' Questacon Smart Moves program (a five day course for high school age inventors). In 2010 it was designed into a foresight and social enterprise course for undergraduates at Swinburne University of Technology's school of business (a 12 week program). In 2012 it was applied in modified form in a Masters course on Strategic Foresight for Public Policy, at the Lee Kuan Yew School of Public Policy, National University of Singapore. In 2013 it is currently being used at the time of writing this article, 1) as the methodology for the Oases Graduate School's unit on Anticipatory Innovation, and as the framework used for the community leadership program, Bendigo a Thinking Community, in Bendigo Australia.

As an overview, the FAM approach features these elements:

First, the approach uses four levels of inquiry in the design process: emerging futures, global responses, the community (of the initiative), and the core model, which for initiative modeling is the 'guts' of the initiative.

Secondly, designing initiatives in the context of emerging issues involves an innovation process in which participants address 'wicked problems', and as such requires non-linear approaches to initiative design. In this regard the model draws heavily upon Conklin's (2006) dialogue mapping theory and practice (see discussion section).

Thirdly, the design approach employs the concept of a 'community of the initiative' (CoI). CoI is an emerging issue in the early 21st century where network centric or peer to peer value creation is ascendant and where service dominant logic has transformed the relationship between value creator and value receiver (Vargo and Lusch 2004). The idea of CoI is key as, increasingly, an initiatives' value proposition lies in the service of creating a value exchange system between stakeholders, allowing stakeholders to exchange value in new and dynamic ways. Value is not necessarily in the 'thing' but in a knowledge-service that facilitates value production, exchange and emergence.

Fourthly, initiative design requires the integration of elements such as: purpose, governance and resources into a synergetic whole which fits into the community of the initiative. The initiative can neither be conceived as a mere set of functional units, nor can it exist outside of a community specific to that initiative. The design process is thus relational rather than functional. The initiative is organic to the community.

Finally, exploring emerging futures, the continuous scanning for change (often called 'horizon scanning' or 'environmental scanning'), emergence and developing foresight is fundamentally disruptive, transformative and is a critical element in the

approach, without which the dynamism in the tension between present and futures is lost.

Levels and methods explained

The 4 levels in the methodology include: 1) emerging futures, 2) global responses, 3) the community of the initiative, 4) the core initiative model (also described as the 'vehicle'). .
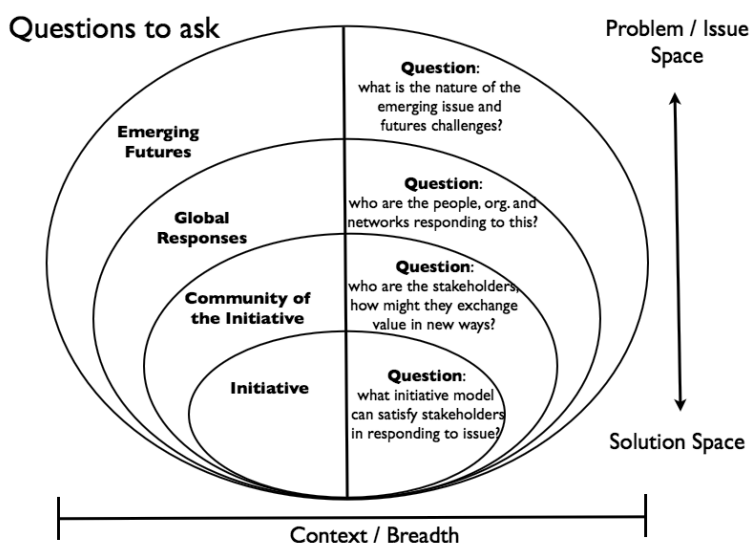

Figure 2. Questioning the futures using FAM

Questioning is a fundamental aspect of FAM at different levels. As seen in figure 2, at different levels different questions can be asked. These questions, however, are not disconnected from each other, but rather (as seen in the following discussion) provoke a relational inquiry between our understanding of change and how we may respond in the present. This relationality extends to the use of futures tools and methods, which can deepen the inquiry across various levels in a non-linear way. Futures tools and methods engender relational insights across levels.

Working in a team of 3 to 5 (or so) people, a group considers what issue or area they want to address. For example, the team may decide they're interested in reducing household water consumption, given that water resources are a significant issue and emerging challenge, and that water usage efficiency in much of the world is quite poor.
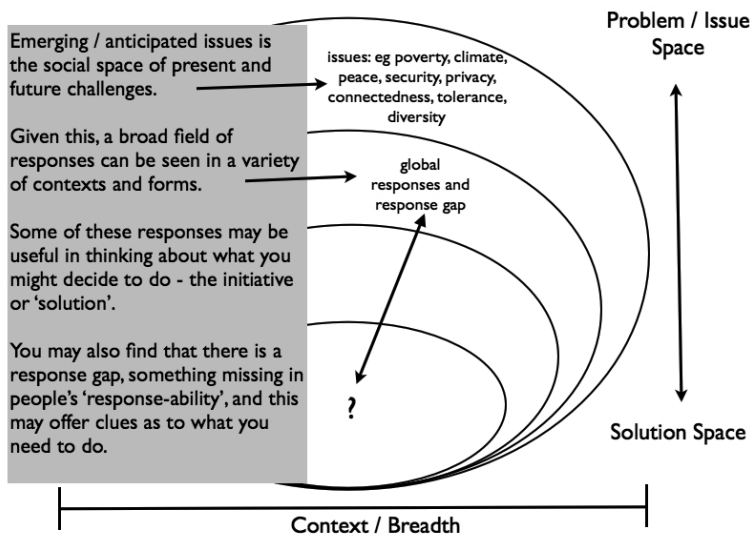
Emerging / anticipated issues is the social space of present and future challenges.

Given this, a broad field of responses can be seen in a variety of contexts and forms.

Some of these responses may be useful in thinking about what you might decide to do - the initiative or 'solution'.

You may also find that there is a response gap, something missing in people's 'response-ability', and this may offer clues as to what you need to do.

issues: eg poverty, climate, peace, security, privacy, connectedness, tolerance, diversity

global responses and response gap

?

Problem / Issue Space

Solution Space

Context / Breadth

Figure 3. Emerging Futures

Inquiry into emerging futures entails using a variety of methods to begin to explore the futures. The first method, which is key, is environmental scanning. This means that a systematic approach is developed for looking for knowledge about emerging futures in relation to that particular issue, whether this is through blogs, magazines, books, journals, podcasts and the like. This resembles a classic literature search, except that the approach in futures research is significantly different, and employs methods specific to environmental / horizon scanning, such as those developed by Choo (2003) and Schultz (1988). With this process in place, the team begins to collect a wide variety of literature which expands the team's understanding of emerging issues and futures in that particular area. While environmental scanning is often used to understand emerging futures, it is also useful in identifying global responses, and provides insights into the other FAM levels. Other futures tools such as Emerging Issues Analysis (Molitor 2011), the Futures Wheel (Gordon 2009; Inayatullah, 2009), and Causal Layered Analysis (Inayatullah 1998), and other futures approaches (like backcasting) work in a non-linear way within the FAM model, providing insights at various levels. As seen in figure 3, this top level of emerging futures naturally leads to the next layer in which participants inquire about the emerging global responses to these challenges.
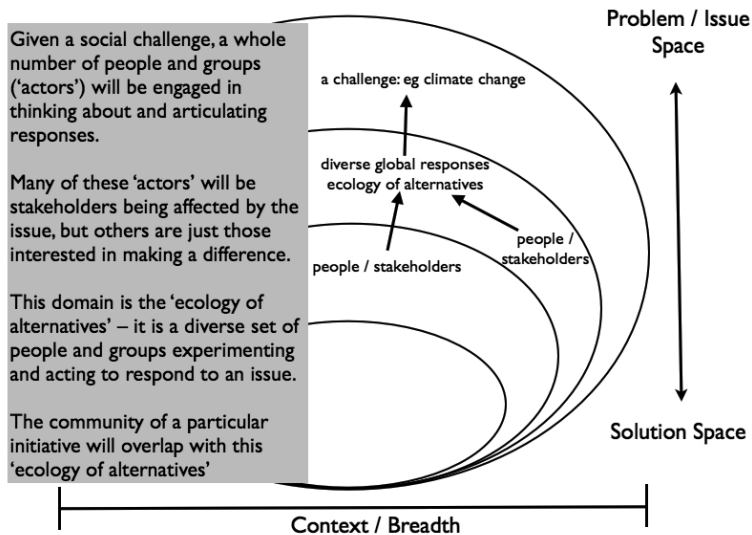
Figure 4. Global Responses and the ecology of alternatives

Inquiry into emerging global responses entails looking at the various ways in which people around the world are responding to the particular challenge, problem or issue of concern to the group. Many of these people, organizations, agencies and companies responding to a particular challenge or issue are already collaborating and connecting with each other, and hence this can be called an 'ecology of alternatives' (Ramos 2010), as seen in figure 4. To use the example of water sustainability, the team might begin to identify a number of interesting responses from around the world, from the use of micro biological cubes in public latrines, economic incentives to install water tanks, retrofitting toilets, policy responses in a variety of countries, big technical fixes (e.g. desalination plants), and alternative approaches to framing the issue, etc. Of course context matters, and the various responses will obviously reflect the various contexts within which the responses are created. The key for the group is to understand the context that they are trying to address, whether this is local, regional or global, how this corresponds to the contexts that they are identifying through the analysis of global responses, and how this connects with the focus/niche of the initiative. Correspondences begin to shed light on what might be potential niche / local responses for the team. Again a key tool here is environmental scanning. Other tools also include resilience mapping drawing on the work of Gunderson and Holling (2002), Emerging Issues Analysis (Molitor 2010), and S-curve analysis. As seen in figure 4, stakeholders or stakeholder categories who may be part of the community of the initiative are often associated within the response space. This is because those people (or those types of people) who the team may want to directly involve in the initiative creation process (the community of the initiative) may be part of organizations, institutions, agencies, companies, etc responding to the particular issue or challenge in question.
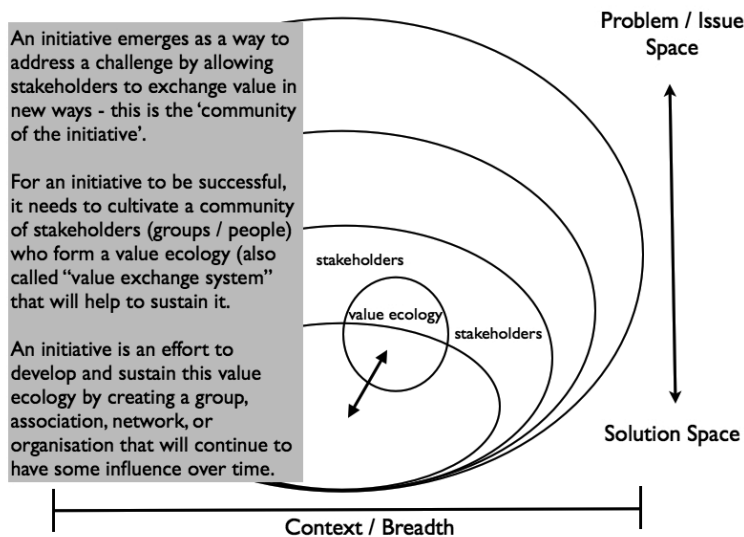
Figure contents:

An initiative emerges as a way to address a challenge by allowing stakeholders to exchange value in new ways - this is the 'community of the initiative'.

For an initiative to be successful, it needs to cultivate a community of stakeholders (groups / people) who form a value ecology (also called "value exchange system" that will help to sustain it.

An initiative is an effort to develop and sustain this value ecology by creating a group, association, network, or organisation that will continue to have some influence over time.

Problem / Issue Space

stakeholders

value ecology

stakeholders

Solution Space

Context / Breadth

Figure 5. Community of the initiative

Inquiry into the community of the initiative entails looking at who might be the potential stakeholders for a new initiative. In this regard, special attention is put on what stakeholders within this issue (and in the context of the initiative concerned), value and need. By doing this, participants develop a 'value ecology' (also referred to as a 'value exchange system"), identifying what is valuable and needed by different stakeholders (people / organizations / networks) as a precursor to designing new approaches that allow stakeholders to exchange value with each other in novel ways. Besides classic stakeholder analysis, structural analysis is also very useful here, for example identifying how actors in different social domains (economic, political, cultural) have different interests and priorities. By identifying different interests across domains, new synergies of value creation can be developed. This requires a type of value exchange analysis. As seen in figure 5, the value exchange system is a dynamic partnership between the initiative and the key stakeholders. The initiative as a 'vehicle' sustains the capacity for the stakeholders to exchange what they value. By virtue of the need to sustain itself, the initiative becomes part of the value exchange process.

Figure 6. The 'Vehicle', the core model of the initiative

Finally, at the level of the initiative, the inquiry focuses on the 'vehicle', the specific structure and organs the initiative takes to provide value for the community of the initiative, as seen in figure 6. Three main elements are modeled in: 1) how an initiative draws its resources (this can be financial considerations such as market exchanges, grants, peer funding), or can be in-kind, pro-bono, volunteer, crowdsourced, etc. 2) how an initiative is governed, for example is it a private business, a cooperative, a corporation, an association (who and how are critical in making decisions), 3) the purpose of the organization, for example what is its reason for being, what is it here to do, what is meaningful for the people involved in developing the organization (vision), or at a lower-level what is the strategic intent. These three elements need to come together logically and synergistically as a way to address the needs within the value ecology. The tools used here include initiative modeling, capacity analysis (for the team), classic project management, and classic business planning, among others.

Figure 7. Patagonia as an example of FAM dynamics

Figure 7 provides an example of how one might understand these different four levels using a very well known company, Patagonia, as a case in point. For Patagonia, the environmental focus of the company has had its origins in its customer base, people involved in outdoor sports such as rock climbing, mountaineering, surfing, fly fishing, and skiing . These customers, connected to nature and wanting to preserve nature from the onslaught of development, have helped to drive Patagonia towards radical environmental solutions. Patagonia now produces clothing that (in some cases) is up to 90% produced from recycled nylons or polyesters, one of the most successful examples of closed loop manufacturing in the world. Thus, from the point of view of emerging futures, Patagonia's responds to a number of relevant trends, the impact of consumer waste, the depletion of resources, and an emerging demographic of environmentally conscious consumers willing to pay a premium for eco-friendly products. At the level of responses we can see that industrial ecology is an important movement, supply chain informatics is part of the ICT revolution that allows customers to more transparently see product life-cycles, product lifecycle assessment goes hand-in-hand with this new consumer transparency, and of course the cultural norm of recycling which has been gradually embedded over many years is also significant. Patagonia's community of the initiative is complex, but we can see three main elements in the value ecology. Patagonia actively promotes its clothing as closed loop / cradle to cradle to customers, and encourages its customers to donate old nylon and polyester to its retail centers. The retail centers send the recycled nylon to specialist industrial plants in Japan and elsewhere which convert the nylon into pellets, which are in turn manufactured into nylon-based clothing. Clothing is then sold at the retail centers at premium prices. What Patagonia has been able to create is a consumer industrial metabolism. As is obvious such a cradle to cradle close loop system is more than just a technical arrangement, it in fact requires creative social organization – a social initiative design that complements the technical exchange system.

Case examples

Two case studies provide a brief overview of two teams developing specific initiative models in the context of emerging environmental issues and challenges. The two teams formed in a class on "Entrepreneurship and Social Responsibility" at Swinburne University of Technology in 2008 in which the FAM methodology was run over an 11 week period. While the case studies are narrated in a linear and progressive fashion – from the exploration of emerging futures, to global responses, to the community of initiative and on to the specific initiative model – in practice the initiative modeling and design occurred in a nonlinear fashion.

Case study 1 – Fuelling aviation futures

In this first case study, a team of four decided to take on the issue of aviation in the context of climate change and peak oil. In defining the problem, they noted both economic and ecological factors.

Emerging Futures: Ecologically, they began by looking at the impact of human induced climate change, in particular the contribution of different modes of transport to carbon emissions. The impact of fossil fuel based pollution on ecosystems and the ozone layer were detailed. Importantly, various timelines for fossil fuel reserves informed their understanding. Avtur Jet A is produced through distillation of crude oil, natural gas and coal, all of which are expected to deplete significantly in the 21st century. Also notable were anticipated introductions of government policies such as an Australian carbon tax, which would also impact the economics of aviation.

The team noted that, economically, the costs of producing Avtur Jet A or Jet A 1 fuels were rising. Reasons for the rise in jet fuel prices include three factors: as noted above, governments are moving to internalize the costs of fossil fuels, secondly a large increase in air travel has put increasing demand on these fossil fuels, and thirdly emerging resource scarcities are impacting costs.

Social Responses: The team began examining the different types of responses coming from different sectors of society. They noted the International Air Transport Association (IATA) mission to reduce greenhouse gas emissions and drive "carbon-neutral growth". They found extensive collaborative efforts between airline companies, aircraft and engine manufacturers and airports to drive efficiency gains. They also began to take interest in research and development of biofuels developed for aviation purposes.

At first they noted the problematic nature of first-generation biofuels. Biofuels based on existing food crops can distort food prices, require the use of fertile lands, and exacerbate food insecurities. The team began to take interest in second-generation biofuels, such as "Jatropha based fuel, Camelina based fuel and the Algae based fuel." In particularly they found that algae-based fuels have distinct advantages: it can be grown in desolate regions, and therefore not impact on existing food production, it can be grown in salty or brackish water, and it readily absorbs carbon dioxide as a nutrient, and is "six to ten times more energy efficient per hectare than other conventional biofuels feedstock". Three organizations were discovered as important actors in the social space, the Algal Biomass Organization (ABO), the National Algae Association and Algae Tec. They also discovered a number of university-based research and development projects. This included a partnership between Queensland University and Boeing's "Sustainable Aviation

Fuel Initiative". They also discovered that second-generation biofuels are being currently tested within the industry, in particular they found a collaboration between Rolls Royce, Boeing and Air New Zealand which intended to make 10% of all fuels biofuel-based by 2013.

Community of the initiative: Through the examination of the global response space, the team came to the conclusion that "the most efficient way to challenge the economic and ecological problems faced today in the aviation industry is to develop a new sustainable fuel. From our research we have decided that the most efficient sustainable fuel is the algae-based biofuel."[1]

For this team, the community of this initiative began to emerge dynamically across sectors, as the aviation industry is aiming to increase the usage of biofuels to 30% by 2030. This would require commercial scale quantities, and partnerships between different aspects of the aviation industry. Testing of algae-based biofuels must therefore emerge through strategic collaborations. They decided that, as a starting point they would collaborate with "Airbus for the plane manufacturer, Rolls Royce for the engine manufacturer and Virgin for the Airline."

The team decided to pick a particular geographic location, coastal Western Australia near Perth, where ample sunlight combined with saltwater and the availability of low cost land would allow for large-scale production of algae. The operation would be located near an industrial zone that produced carbon emissions, and would capture these industry's emissions as feedstock for algae production.

Collaboration with peak bodies and networks such as IATA, the ICAO and ATAG would allow for networking and synchronization within the aviation industry.

The *Initiative model* included the following elements: In respect to the initiatives purpose, the team decided its main purposes were to produce and commercialise algae-based biofuel while creating a consumer / producer / feedstock value ecology for algae-based biofuels.

The company would be a for-profit entity, financed and supported by an existing fuel producer, an airline, an engine manufacturer, and an airplane manufacturer. This strategic alliance would be the financial backbone of the new company. The new initiative would provide back to its partners strategic security in future fuel supplies.

Case study 2 – Developing an e-waste exchange system

Emerging Futures: After reading literature regarding problems related to electronic waste (e-waste), a team of four decided to design an initiative to address this problem.

They noted the accelerating problem of electronic waste, as a digital age has seen an ever widening proliferation of different types of electronic devices, from mobile phones, computers, TVs, to photocopiers and the like. Each one of these devices contains a variety of different finite resources, from lead, cadmium, mercury to gold, silver, plastic and many other materials. In conjunction with this is a vast increase in the world's appetite for such devices, driven by both population growth and the economic emergence of developing countries. As they wrote in their report:

"E-waste is a serious issue that sees 20 to 50 million tones of e-waste being dumped [in Australia] annually, and this figure continues to grow … due to the modernisation of our economy with people consuming more electronic goods and disposing of them faster due to the rapid pace of technological advancement."

They found that, generally, over 80% of electronic devices end up as "electronic

waste" in landfill, rather than being recycled. Of the discarded electronic goods from the developed world that will be recycled, much of it will end up in developing countries with very poor or nonexistent e-waste regulations. Therefore, on top of the extensive waste in natural resources, toxic chemicals such as mercury and lead can contaminate local ecosystems, ending up in the water supply and impacting on the human and natural environment.

The team discovered that, while there are organizations and companies that offer electronic waste recycling, costs and obstacles involved for customers are a major disincentive.

Social Responses: After conducting an extensive analysis, the team surfaced a variety of actors in the area of the waste. Emerging regulations on e-waste in various countries and states around the world (e.g. Japan's Home Appliances Recycling Law and EU's Waste Electrical and Electronic Equipment laws); A new push for Australian federal legislation to regulate e-waste; Extensive advances in industrial ecology / closed loop manufacturing - Materials Recovering Facilities are becoming more effective at recovering trace minerals;[2] Manufacturers / producers of e-waste - Industry associations interested in self regulation of e-waste and product stewardship; An emerging list of logistics companies involved in the collection and export or e-waste; NGO push to address e-waste (e.g. Clean Up Australia public awareness campaigns, Greenpeace campaigns in India); Extended Producer Responsibility (EPR) ("widely practiced in the European Union").

In Australia, industry initiatives such as Mobile Muster are attempting to deal with mobile phone e-waste through voluntary disposal. Industry peak body Product Stewardship Australia is developing awareness and collection schemes for old TVs and CRT monitors. The Environment, Protection and Heritage Council (EPHC), are pushing for National guidelines on the management of E-waste.

They found that e-waste recycling rates in Australia lagged far behind the US, which in turn lagged other pioneering efforts (Japan). Overall most e-waste is shipped to other countries. Given the diverse push for an overhaul of existing e-waste arrangements, and Australia's very poor e-waste recycling rates, the team began to identify a large space of opportunity to address this socio-ecological issue in a profitable way.

Community of the initiative: The team began to consider those actors might help form the community of the initiative.

Consumers were first on this list, as consumers are the primary actors who hold and use electronic devices, and whose behaviors need to be changed in order to increase e-waste recovery.

Australian e-waste recycling companies were another important part of this community. These are the companies that have the logistics or technology to transport and / or process electronic waste. Given particular prices for electronic waste elements, they would also pay for certain types of electronic used-goods.

Electronics manufacturers, who want to promote product stewardship, would also have an interest in the initiative.

Government regulators, who want to see the problem electronic waste disposal / contamination addressed, are also potential community members of this initiative.

Initiative Model: In the spirit of industrial ecology, the team introduced two key design principles.

1. The linear consumption pattern changes to a circular / closed looped pattern

(ones waste is another's use) and,

2. All participates of the transaction benefit.

These principles guided the development of the model: The initiative used an eBay like template, whereby the initiative would create a transaction environment, which they would then receive a small commission for each transaction. The group anticipated that strong government support, financial or legislative, would be needed to operate this business at a large (national) scale. In addition, the company would also make money through subscriptions for large organizations wanting to either dispose of or buy e-waste.

Electronic waste recyclers would form an online market where they would offer a certain amount of money for particular electronic waste products. To increase the price they would be willing to pay, the price offered would be based on large scale quantities. Individual or organizational consumers wanting to gain money for used electronic waste products could register to join this online platform. They would then be able to see how much is being offered for different types of electronic waste products. Consumers would be able to take their electronic waste products to a processing depot "at easily accessible locations such as Woolworths and Post-offices", and get a monetary reward.

Bigger incentives could be built into electronic waste recycling, if electronic manufacturers build in product stewardship incentives, such as Apple's existing 10% buyback offer, or if federal legislation incorporates a buyback levy into the price of electronic goods (as in Ontario Canada). The initiative would therefore pursue government grants and support as part of the development of the initiative.

Extended Discussion

This paper has detailed both the FAM methodology and two case examples in its use. I would now like to provide a discussion of four important areas in considering the approach, with a view toward developing conceptual clarity in the underlying processes needed for methodological design to create preferred futures through initiative.

First, we may consider the importance of methodological design for addressing wicked problems, as the issues we are enmeshed in are not reducible to single issues, but are woven into complex system.

Secondly we may consider the role of action learning / research strategies, as the need to develop designs also requires an experiential basis.

Thirdly, we may consider the importance of relational and socio-ecological frameworks, as the projects and initiatives we create are situated in dynamic communities and networks.

Finally, we may consider the importance of pattern recognition as a foundation for considering the twining of futures / foresight and action oriented / initiative strategies, and the further development of strategic thinking that is concretely connected to a commitment to action orientation.

Initiative design for wicked problems

In the 21st century we need to design initiatives that address wicked problems. Yet addressing wicked problems requires nuanced systemic thinking that includes an understanding of how different stakeholders understand an issue. 'Complexity'

implies conditions in which there are not simple and known answers. The issues we are dealing with today are characterised by what might be termed 'ontological and epistemological complexity'. Ontological complexity refers to the complex of systemic interconnections between issues, forces and movements in the world (characteristic of classic systems thinking). Epistemological complexity refers to the complex of ways of knowing and perceptions / projections of the issues that concern us. Conklin (2006) calls these 'wicked problems' and 'social complexity', respectively, writing:

> "One cannot understand the problem without knowing about its context; one cannot meaningfully search for information without the orientation of a solution concept; one cannot first understand, then solve. Moreover, what "the Problem" is depends on who you ask – different stakeholders have different views about what the problem is and what constitutes an acceptable solution" (Conklin 2006, p8)

Figure 8. Depiction of 'Traditional Wisdom' from Conklin (2006)

The FAM approach follows in the footsteps of Conklin's research (2005). In particular the FAM approach departs from the "waterfall" metaphor of problem-solving as seen in figure 8. According to Conklin, this waterfall approach to problem solving is what is taught in most management schools or research programs. His own research into problem-solving led him to conclude that, while the waterfall approach is an idealized model, in fact when engineers and designers come together to solve a problem the actual processes is dynamic and nonlinear.
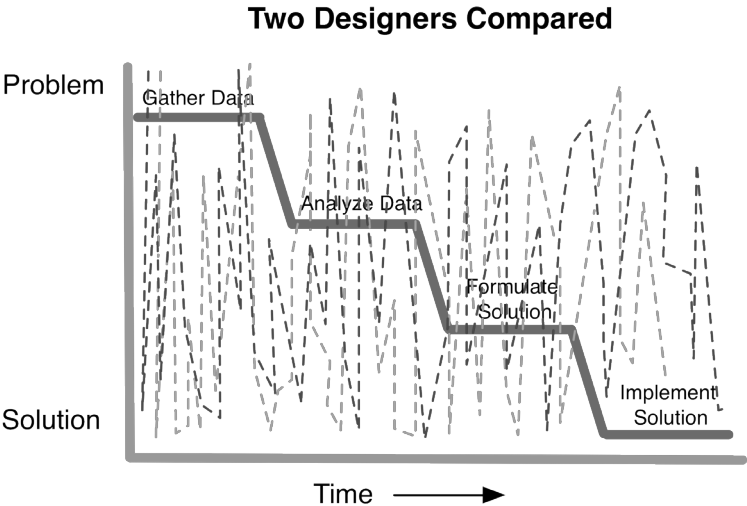
Two Designers Compared

Figure 9. Dynamics of two designers solving a problem from Conklin (2006)

Conklin's research showed that engineers and designers move dynamically across different aspects of a problem-solving process. At one point one engineer may be at the level of gathering data, while the next one may already be thinking about a solution; or one may be analyzing data while the other is beginning to explore strategies in formulating solutions; one may be thinking about how implementation might happen while the other may be thinking about something different, etc. As seen in figure 9, different engineers and designers are cognitively located in different modes of thought during the process. This does not mean that a team never gets to a solution. The point of FAM is to come to robust, creative, novel, and rigorous initiative and project concepts and models that can work in the world. The process, however, is not a straight line from A to B.

Figure 10. FAM model from O'Connor and Ramos 2004

When the first FAM models were developed, colleagues and I did assume that people could move in a more linear fashion from foresight, to innovation (creativity), to enterprise. Testing this assumption, we found in a research paper (O'Connor and Ramos 2004) that social entrepreneurs do tacitly incorporate foresight and innovation into their practice, but they do so in a dynamic and non-linear fashion.

The idea that one could, in a linear fashion, move from knowledge of the future, to formulating alternatives, to designing a solution, to implementing a solution, all had to be reconsidered. In fact, in retrospect our initial assumptions about process did somewhat fall into Conklin's metaphor of the waterfall.
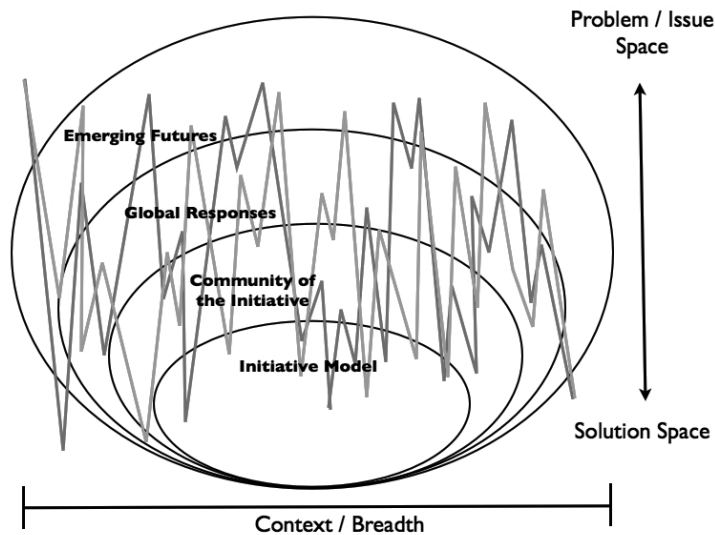

Figure 11. Dynamic movement across all 4 levels of FAM

Subsequent workshops and classroom processes have employed Conklin's ideas around more dynamic problem-solving processes. Instead of presenting the 4 levels as a linear progression, the process is now presented as one which is dynamic that can move across and between levels at any given time. If participants get stuck at one level, they are encouraged to simply move on to another one. As seen in figure 11, the levels are nested on the axes of breadth and problem-to-solution, and therefore the process brings the different levels into play asynchronously. Given this, participants themselves need to understand the complexities and challenges involved in working in teams with people who may have different cognitive styles, dispositions or who may simply be in a different part of the process at any given point in time. As a facilitation process, it cannot work as instrumentalized process facilitation, but rather requires thinking about the nature of thinking, and reflexive inquiry into our socio-ecological existences.

Anticipatory Action Learning and FAM

The FAM approach can be seen to be part of the action learning tradition. In action learning, work has traditionally been done in teams addressing a particular problem or challenge. Teams typically explore the space of the problem, drawing upon "program learning", what is already known about the particular problem, and including active questioning, if not experimentation. The combination of programmed knowledge and strategic questioning leads to learning. An outline of the process can be understood as going through 4 steps: plan - act - observe – reflect (Revans 1982 in Burke 2002; Wadsworth 2010).

When exploration of emerging issues and alternative futures are included in action learning, the approach can be considered a type of "anticipatory action learning". Anticipatory action learning was pioneered by Inayatullah (2002), Stevenson (2002), Burke (2002), and Ramos (2005), among many others, as a way of including futures and strategy into an action learning process. In addition there are a number of well documented approaches which have combined futures thinking and action research (Ramos 2006). Participants are engaged in thinking about the futures of their organizations, networks or communities by using a variety of tools and techniques. This can include tools like emerging issues analysis, environmental scanning, futures triangle, scenario development and backcasting (Inayatullah 2007). Opening and questioning the future allows participants to question some of the core assumptions they have about the futures they believe are preferred, probable or possible, the strategies they follow, the designs they are developing, and the core purposes or visions being pursued. Strategy becomes a constant process, reflecting the difference between strategic planning and strategic thinking (Minzberg 1994 in Burke 2002).

The FAM approach draws from this tradition of anticipatory action learning and more generally the fusion of futures studies and engaged / action research / learning. Like other anticipatory action learning approaches, the FAM approach entails work in small teams where participants are challenged to design a social enterprise through the exploration of four levels of inquiry: the emerging futures space, the global response space, the community space, and the initiative space. The dynamic movement between these four spaces, reminiscent of Conklin's (2006) explanation of wicked problem dynamics, is a movement from the exploration of broad ecological and sociological context to the specific designs aimed at addressing this.

It should be noted that, while the FAM approach uses an anticipatory action learning approach to strategy development and initiative design, the loop between inquiry and action is not fully closed. Teams have not necessarily tested the initiative or project models in real world settings. The full action learning / action research loop of plan, act, observe, reflect has not been truly enacted. While some participants / students carry on with their projects, FAM has had no formal life after the workshops. This is a limitation that must be put on the current research findings.

Engagement in systems for initiative development

One can consider an initiative as part of a "social ecology of alternatives". Many social initiatives are creating something partially or completely new, or new within a particular geographic or thematic context. They can be therefore understood as "alternatives" to what currently exists. In addition to this, they sometimes exists in a field or space in which there are other social initiatives / groups who are also "alternatives". A social ecology of alternatives is an emergent associational phenomena. There are relationships between people developing different alternatives. Sometimes these relationships overlap, converge, collaborate or compete. These social ecologies of alternatives very often create solidarity systems and peer-to-peer exchanges. Start up social initiatives often survive by being involved in and giving value to these emergent social ecologies of alternatives (Ramos 2010).

More broadly, organizations and initiatives exist in a living web of relationships,

which can include: clients / customers, suppliers, funding agencies, supporters, audience, board members, voting members, other like minded organizations within similar networks, etc. Initiatives can therefore be understood to exist within a social ecology of relationships. This broad social ecology is the environment that gives life to the initiative. While the initiative team and leadership must take responsibility for designing, steering and operating an initiative, all this is done within a relational and transactional set of niches.

A deep understanding of and engagement with this relational transactional niche is of the highest importance in considering the development and design of an initiative. Understanding the needs of the different stakeholders within the social ecology is a pathway towards designing platforms by which stakeholders can exchange and reciprocate value, and understand what needs to be designed to provide value for stakeholders.

Pattern recognition and new opportunities

The FAM approach connects strongly with key propositions made by Baron (2006), who argues that one of the key capacities that entrepreneurs successful rely on is a process of pattern recognition. According to him, three key factors are involved in enabling pattern recognition that allows entrepreneurs to "connect the dots" and discover and develop new business opportunities. He writes:

> "engaging in an active search for opportunities; alertness to opportunities (the capacity to recognize them when they emerge); and prior knowledge of a market, industry, or customers [is the] basis for recognizing new opportunities." (Baron 2006, p104)

Central to his line of thinking are two key propositions he makes: First, emerging opportunities arise from dynamic and complex socio-ecological processes. The process of social change itself is central to opportunity identification. In this regard pattern recognition of a socio-ecological nature, in particular the strategic foresight notion of "emerging issues" becomes important. The FAM approach scaffolds inquiry into socio-ecological change into the broader inquiry of opportunity mapping and initiative modeling. Secondly are the cognitive structures which entrepreneurs tacitly use as "templates" for new business opportunities, which include both "prototype" and "exemplar" models, are central to this pattern recognition (Baron 2006, p107-110). By reviewing global responses and the various 'templates' people employ the FAM approach can be seen as a way of discovering, reviewing, analogizing and adapting existing models as a form of opportunity recognition.

Overall the FAM approach is complementary to Barron's (2006) recognition that active search, alertness, and experience are part of the pattern recognition process. The FAM approach can be seen as a way of enhancing each of these three factors in the process of opportunity recognition and initiative design.

Conclusion

This paper has detailed the development of FAM, its methodology, two case examples in its use, and provided an extended discussion of key ideas that provide context for it.

So far the key outcomes from using FAM have been from developing a rich and rapid conceptual development of initiative models that address critical emerging issues and futures. It is a creative and critical thinking framework. And yet, much more work need to be done to put futures and foresight approaches into action-contexts, to strengthen our capacities in addressing the challenges we face in robust and effective ways.

In this spirit, a number of potential opportunities exist to apply the FAM approach to various areas.

Youth development - the early development of the FAM approach was done with young people, as young as 14. My experience working with young people taught me that, given permission to explore and ideate and with the right support, young people can develop innovative initiative ideas and inspire themselves. FAM has potential for youth development work, in building creative and critical thinking skills and building the confidence of young people in playing a vital role in social renewal.

Community action – the FAM approach is fundamentally about the empowerment of people, through teamwork, in the context of emerging futures and challenges. While FAM has been applied in community development settings, challenges exists in making FAM accessible, in providing support in localized settings, and turning diversity into an asset rather than a liability. Further work can be done to develop FAM programs that engenders innovative community action for change.

Social enterprise and innovation – FAM as an approach to ideation can be used for rapid / agile modeling of initiatives. While it is used to facilitate the process of initiative ideation. It can, however, also play the role of enhancing existing social enterprise's / social innovation engagement with emerging futures, making them more responsive to change and more relevant to different futures.

Service design – the FAM approach has strong overlaps with the emerging trans-disciplinary thinking and practice of service design. Core service design activities, such as the ideation of new service strategies, service processes and environments, and the incorporation of foresight research and service development overlaps with the FAM process (Kuosa 2012, p22), offering potential to use service design thinking as part of FAM or the use of FAM within service design consulting.

Public Policy – the FAM approach was applied to the context of public policy development and challenges for a class at the National University of Singapore, with good results. In teams students developed a suite of policy options in the context of emerging futures using the FAM approach. In this application of FAM, the Community of the Initiative was substituted with "stakeholders" and power-influence mapping was done. Policy options were developed (and wind-tunneled) as the 'initiative' in the context of political dynamics. Potential exists to apply FAM to policy development in the context of developing anticipatory governance and anticipatory policy formulation.

Transition Management – FAM has strong resemblances to the emerging body of literature related to transition management. In particular the cyclic iteration through an action learning or research cycle, but as well the emphasis on linking emerging futures and global responses with localized experimentation also resonates very strongly with the transition management concept of the 'arena' of action (Loorbach & Rotmans, 2010). FAM may hold some value for transition management

practitioners looking for frameworks that can be used for rapid ideation and complement communication.

Futures Research – where research projects have already developed robust understandings of change and emergence in particular areas, if there is a desire to apply this knowledge toward developing change strategies, FAM is ideal. With the hard work of futures research in place, FAM can be applied to facilitate the exploration of responses, analyze implementation contexts and develop policy options and action drawing upon the research already conduced.

Leadership – work after FAM ideation entails the potential implementation of FAM initiative models. However, as offered by an anonymous reviewer, this is not necessarily a "rational" challenge, but rather "a leadership challenge". Linking leadership and foresight literature with FAM may be the next step in developing "adaptive and non-rational" approaches to leadership that leads to effective actions and implementations.

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Notes

1 It should be pointed out that this is the rather bold conclusion this team came to. It does not amount to a truth claim, but is rather the prefered strategic option that emerged for the group, built around assumptions. As pointed out by a colleague who reviewed the paper / Josh Floyd: [the proposition for this enterprise is] "strongly dependent on what one means by efficient (and sustainable!) e.g. it's not particularly efficient financially, requiring very high oil prices to be viable, due to capital intensive nature of production. I believe that, depending on cultivation regime, net energy yield is also lower than other biofuels, even if area-based yields are

higher." This strategy, however, has already been picked up by other enterprises, that have also studied and researched emerging opportunities. See: http://www.abc.net.au/news/2013-06-22/algae-farmers-spruik-potential-for-wa-biofuel-boom/4769326 and http://www.sciencewa.net.au/topics/industry-a-resources/item/2050-biofuel%E2%80%99s-big-future-illustrated-by-expert.html

2 As pointed out by a colleague who reviewed the paper / Josh Floyd: "..there are fundamental limits to this that mean any serious effort to address the issue of e-waste requires that the way materials are combined in the first place at the design stage needs to be the principal starting point."

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