

Scenario Art: A New Futures Method that Uses Art to Support Decision-Making for Sustainable Development¹

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Abstract

This paper introduces a new futures method, Scenario Art, which involves the use of visual representations of future scenarios to support decision-making towards sustainable development. Based on preliminary investigations it is proposed that Scenario Art has the capacity to increase a person's level of empathy, creativity and responsiveness to risk; and on this basis has great potential to facilitate decision-making processes and outcomes that demonstrate sustainable thinking. To illustrate the application and support the proposed value of Scenario Art an overview of a recent futures workshop, which applied the new method, is provided. This paper aims to inspire the further development and utilisation of Scenario Art.

Keywords: Scenario Art, Art, Futures, Decision-Making Processes, Sustainability, Sustainable Futures, Empathy, Neurology, Visioning, Scenarios, Mining, Minerals

Introduction

Scenario Art is a new futures method that involves the use of visual representations of future scenarios, alongside a process of asking a series of strategic questions to stakeholders in the issue at hand. The primary purpose of Scenario Art is to catalyse sustainable decision-making processes by evoking emotion and empathy, increasing responsiveness to risk, stimulating creative and innovative thinking and breaking down stakeholder barriers. It is proposed that Scenario Art, when coupled with decision-making processes that may have long-term implications on the sustainability of social, political, natural and/or economic environments, will facilitate a transition to sustainable futures. Whilst further testing and refining of this method are needed, the results of a recent application of the method provide a strong case to justify further exploration of its value.

Scenario Art was originally designed to support a futures workshop, *Vision 2040: Innovation in Mining and Minerals*, from hereon referred to as *Vision 2040*, which formed

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part of a program of research supported by the CSIRO (Commonwealth Scientific Industrial Research Organisation) Mineral Futures Collaboration Cluster (2009–2012)². One of the Cluster’s strategic goals is focused on delivering long-term national benefit from Australia’s mineral’s industry. *Vision 2040* was specifically aimed at developing the beginnings of a shared vision and strategy for Australia’s mineral futures, through exploring plausible scenarios. The research team initially identified that art would be a useful tool to stimulate creative and innovative long-term thinking at this workshop. It was later realised, on applying Scenario Art at the workshop, that this method may offer far greater potential in facilitating sustainable futures.

The Case for Scenario Art

Addressing the need for greater depth in futures work

The decision to develop Scenario Art as a robust method was largely motivated by an appreciation that existing futures methods are not generating the results initially anticipated by many in the futures field. The decision was greatly influenced by a recent analysis and evaluation of the impact of futures work on public policy in the context of responding to climate change, which concluded that,

“Futures work is currently falling well short of its potential to achieve influence over public policy and practice, and thereby contribute to a transition to a sustainable society” (Riedy, 2009, p.41).

Riedy (2009) proposed a few reasons for this shortfall, including:

- much futures work remains shallow, focussing on linear trends and lacking depth; and
- most futures work runs up against a dominant western worldview in which short-term thinking is entrenched.

It is proposed that Scenario Art addresses these shortfalls by:

- encouraging and helping participants to appreciate and access the world-view and myth levels of Inayatullah’s causal layered analysis (CLA) ladder (Inayatullah, 1998);
- challenging existing unsustainable world-views; and
- encouraging and helping participants to contemplate long-term impacts of decisions and actions and to respond responsibly (in regards to current and future generations).

Critically, Scenario Art is a thoughtful response to the call for “methodological renewal to improve the depth and criticality of futures work” (Riedy, 2009, p.53). It is acknowledged that while existing futures methods and theory, such as CLA (Inayatullah, 1998) and Integral Futures (Slaughter, 1991), are at the core of this methodological renewal, complementary methods and techniques are needed to increase the accessibility and impact of these existing approaches.

Great consideration has been afforded to the existing large palette of futures methods and techniques. In adding Scenario Art to this palette I was cautious not to contribute to the existing “methodological chaos” of futures methods, as Bradfield (2005, p.795) describes.

The decision to offer this method has been evaluated on the potential of Scenario Art to make long-term thinking easier and bring greater depth to the utilisation of existing futures methods. It is proposed that Scenario Art may increase the accessibility of existing futures methods and enable greater insights to be drawn by helping to draw out and challenge worldviews and generate meaningful discussion around sustainability. The proposed capacity of Scenario Art to do this is based largely on arts ability to spark creativity, innovation and empathy. This is explored in section 5.

Addressing the need for more accessible and stimulating scenario's

Further to the shortfalls of futures work as a whole, identified in section 2.1, are specific methodological shortfalls of scenario building. The 'For-Learn On-Line Foresight Guide', part of a European Commission Programme, which is a cornerstone of the European Science and Technology Foresight Knowledge Sharing Platform, identified the following (European Union, 2012):

- Scenarios can be presented in extremely technical and formalised ways, and may be hard for ordinary readers to assimilate.
- Scenarios can be mistaken for predictions or forecasts of the future. This misconception sometimes hinders the adoption and use of scenario building.
- Scenario building is not the complete answer to futures thinking. Environmental scanning and monitoring are needed to round out the toolkit of external environmental analysis.

Scenario Art makes a start at addressing these three identified shortfalls of scenario building. It is proposed that Scenario Art may,

- provide opportunities to communicate technical information in creative ways that may be easier for users to absorb;
- reduce the risk that participants view and use scenarios as predictions; and
- encourage and enable environmental scanning and analysis.

Sections 4 and 5 of this article outline the results of *Vision 2040* and provide preliminary justifications for these results, which support the propositions made so far.

A need to inspire new and sustainable public governance systems

A significant contributing factor to the widely recognised threat to the sustainability of human civilisation is public governance. Camilleri and Falk (2009, p. 3) define 'public governance' as "the legal and political arrangements that underpin human responses to physical and social challenges". They propose that, "the principles around which public governance has been structured during the Modern epoch have reached their limits" (2009, p.3). This proposition is supported by the political instability and policies of the twenty-first century that reflect short-term thinking and a grave lack of appreciation for the Earth's limited supply of natural resources. In light of this, an urgent reawakening is needed. Current public governance systems must be questioned and redesigned.

Causing a significant shift in public governance will require bringing to light, challenging and re-thinking the worldviews on which current public governance systems and related challenges are based, alongside the myths underlying these. Scenario Art may assist this shift by utilising its capacity to reveal and challenge the

values and world-views upon which many of today's challenges are rooted. Through its capacity to evoke emotion and empathy, and draw to light the impact that our decisions made today may have on the future, Scenario Art offers great potential to inspire new world-views that demonstrate sustainable and equitable thinking. The capacity of Scenario Art to achieve this goal is explored in section 5.

The results of *Vision 2040*, alongside preliminary investigations into these results, excite the proposition that Scenario Art may be more effective than non-art based approaches in increasing responsiveness to systems that are unsustainable. Specifically, the results of applying Scenario Art at *Vision 2040*, suggest that participants' awareness and appreciation of the unsustainable nature of current public governance systems increased. Further exploration and testing of this proposition would be a valuable contribution to the futures field, and is needed to enable more definitive statements and wise recommendations. As a next step it would be interesting and useful to evaluate Scenario Art against Slaughter's four Integral Futures quadrants, as the preliminary justifications postulate a physiological (upper right) correlation with psychological (upper-left) experiences, as well as group processes (lower-left).

Based on the above, and appreciating the preliminary nature of this work, it is hypothesised that contemplating artworks that expose unjust outcomes of decisions, through figurative and environmental images experiencing harm and distress, may activate the participant's mirroring mechanisms of the brain, causing the participant to empathise with the people and environment that feel the effects of the decisions in question through embodied simulation, which may lead to decisions that demonstrate greater value for inter- and intra-general equity. This hypothesis is explored at section 5.1.

It is further hypothesised that the process of quiet reflection on visual representations of future scenarios provides an opportunity for self-development. Contemplating the self is an important step in uncovering and evaluating existing worldviews and inspiring new ones that are rooted on social and environmental ethics (i.e., ones that will set us on the path toward futures that can be sustained). In this way, Scenario Art may enable responsible leadership by providing decision-makers with an opportunity to consider the long-term implications of their decisions. Whilst responsible leadership is a reasonable expectation, today's institutional frameworks that hold political and corporate decision-makers accountable to short-term policy objectives and short-term stakeholder profits respectively, are a significant barrier to having such expectations met.

The Scenario Art Method

1. Artworks of the subject scenarios are created by the artist.

The scenarios may describe the social, political, economic and natural environments of the scenarios.

2. Facilitator/Artist³ explains the purpose and value of analysing the artworks to the participants.

This could involve introducing and discussing the notion of the 'death of the author'. The notion of the 'death of the author' (Foucault, 2002) is a philosophical concept that relates experience to perception. In the context of

art, this concept communicates the notion that the person who experiences an artwork creates meaning in the work, and that this meaning is just as relevant (and arguably more important) as the meaning intended, if any, by the artist. The purpose of introducing this concept is to encourage participants to appreciate that their interpretations of the artworks are valid and valuable.

3. Facilitator/Artist presents and describes the Scenario Artworks⁴.

The facilitator or artist details the key characteristics of the scenarios to a sufficient extent but does not draw out the implications of these characteristics or make judgment on the scenarios (i.e., the facilitator/artist should not analyse or evaluate the artworks; this will be a task for the participants).

4. Facilitator/Artist encourages the participants to individually reflect on the Scenario Art and answer several strategic questions⁵ (roughly 5-10 minutes).

The strategic questions should encourage participants to immerse themselves in the scenarios. The questions are 'strategic' in that they aim to generate responses that will enable insights to be drawn into the world-views underpinning the issues at hand and be valuable to the task of developing a shared vision. Some useful questions may include: 'What aspects of the artwork resonate with you?'; 'What are the challenges and opportunities you see in the scenario?'; 'What role would you like to be playing in this scenario?', and 'How could you go about achieving this?'

It is important to encourage participants to do this step on their own, preferably in silence. This step enables the participant to reflect on their experiences and contemplate their values and ideals. It is desirable to capture these insights. This could be done by an observer taking notes during later discussions or through worksheets that participants fill out during this interpretation/reflection step.

5. Facilitator/Artist opens the interpretation/reflection activity up for group discussion (15-20 minutes).

In the case of a group larger than eight it is recommended that these discussions initially occur in small groups of roughly five to eight people. Key issues/ideas that arise from this discussion can then be shared in the larger group. The facilitator/artist should work to ensure that each participant has an opportunity to contribute.

Case Study: *Vision 2040*

Background

Vision 2040, which ran over two days in Brisbane, Australia 14-15 November 2010, formed part of the Commodity Futures stream in a broader program of research supported by the CSIRO Mineral Futures Collaboration Cluster (2009–2012) within the Minerals Down Under Flagship. This research is addressing current and foreseeable sustainability challenges facing the Australian minerals

industry. The specific aim of *Vision 2040* was to bring together a range of mining stakeholders to work together on developing a shared vision and strategy to deliver long-term national benefit from Australia's minerals. The application and results of using Scenario Art at *Vision 2040* are discussed and evaluated below. Insights into the results are drawn through an analysis of workshop outputs and supporting art and neurological theories. These insights have led to the development of several hypotheses, which are identified throughout this report.

Scenario Art was used on the second day of the two-day workshop. It was used to introduce four different scenarios to the thirty participants. The participants represented a variety of mining stakeholder groups including industry, government, research and one high school student. Three of the four scenarios reflected plausible futures and were based on research conducted by the World Economic Forum during 2009 (World Economic Forum, 2010). The fourth was based on 'The Great Transition' scenario (Raskin et al, 2002), which reflects a socially and environmentally sustainable future. This scenario emphasises human agency and reflexive capacity; the capacity to perceive a desirable future and respond to environmental forces so to achieve that vision.

The use of Scenario Art aimed to bring the scenarios alive by encouraging and enabling the participants to imagine themselves in these different worlds. Leah Mason, Senior Research Consultant at the Institute for Sustainable Futures explains that, "using art to show possibilities for the long-term future enables people to see and discuss issues in concrete terms" (UTS media article, 2011). On top of facilitating discussion around the scenarios, Scenario Art was used to engage the creativity and imagination of the participants, and provoke innovative responses to the scenarios. These responses then fed into the development of the vision and strategy, which demonstrates foresight and sustainable thinking.

For further background to *Vision 2040* and a detailed overview of the workshop design and output please refer to the recent report in the Journal of Futures Studies titled 'A Vision for Mining and Minerals: Applying Causal Layered Analysis and Art' (Lederwasch et al. 2011) or alternatively the *Vision 2040* project reports⁶.

Creating scenario art for Vision 2040

Researchers from the Institute for Sustainable Futures, who led the workshop, contextualised four existing global scenarios by evaluating the role Australia would be likely to play in the scenarios. As previously identified, three of the scenarios were developed by the World Economic Forum in 2009. This involved a year-long international consultation process with hundreds of mining stakeholders to determine plausible global minerals futures.

The artist then took the Australian contextualised scenarios, pulled out the key defining elements of each of the scenarios and represented these through images. The works are largely and deliberately metaphoric and symbolic. The artworks were drawn on recycled cupboard doors to encourage ideas for creative use of resources. Figure 1 presents one of the four scenarios, 'Rebased Globalism'. There was general consensus amongst participants that this scenario represents the most likely future if business as usual is to continue out in the decades ahead.

The artist's interpretation of the images in the artwork is provided below. The artist's interpretation is included for the purpose of illustrating how issues can be visually represented.



Figure 1. Artist's (Aleta Lederwasch) interpretation of the 'Rebased Globalism' scenario

Artist's interpretation of 'Rebased Globalism'

The top of the artwork is covered in reaching arms between nation states, representing the fully globalised world and complex networks.

The large hands reaching toward the Australian land, illustrate the important role that Australia is playing in the global arena. Australia is realizing huge wealth from its mineral endowment.

Slightly right from the centre, the Australian Government has its mind fixated on the economic, political and resource issues outside Australia and has its back to the social and environmental issues arising within Australia. The detrimental social and environmental changes that are occurring and becoming more intense are illustrated through the desperate and bleak figures in the bottom right hand corner and the dying landscape to the right.

At the top of the artwork is a miner on a tipping ladder, representing mining companies who are aware of the economic, social and environmental risks of continuing traditional mining practices and yet continue to take great risks to meet increasing global demand.

The robotic figures in the middle, the yellow machinery self-powered by solar concentrators and the leaching technologies in the far right, represent technological advancement and improved production efficiencies that have been developed in response to the realization of falling ore grades and qualities.

The few happy faces spread only across the faces of the mining industry that is receiving the bulk of Australia's mineral wealth, as the government has made no attempt to facilitate equitable distribution of Australia's mineral wealth.

At the bottom centre, a child, representing youth, is terrified of its future but is holding on to hope represented by the child's distressed face and the action of clinging on to the life left in the withering tree.

Applying scenario art at Vision 2040

The method detailed at Section 3 was followed. Participants were divided into five groups of roughly six people and each group was provided with one of the four artworks. The participants were asked to contemplate the artworks on their own, in silence, and to then answer three questions; these were, to identify what aspects of the scenario resonated with them, and what opportunities and challenges they could see in the scenario allocated to their group. Responses were then shared and discussed in the small groups. A larger group discussion followed, which enabled the group as a whole to engage in a meaningful and deep discussion around the key issues facing the industry and the key elements for a shared vision.

Results of using scenario art at Vision 2040

The artworks provided an opportunity for participants to readily access and engage with the future scenarios in their own way.

Table 1. *Survey responses following Vision 2040 Workshop*

Issues recognised by participants	Participant responses via survey and feedback forms
"Future generations will have to deal with the legacy of current mining activity."	14% of respondents were concerned about the need to preserve agricultural land and to avoid conflicting land uses.
"Mining in particular areas impacts different sectors and the taxes collected from the enterprise should in part be apportioned to providing specific benefit."	24% of respondents were concerned about the need to manage 'boom' and 'bust' cycles, and a 'two speed economy' (Dutch disease).
"... more benefits if there was better planned and more strategic development of our reserves."	21% of respondents believed that minerals and mining contributed to losses in other sectors.

This contrasted the experience of the earlier World Economic Forum workshop, held in September 2010⁷, where the same scenarios were presented in a plenary session using a corporate video format. On this occasion, there was much more discussion on whether each scenario was in fact plausible or not, rather than on exploring the implications of the scenarios and the opportunities that each presents.

The use of Scenario Art evoked emotion, creativity and innovative ideas - all of which are highly valuable in transitioning to sustainable futures. Additionally, the thirty participants shared their personal perspectives and creative ideas, and importantly, expressed a great willingness and interest to learn of alternative perspectives. This outcome is greatly valuable to processes that are intended to be collaborative and that involve multi-stakeholder groups, particularly when competing interests exist. These experiences led to the following hypotheses:

- **Scenario Art breaks down barriers between and within stakeholder groups**

Detail: When the activity of art analysis is a foreign or uncommon exercise to the decision-makers participating in the decision-making process it removes an element of expertise, and thereby places all participants on a level playing field. This creates a collaborative atmosphere in which participants feel more comfortable and willing to contribute to discussion outside their field of expertise in the workshop and beyond (for example when talking about the project subsequently).

- **Scenario Art increases an appreciation of and interest in alternative perspectives**

Detail: This hypothesis closely relates to the one above however goes further to propose that Scenario Art not only causes an increased willingness and interest to share alternative perspectives but respect and consideration of alternative perspectives. Appreciating different perspectives is highly valuable in futures work that is tasked with addressing sustainability challenges, as it encourages different ways of knowing. Appreciating different ways of knowing will necessarily increase ones capacity to draw different meanings into an object or issue, to undertake comprehensive evaluations of root causes of problems and challenges, and to subsequently develop shared visions and strategies for achieving sustainable futures.

Sharing multiple interpretations of the Scenario Art with all participants may help the group identify common values, ideas and interests of the participants, which may help to identify common and complementary goals and opportunities. It is proposed that this may assist the development of strategies that offer maximum value to maximum stakeholders in the challenge at hand.

Neurological Insights into the Potential of Scenario Art to Facilitate Sustainable Futures

Existing literature on art therapy and neurological processes, involved when the brain is experiencing art, provide insight into the results of *Vision 2040*, and support the potential value of Scenario Art to assist the futures field in achieving sustainable futures. Of particular interest is the literature that provides insights into the capacity of art to:

- generate empathetic feelings;
- increase responsiveness to risk; and
- activate innovative and creative responses.

An overview and discussion of these capacities is now provided.

Art's ability to generate empathetic feelings

The Painting will move the soul of the beholder when the people painted there each clearly shows the movement of his own soul...we weep with the weeping, laugh with the laughing, and grieve with the grieving. These movements of the soul are known from the movements of the body (Alberti, 1972, p. 80).

The embodied phenomena at play in the above quote has gained the interest of neuroscientists who attempt to gain insight into the neurological processes that are stimulated when art is being contemplated (e.g. Freedberg & Vittorio, 2007; Livingstone, 2002; Ramachandran, 1999; Solso, 1996; Zeki, 1999 & 2002). The work of Freedberg and Vittorio (2007) provides insight into the empathetic feelings generated by neural mirroring mechanisms.

As put by Freedberg and Vittorio (2007, p.197),

Most spectators of works of art are familiar with feelings of empathetic engagement with what they see in the work itself. These feelings might consist of the empathetic understanding of the emotions of represented others, or most strikingly, of a sense of inward imitation of the observed actions of others in pictures...

Freedberg and Vittorio (2007) support the above proposition through discussing reported experiences of bodily empathy by viewers of art. Detailed descriptions of responses to works such as Michelangelo's *Slave called Atlas*, and Goya's *Los Desastres de la Guerra*, demonstrate the ability of art to evoke incredibly intense emotional feelings and cause the body to physically feel the experience of the subjects in the art works. On assessment of the reported responses to Michelangelo's *Slave called Atlas*, Freedberg and Vittorio (2007, p.197) recognise that,

Responses often take the form of felt activation of the muscles that appear to be activated within the sculpture itself, as if in perfect consonance with Michelangelo's intention of showing his figures struggle to free themselves from their material matrix.

In the case of Goya's *Los Desastres de la Guerra*, empathy is stimulated by physical responses that mirror those parts of the body of the characters in the painting that are threatened and constrained. This physical empathy then causes emotional empathy, whereby the viewer feels the emotional consequences of the body experiencing the damage being threatened.

These insights drawn by Freedberg and Vittorio (2007) support the proposition that coupling art experiences with decision-making processes, whose outcomes have foreseeable long-term consequences, will increase the occurrence of decision outcomes that advance sustainable futures, on the basis that the physical and emotional implications of the people who are affected by the decision outcomes are felt by the decision-makers (if they are the participants) and thus influence the decisions. In a positive light, experiencing the well-being of characters and environments that exists in preferred futures may motivate thought, decisions and actions toward achieving such futures.

Responsiveness to risk

Monti et al. (2006) provide an overview and assessment of the results of a study that gathered data on the efficacy of mindfulness-based art therapy. This study involved a psychosocial group intervention for cancer patients using art to decrease symptoms of distress and improve key aspects of health-related quality of life. In evaluating the results of the study Monti et al. (2006, p.364) propose that,

The stimulation of art media in art tasks may activate the right hemisphere⁸ via kinaesthetic and sensory activity, which leads to greater awareness of

different aspects of threatening events, including emotional responses.

Whilst further research is needed to support the above proposition, it provokes thought on the value of Scenario Art in the context of decision-making processes that are responding to challenges that involve significant elements of risk – such as political responses to anthropogenic greenhouse gases, peak oil, water scarcity, food shortages, increasing energy demands etc.

In the context of *Vision 2040*, risk included environmental and social risks of continuing traditional mining techniques. Communicating these risks through art had the effect of generating greater thought and discussion around issues of sustainability, including intergenerational equity, equitable distribution of wealth, and the destructive impact that traditional mining processes are having on the natural environment and non-mining industries. It is proposed that the capacity of Scenario Art to increase awareness and responsiveness to risk during decision-making processes will increase the likelihood of decisions that respond to real and perceived risks in a meaningful way and that demonstrate an appreciation of responsibilities to current and future generations.

Activate innovative and creative responses

The value of Scenario Art largely rests in the capacity of art to engage the imagination and creative abilities of the brain. Engaging the imagination and our creative abilities increases our capacity to generate innovative and creative responses (thoughts, discussions and decisions), which is invaluable in responding to challenges that require a significant shift in public governance systems and world-views. The results of *Vision 2040* support this proposition.

There is great variability in how humans perceive their surroundings and thus responses to them. Responsible for our perceptual capabilities is the brain, which has been identified as the most variable and fastest evolving organ (Zeki, 2001). Zeki, professor of Neurobiology at the University College London, who specialises in studying the visual brain, identifies that art is an expression of the variability of the brain as is our unique perceptions and responses to art. Further, Zeki (2001) identifies that the variability of our brain is a key factor in the further evolution of human societies. Zeki's work stimulates the thought that through arts capacity to generate and arouse a rich spectrum of unique responses, art has potential to catalyse creative and innovative responses to current challenges.

Artist Paul Klee once wrote: “Art does not reproduce the visible; it makes things visible” (Zeki, 2001, p.51-52). Sharing responses to visual art, from a variety of people, particularly from different stakeholder perspectives, has great potential to increase the breadth and depth of the pool of thoughts and ideas for responding to sustainability challenges. With different perceptions of art and unique perspectives being shared, alongside other conditions, such as having adequate time and an effective facilitator, new creative and innovative ideas can be inspired. A differentiated but additional value of this is multi-stakeholder buy in to a shared vision and strategy.

Conclusion

Existing art and neurological theory support the proposition that Scenario Art

offers great potential to facilitate sustainable decision-making processes. The value of Scenario Art is grounded on its capacity to evoke empathetic feelings for the characters and natural environment in the artworks, to stimulate innovative and creative thought, and to increase levels of responsiveness to risk. These outcomes are all highly valuable in realising sustainable futures. The value of Scenario Art is also supported by the results of *Vision 2040*, which has led to several hypotheses on Scenario Art's capacity to: break down barriers within and between stakeholders; and to increase one's willingness to share and consider alternative perspectives to an issue.

The potential value that Scenario Art offers for transitioning to sustainable futures provides a strong case for continued research into the practicalities and effectiveness of this new method; particularly in the context of decision-making processes that are likely to have significant long-term implications on sustainable futures.

While the research is propositional, it opens up a rich domain of inquiry, in theory and practice, which offers great potential for both the field and humanity. The preliminary investigations and results offer an opening to futures research, to explore the connection between art and physiological response, embodiment, and the cultivation of wise futures.

The short poem below describes the value of contemplating art in affecting our decisions and subsequent actions. It acknowledges the neurological processes that occur in experiencing art, supports the hypotheses made in this paper, and highlights the ability of art to challenge current worldviews and cause a reawakening from current ways of thinking that reflect unsustainable and short-term pursuits.

*In art we embody the other's state; whilst our 'self' experiences dissection.
In art we gain new eyes, new thoughts, affecting our direction⁹.*



Figure 2. The great transition scenario used at *Vision 2040*

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Notes

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2 The CSIRO is Australia's Commonwealth Scientific and Industrial Research Organisation. Information on the CSIRO Mineral Futures Collaboration Cluster (2009–2012) can be found at: www.csiro.au/partnerships/mineral-futures-collaboration-cluster.html

3 It should be noted that the artist that created the *Vision 2040* scenario artworks was part of the research team who designed and delivered the workshop and that this artist/researcher facilitated this exercise. On reflection of the success of this method at *Vision 2040* one of the researchers identified that a contributing factor may have been the rapport that the artist/researcher had built with the participants previous to the exercise. Whilst this is a valid reflection it has not been explored in this article.

4 At least three different scenarios should be considered. At *Vision 2040* four scenarios were used.

5 Strategic Questioning is a special type of questioning and listening, which was developed by Fran Peavy. Fran Peavy's manual for strategic questioning is an invaluable policy, business and life tool. It can be found at http://www.thechangeagency.org/_dbase_upl/strat_questioning_man.pdf

6 i) <http://www.csiro.au/Organisation-Structure/Flagships/Minerals-Down-Under-Flagship/mineral-futures-collaboration-cluster/Vision-2040.aspx>

- ii) <http://www.csiro.au/Organisation-Structure/Flagships/Minerals-Down-Under-Flagship/mineral-futures-collaboration-cluster/Mason-et-al-report.aspx>
- 7 WEF Future Scenarios Workshop Summary, September 2010, Melbourne
http://resourcefutures.net.au/sites/default/files/WEF_Australian_Workshop_Session_Summary.pdf
- 8 Neurological studies demonstrate that contemplating art activates a specific part of the brain, commonly referred to as the 'visual brain' (e.g. Zeki, 2001), which is located in the brain's right hemisphere (Lusebrink, 2004).
- 9 Written by the author of this article, inspired by this research

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