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# THE FUTURES WHEEL

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# THE FUTURES WHEEL

by

**Jerome C. Glenn**

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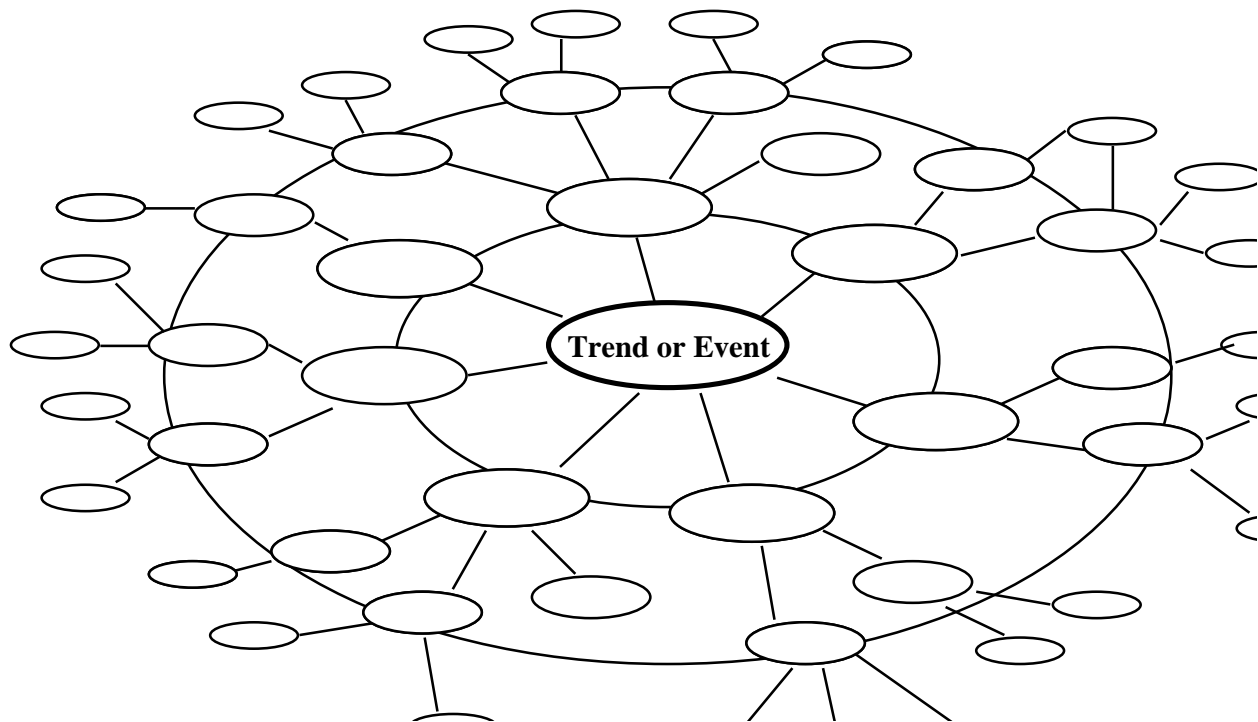
## Acknowledgments

The paper has been enhanced by the special contributions of Martin Potucek, Director, Institute of Sociological Studies of Charles University, Prague, The Czech; Pierre Benckendorff, James Cook University, Australia; David Pearce Snyder, President of the futurist consulting firm Snyder Family Enterprise, Bethesda, Md. and Dr. Joseph Coates, President of Coates & Jarratt of Washington, D.C. and member of the Steering Committee for the Millennium Project Feasibility Study. I wish to acknowledge helpful comments and insightful remarks provided by the peer reviewers of the first draft report. In particular, the suggestions and insightful comments furnished by Noriaki Funada and Hirotohi Komoda, Densu Institute of Human Studies, Tokyo, Japan; Bernard Cazes, Commissariat Général du Plan, Office of the Prime Minister, France; Chris Dede, Professor, George Mason University; Terrance O'Donnell, Professor, Salem State College; and Peter Bishop, Professor, Program for the Study of the Future, University of Houston. And finally, special thanks to Elizabeth Florescu, Neda Zawahri, and Kawthar Nakayima for project support, Barry Bluestein for research and computer operations, Choungkyu Ryu for graphic support, Sheila Harty for editing, and John Young for proof reading.

## I. HISTORY OF THE METHOD

The Futures Wheel is a method for identifying and packaging primary, secondary, and tertiary consequences of trends, events, emerging issues, and future possible decisions. It was invented in 1971 by Jerome C. Glenn, then a student at the Antioch Graduate School of Education, now called Antioch University New England. It was spread by workshops on futuristic curriculum development conducted by the Program for the Study of the Future, School of Education, University of Massachusetts<sup>1</sup> during the early 1970s, and shortly thereafter, by futurist trainers and consultants as a method for engaging workshop participants in thinking about future consequences, and decisionmakers for input to their policy analysis process and forecasting. The method first entered the literature in the Spring of 1972.<sup>2</sup> Subsequent variations of the Futures Wheel have been called the *Implementation Wheel*, *Impact Wheel*, *Mind Mapping*, and *Webbing*. These variations have been used by futurists in a wide variety of situations. Although the Futures Wheel is a simple technique, requiring only blank paper, a pen, and one or more fertile minds, it is also an extremely powerful method of exploring the future. The Futures Wheel is currently used by futurists, teachers of futures courses, corporate planners, and public policy advisors throughout the world to help identify potential problems and opportunities, and new markets, products, and services; and to assess alternative tactics and strategies.<sup>3</sup>

**Figure 1. Basic Futures Wheel**



## II. DESCRIPTION OF THE METHOD

The Futures Wheel is a way of organizing thinking and questioning about the future—a kind of structured brainstorming. The name of a trend or event is written in the middle of a piece of paper; then small spokes are drawn wheel-like from the center. Primary impacts or consequences<sup>4</sup> are written at the end of each spoke. Next, the secondary impacts of each primary impact form a second ring of the wheel. This ripple effect continues until a useful picture of the implications of the event or trend is clear.

The Futures Wheel is most commonly used to:

- think through possible impacts of current trends or potential future events
- organize thoughts about future events or trends
- create forecasts within alternative scenarios
- show complex interrelationships
- display other futures research
- develop multi-concepts of the initial concept of the trend or event
- introduce futures thinking in a group context
- engage workshop participants into thinking together about the future
- nurture a futures-conscious perspective
- aid in group brainstorming
- help prevent being “blindsided” by surprises

The original Futures Wheel is one of the most commonly used methods among futurists, because it is an extremely easy way to engage people's thinking about the future. Futurists find it easy to use the wheel to think through the implications of, and organize their thoughts about, possible future events or trends. As the least expensive technique to use, it's also flexible for use in advanced situations as well as in primary school classrooms.<sup>5</sup> After identifying trends or possible future events, some futurists ask their clients, "If this event occurs, then what happens next?" Or they may ask, "What necessarily goes with this event or trend?" Or, "What are the impacts or consequences?" These impacts compose a mental map of the future, acting as a feedback mechanism to stimulate new thinking.

The Futures Wheel has been used in a broad variety of situations and subject. Here is a sample available on the Internet:

Futures Wheel on European Integration

[http://www.uni-konstanz.de/FuF/Verwiss/Alber/potucek/Futures\\_Wheel\\_on\\_European\\_Integration.pdf](http://www.uni-konstanz.de/FuF/Verwiss/Alber/potucek/Futures_Wheel_on_European_Integration.pdf)

South Africa's Western Cape of Provincial Foresight Coordinator Futures Wheel report

published 23 November 2007 and available at:  
[http://cofisa.org.za/pdfs/report\\_1gfw\\_wc\\_2007.pdf](http://cofisa.org.za/pdfs/report_1gfw_wc_2007.pdf)

Middle East Peace Scenarios study <http://www.millennium-project.org/millennium/MEPS.gif>

Use of a Futures Wheel for Atlantic Salmon in Canada:  
[http://www.pc.gc.ca/apprendre-learn/prof/sub/eco/itm5/fi-lr6/future-avenir\\_E.asp](http://www.pc.gc.ca/apprendre-learn/prof/sub/eco/itm5/fi-lr6/future-avenir_E.asp)

Sustainable Tourism <http://www.besteducationnetwork.org/ttvii/pdf/Benckendorff.pdf>

Strategic Thinking: The Futures Wheel  
<http://www.passig.com/vault/Lec-ExecutiveMba/FuturesWheel.pdf>

Futures Wheel, Global Education July 2008  
<http://www.globaleducation.edna.edu.au/globaled/go/cache/offonce/pid/1835;jsessionid=94A7956ADC4C218C2D43F84A608FD49E>

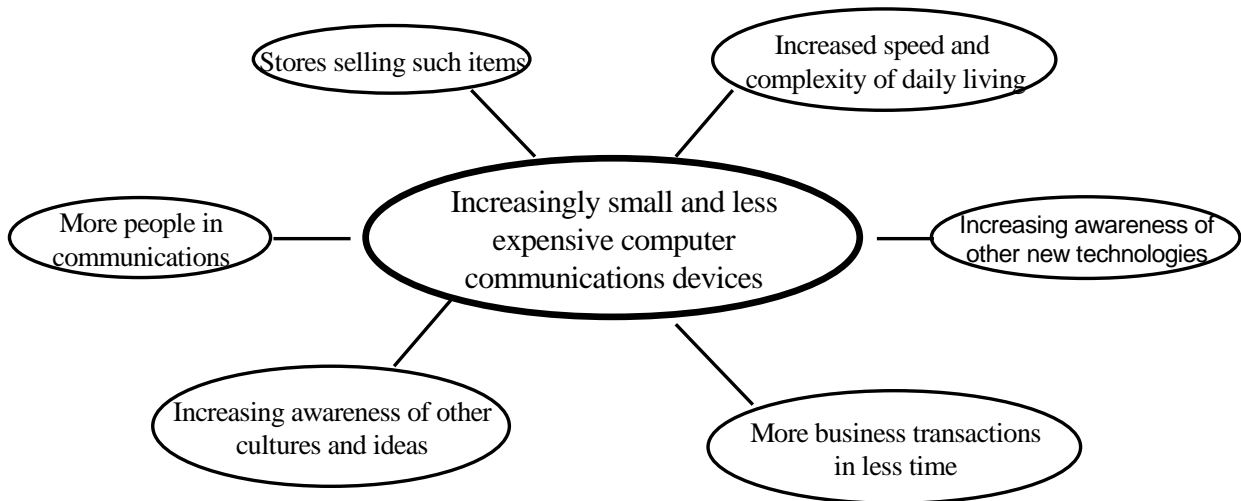
Personal Futures Wheel  
<http://www.personalfutures.net/sitebuildercontent/sitebuilderfiles/personalfutureswheelbooklet.docx>

### III. How to Do It

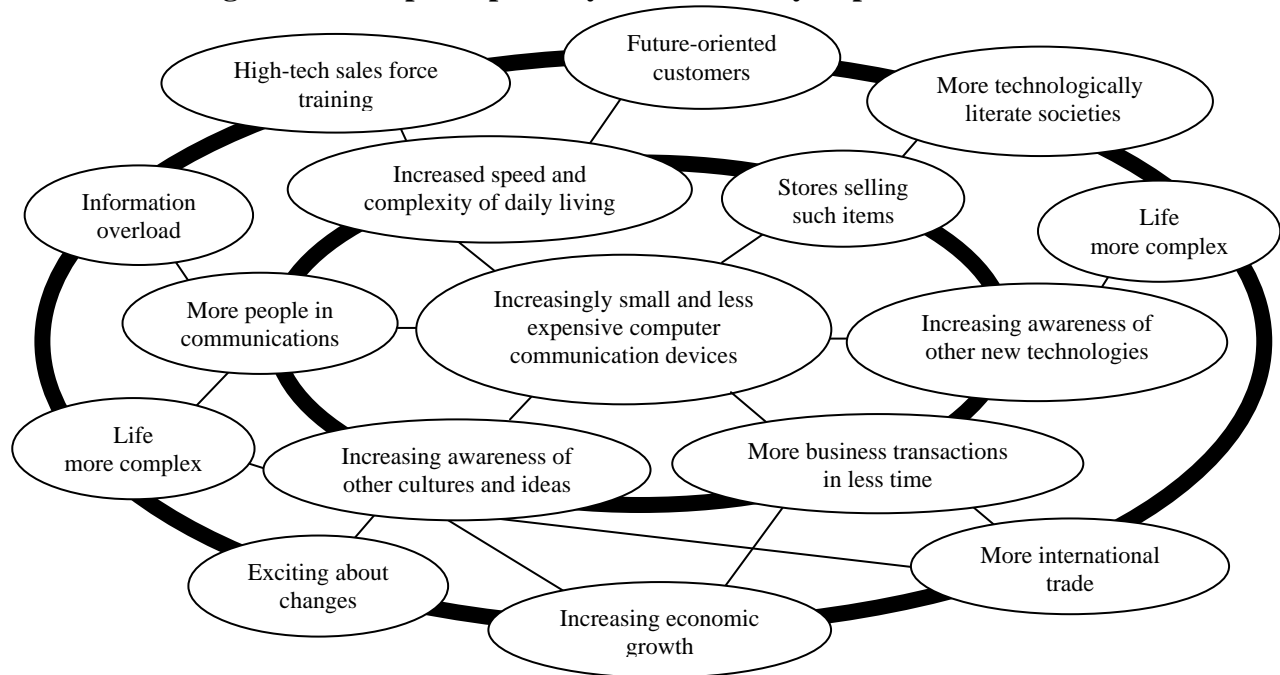
#### A. Basic Futures Wheel

A group decides to brainstorm about a trend, idea, future event, or value. The subject is written in the middle of a piece of paper, a flip chart, blackboard, on a computer with video projector, or in software. For example, one could do a Futures Wheel on the trend: Increasingly smaller and less expensive computer communications devices:

**Figure 2. Example of primary impacts of trend**



Next, the leader of the brainstorming session draws an oval around the item and asks the group to say what necessarily goes with this item. As impacts or consequences are offered by the group, the leader draws short wheel-like spokes out from the central oval and writes these impacts at the end of each spoke. For example:

**Figure 3. Example of primary and secondary impacts of a trend**

Ovals are drawn around each of the primary impacts. A ring can be drawn connecting the primary impacts. Next, the leader asks the group to forget about the original item in the middle of the Futures Wheel and to give the most likely impacts for each of the primary impacts of the first ring of primary consequences. As these secondary impacts are offered by the group, the leader draws two or three short spokes out from each of the ovals around the primary impacts to form a second ring and writes the names of these secondary impacts at the end of each spoke and draws ovals around them.

At first, this process goes quickly, with participants listing second, third, and fourth order consequences with little or no evaluation. After the group feels its thinking is represented on the wheel, they can evaluate and edit the wheel to be more "realistic." This step is similar to the clarification part in other brainstorming processes.

Alternatively, the impacts of an event or trend can be processed more slowly and deliberately by accepting criticism prior to entering anything on the wheel. In this approach, the group discusses the plausibility of every impact. If an impact is judged plausible by all, then it is entered; otherwise, not. Peter Wagschal refers to this as the "rule of unanimity." He argues that making sure everyone agrees is one way of ensuring that the impacts are reasonable: "The Futures Wheel process leads rapidly to unexpected consequences and, thus, requires a restriction on the group to prevent them from arriving at conclusions that are so speculative as to be of little worth in assessing alternative futures."<sup>6</sup>

Sometimes people may want to pursue sequential chains of impacts radiating out in a linear fashion from the initial trend or event. This variation is referred to as *Mind Mapping*. The Futures Wheel, in contrast, completes each ring in concentric circles. *Mind Mapping* is good for

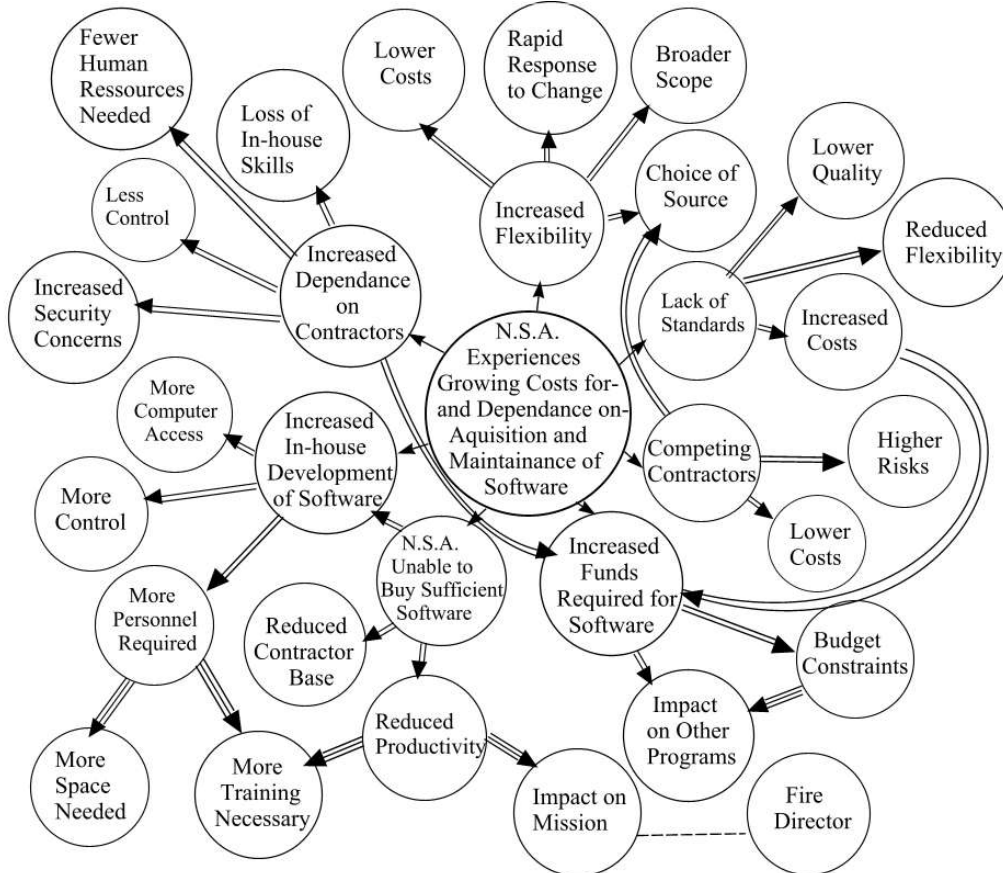


exploring one's thoughts, but does not necessarily make distinctions between primary, secondary, and tertiary impacts relative to other impacts radiating out in time.

### B. Distinguishing Between Consequences

The Futures Wheel can show distinctions between primary, secondary, and tertiary consequences in another way. Instead of rings, one can draw single lines from the central oval to the primary impacts, double lines between the primary and secondary impacts, and triple lines between the secondary and tertiary impacts. Using this approach, the Futures Wheel shown in Figure 4 illustrates the possibility of cross-linkage of impacts. For example, "increased funds required for software" is a *primary* consequence of the National Security Agency (NSA) experiencing "growing costs for and dependence on acquisition and maintenance of software," a *secondary* consequence of "increased dependency on contractors," and a *tertiary* consequence of "increased costs" in general.

**Figure 4. Variation of a Futures Wheel with Lines Indicating Sequence of Consequences**



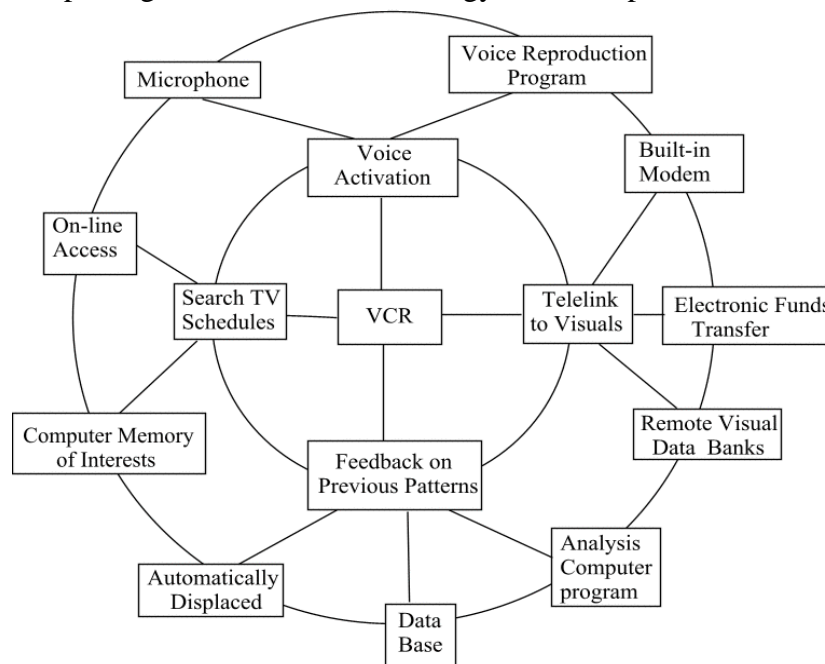
This Futures Wheel developed by Futurist David Snyder during consulting with the U.S. National Security Agency, illustrates the use of single, double, and triple lines to represent primary, secondary, and tertiary impacts (reprinted with permission of the author.)

### C. Creating Forecasts within Alternative Scenarios

The Futures Wheel can also be used as a method to create forecasts within alternative scenarios. In this application, one selects a scenario and an item in that scenario to explore. For example, one could forecast the future of the videocassette recorder (VCR) within the post-information age scenario of "conscious technology,"<sup>7</sup> (i.e., the Post-Information Age in which distinctions between technology and consciousness blur). One could imagine that the VCR is a conscious entity capable of communicating; then identify what features would be required to make this "real." The Futures Wheel could show a different variation of how to design the product as more "conscious" or more immediately responsive to the user. Each new product feature could have spokes that identify what new elements need to be incorporated in the new design.

In the Futures Wheel below (Fig. 5), the new designs for the VCR would include voice activation so that you could tell it what to do. This implies that a microphone and voice recognition program would be added to future VCRs. The future VCR might also search TV programs or remote visual data banks by computer communications and match your previously computer-stored preferences. If a fee were involved, payment by computer communications and electronic funds transfer could be accomplished. The VCR could also be equipped with a computer program to analyze your viewing patterns and make recommendations. This Futures Wheel shows the more "conscious" VCR of the future and what new product features are likely to bring it to market. This variation is similar in function to decision trees and morphological analysis (see paper by that title in this series).

**Figure 5. Example of a Futures Wheel by the author in *Future Mind* exploring the future of a technology within a specific scenario**



The Futures Polygon chapter in this series details other approaches to illustrating more detailed relationships among primary, secondary, tertiary, etc., consequences of events or trends.

#### **IV. STRENGTHS AND WEAKNESSES OF THE FUTURES WHEEL**

*Strengths.* The Futures Wheel is easy and enjoyable to use: no equipment or software is necessary. It gets people thinking about the future quickly and easily. It can be used at any point in the process of futures research to further understand events and trends. One futurist said that whenever he gets stuck in a strategic planning exercise, he does a Futures Wheel with the group and "everything starts flowing again."<sup>8</sup> It does not require advanced education or training and is easily transferred and adapted to a variety of situations. It is an easy means of diagnosing any group's collective thinking about the future.

The Futures Wheel can help identify positive and negative feedback loops. The higher-order consequences occasionally cycle back to the original item (e.g., more highways produce more drivers, produce more congestion, produce still more highways). This sequential process is a natural way to tie the Futures Wheel into the development of a formal systems model.

The Futures Wheel also helps move the mind from linear, hierarchical, and simplistic thinking to more network-oriented, organic, and complex thinking. As a result, it helps develop one's prospective attitude towards things, events, and people. It stimulates complex yet systematic thinking about a new development by emphasizing that the consequences do not happen all at once but are often linked over time in an evolutionary, interactive sequence. It gives a relatively clear, visual map of the potential complexity of interactions.<sup>9</sup>

The strengths of the Futures Wheel can also be weaknesses. As the rings of associations and implications increase, the complexity of the overview can become overwhelming, unless or until patterns emerge. One strength of the method is its ability to reveal such patterns, but the process may become too complex before pattern recognition occurs.

The Futures Wheel can also yield contradictory impacts. For example, in the Futures Wheel on the National Security Agency (see Fig. 4), one secondary consequence on the left side of the wheel is "more control" and another secondary consequence on the left side was "less control." These two impacts come from different primary consequences and, together, identify the critical issue of how management could react differently to the same event. Thus the ability to reveal contradiction may actually be a strength of the method.

*Weaknesses.* Like *Simulation Games*, *Delphis*, or *Syncons*, the Futures Wheel is no better than the collective judgments of those involved. It can make a group or individual think they understand causal relations between the items that emerge, when it is possible that they have only identified correlations. The Futures Wheel can be too simplistic at times, blurring the distinctions on the timing of one identified impact relative to other impacts or consequences and the probability of one consequence relative to others. The Futures Polygon addresses some of these weaknesses (see the following chapter).

One mistake is to see the possible impacts or consequences as truly representing what will happen. One might be tempted into believing that a single triggering fact is sufficient to generate an avalanche of impacts. Although such events do occur (such as attractors in chaos theory, which give rise to "butterfly effects" — how a seemingly insignificant event like a butterfly passing by can catch one's attention, changing the previously expected flow of events) the Futures Wheel can help to identify them. However, one must guard against making dangerously premature judgments.

The output of a Futures Wheel should be used as a basis for further thinking, for more systematic exploration, and for the application of other techniques for probing the future. Put simply, the Futures Wheel is a creative tool that generates input to futures thinking.<sup>10</sup>

If one is not disciplined in using the Futures Wheel, one can end up with some messy "intellectual spaghetti" that makes the implications of the trend or event more difficult to see clearly. The use of primary, secondary, etc. rings is one way to help prevent the problem; another is the use of the single, double, triple, etc., lines to organize the linkages among the impacts as in Figure 4.

## V. USE IN COMBINATION WITH OTHER METHODS

After trends or future events have been identified, a Futures Wheel can help identify the primary, secondary, and tertiary consequences of the trend or event. It organizes information already known, stimulates speculation, guides further exploration, and increases the understanding of the trend or event. Thus, it can augment trend impact analysis (TIA).

In cross-impact analysis, understanding the implications of specific future events is important. The Futures Wheel could be done on each event prior to doing cross-impact analysis. It may also help identify more significant trends underlying the forces of change originally identified.

The Futures Wheel can be used to analyze key components of a system prior to defining the systems model. For example, a Futures Wheel can help identify relations with other components, feedback loops, and new components to the system.

Genius forecasting and intuitive approaches can be enhanced by the Futures Wheel by giving some structure to seemingly random thinking and speculation. It allows the mind to think freely, moving from one impact to the next, but leaves a trail or pattern of thought for subsequent analysis.

During a scenario construction exercise that has identified driving forces, Futures Wheels could be used on each driving force to explore the pattern of consequences for each. This could provide richer input for the content of the scenarios.

Causal Layered Analysis incorporates Futures Wheels into its process to help better understand the variety of views on the future (see <http://www.metafuture.org/Mt%20Eliza%20Futures%20Prog%2019%20April%202008.doc>)

System analysis can benefit from using Futures Wheels by exploring the range of potential consequences of components or elements of the system to check completeness of relations among the systems elements.

The Futures Wheel can also be used in strategic planning as a way of assessing impacts. One corporate strategic planning sequence of the Diebold Corporation uses the Futures Wheel as the assessment method for step (3) in the following sequence: (1) scan the environment; (2) identify major forces; (3) assess impacts; (4) develop strategies; and (5) monitor.<sup>11</sup>

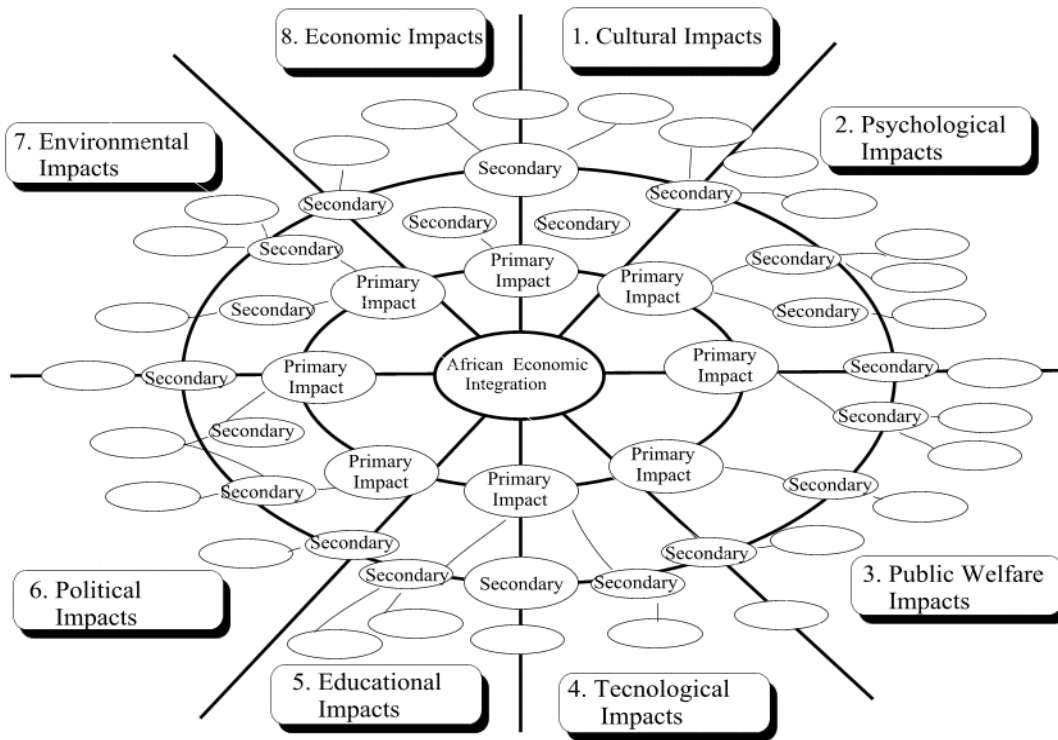
## **VI. FRONTIERS OF THE METHOD**

Glenn became dissatisfied that the original version of the Futures Wheel did not always create a sufficiently broad range of impacts for consideration; therefore, he developed a second version. This "Version 2" has been used in training programs since the late 1970s, but far less so than the original version; however, it first appeared later in Futures Research Methodology Version 2.0 in 1993.

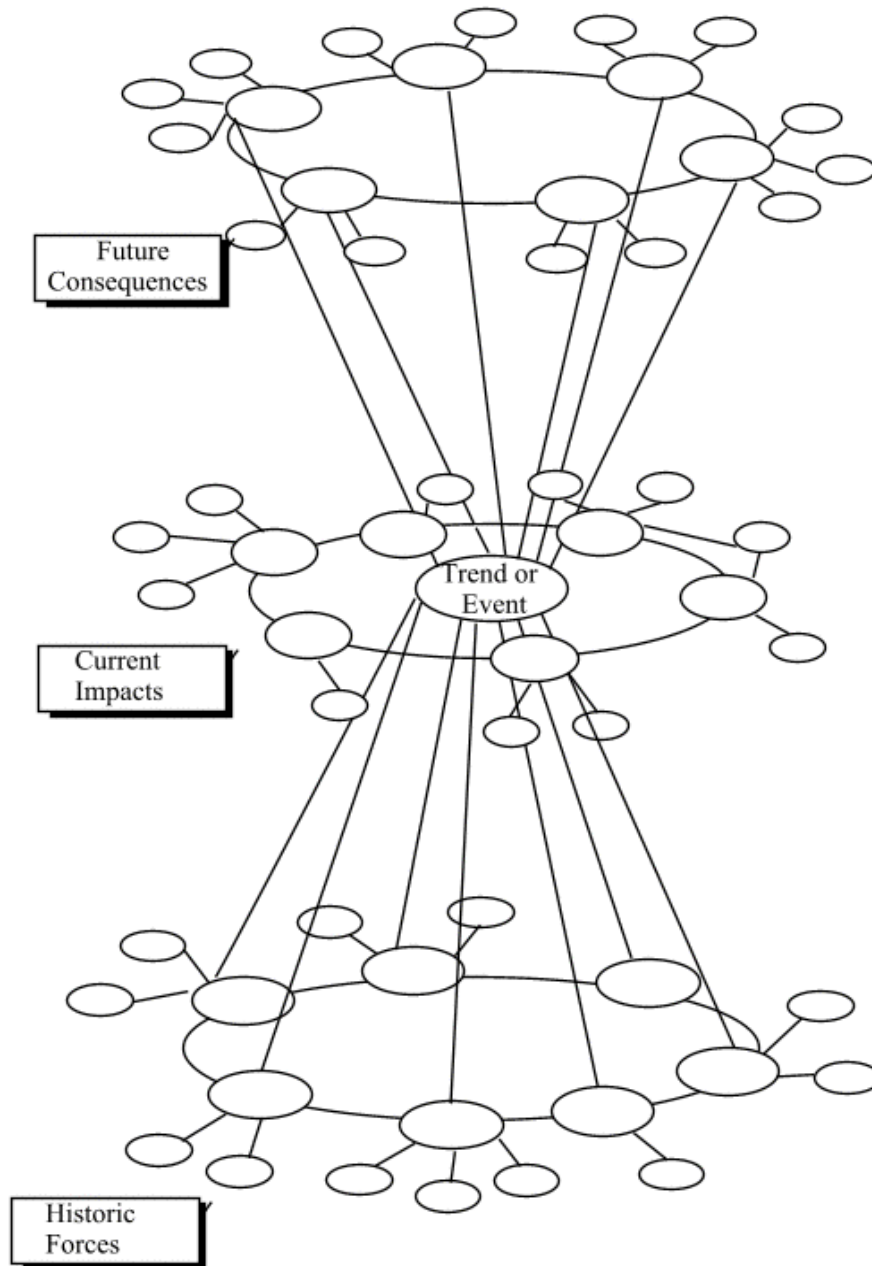
The original version of the Futures Wheel did not force users to consider a realistically wide range of consequences. For example, economists would naturally tend to identify economic implications but would possibly put less stress on the technological, cultural, or environmental consequences of the trend or event. Version 2 adds the requirement that impacts be considered for a predetermined set of areas or domains.

If one were to do a Version 2 Futures Wheel on the possible event of African economic integration, one would be asked to list the important areas of consequence or impact to consider. These could be the political, cultural, environmental, psychological, technological, educational, public welfare, and economic arenas. The specific sectors that are used would be determined by the purposes of the analysis but should be as broad as manageably possible. This second version helps ensure a broader analysis of this potential future event. Using this approach, a Version 2 Futures Wheel would look like:

**Figure 6. A "Version 2 Futures Wheel" on African economic integration**



A "Version 3 Futures Wheel" would add the dimension of historic forces, current correlations, and future implications in a cone-like fashion. This approach has the advantage of providing a space for linkages or consequences that don't always fit in Versions 1 and 2. Some people want to discuss how a trend evolved, while others want to talk about more current impacts, and still others are more future-oriented. Version 3 is more complex, requiring more time, but can capture much of the essential thinking about a trend or event into one graphic.

**Figure 7. Version 3 Futures Wheel**

A Version 3 Futures Wheel could be carried out by three different teams. One team could identify the key historical trends or events leading to the item to be studied; the second team the key contemporary impacts or correlations; and the third, the key future impacts or consequences. The results of the teams can be put into one Version 3 Futures Wheel. Unfortunately, it may be difficult to graph if confined to a two-dimensional piece of paper. If done with computer software that allows for rotation (such as computer-assisted design software) and or in hypertext software (imbedding information under terms that are not seen until requested by the user), the

Version 3 Futures Wheel becomes more visually manageable.

Variations of Versions 2 and 3 could well be as diverse as those that grew from the original Future Wheel. Software variations as sub-routines within strategic planning and futures research packages seem inevitable. One version is available from the Futurelab in Bristol, UK, at: [http://www.exploratree.org.uk/app/?document\\_id=977&permission\\_id=template](http://www.exploratree.org.uk/app/?document_id=977&permission_id=template).

The first application of Version 3 was for the future of European Integration led by Professor Martin Potucek of Charles University, Prague, the Czech Republic, and published as an article “The Futures Wheel on European Integration” available at: [http://www.uni-konstanz.de/FuF/Verwiss/Alber/potucek/Futures\\_Wheel\\_on\\_European\\_Integration.pdf](http://www.uni-konstanz.de/FuF/Verwiss/Alber/potucek/Futures_Wheel_on_European_Integration.pdf)

Another future variation of the Futures Wheel could use a Delphi via the Internet. An international panel could assemble asynchronously to systematically construct a Futures Wheel:

- Round 1: Ask an international panel to rate a list of events or trends for use with a Futures Wheel and or ask for additional suggestions;
- Round 2: Feed back the panel's responses for further refinement, clarification, and ranking;
- Round 3: Request respondents to list primary consequences of the trends or events of highest ranking;
- Round 4: Display results as a Futures Wheel with just the primary ring of impacts; the size of the oval around each primary impact could represent the frequency with which the panel identified it; then ask for the secondary impacts;
- Round 5: Display primary impacts as first ring, and secondary impacts as a second ring; again, the size of the ovals (or some other graphic device) could represent the frequency of responses.

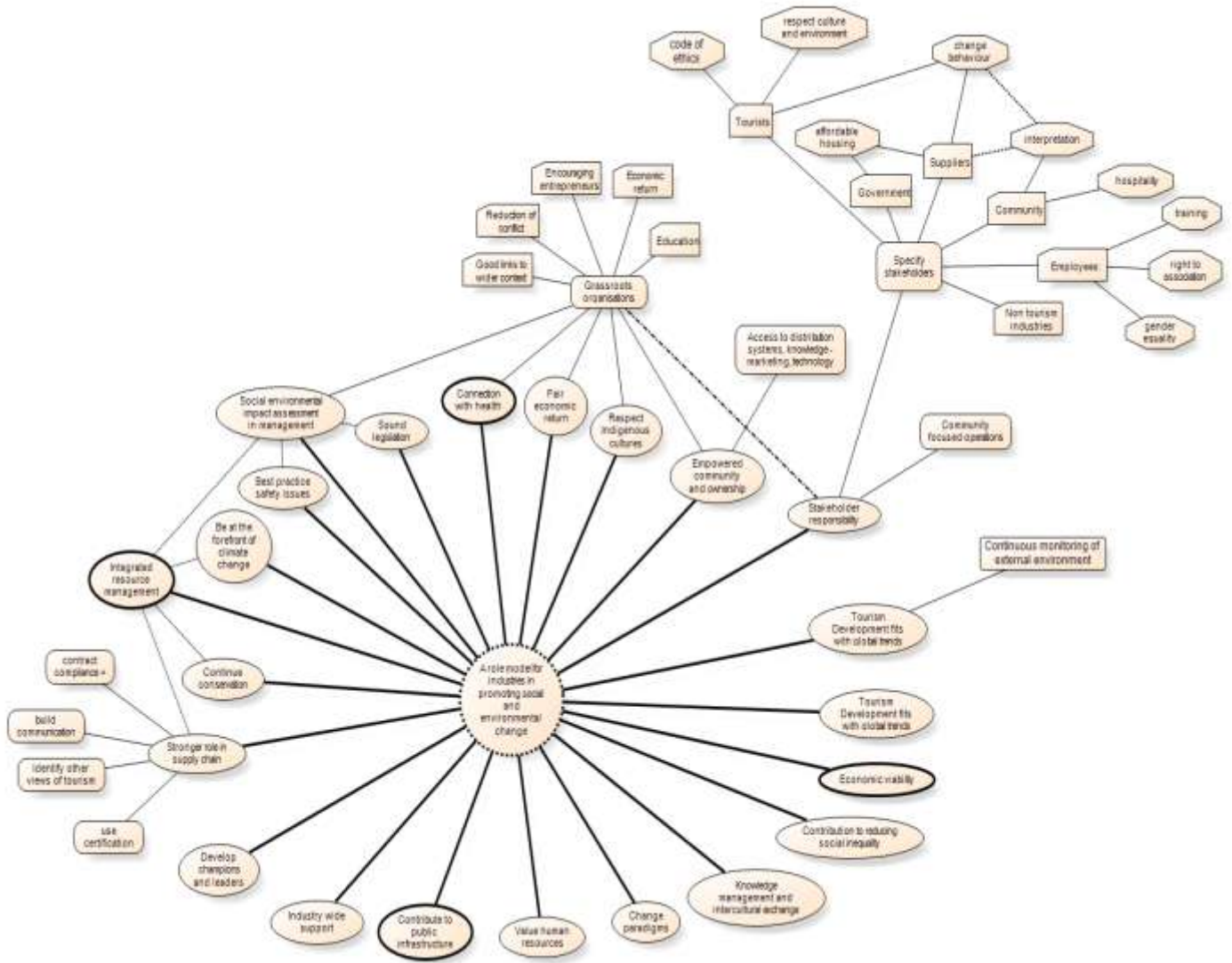
This approach could also use the ideas in the Futures Polygon for expressing consequences.

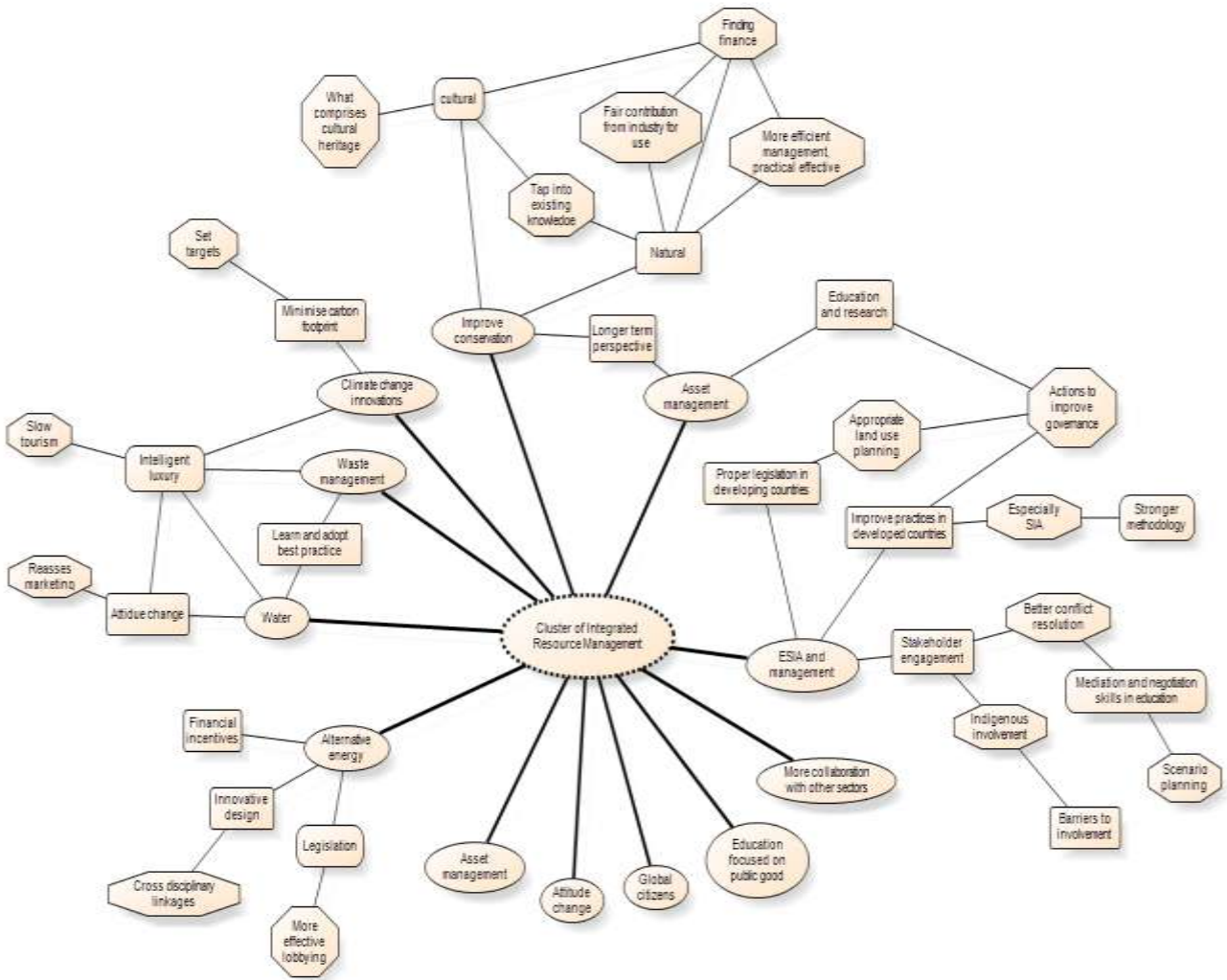
These versions of the Futures Wheel could be assisted by collaborative software or groupware, which would collect and display the panel's views on the impacts in the graphic of a Futures Wheel.

Futures Wheel Wikis could be created by letting geographically dispersed people add to and/or edit the consequences via the Internet.



### SOME ALTERNATIVE EXAMPLES





## ENDNOTES AND REFERENCES

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<sup>1</sup> The School of Education at the University of Massachusetts is believed to have been the first doctoral program in future studies in the world. The program no longer exists but its co-founder Professor Christopher Dede created the Master's program for the study of the future at the University of Houston that exists today.

<sup>2</sup> Glenn, Jerome C. "Futurizing Teaching vs Futures Course," *Social Science Record*, Syracuse University, Volume IX, No. 3 Spring 1972.

<sup>3</sup> Snyder, David Pearce. Monograph: "The Futures Wheel: A Strategic Thinking Exercise," The Snyder Family Enterprise, Bethesda, Maryland 1993.

<sup>4</sup> Philosophically, one cannot claim certainty of causality. One situation may appear to be caused by another situation, when in fact they may both be caused by a third situation not visible to the observer. This point in a futures context is well explained by Bertrand de Jouvenel in *The Art of Conjecture*. The philosopher David Hume in *On Human Nature* demonstrated that what we call causality is a habit of the mind formed by seeing one thing vary with another. It is the variation and correlation that we can know, but not the truth of causality. Impacts and consequences imply causality. Originally, one would do a Futures Wheel by answering the question, "What are the necessary correlations (not in the mathematical sense) with the event or trend?" However, since the method is designed to help thinking rather than determine truth (since "truth" does not apply to the future anyway), the normal use of the method today asks what are the likely impacts or consequences, as if we can really ascertain the causal relations. This paper reflects how the method is used in common practice and, hence, will only refer to impacts and consequences rather than correlations.

<sup>5</sup> Coates, Joseph. The Futures Wheel - a background paper prepared for Phase II of the United Nations University Millennium Project Feasibility Study, September 1993.

<sup>6</sup> Wagschal, Peter. "Futuring: A Process for Exploring Detailed Alternative Futures," *World Future Society Bulletin* (now the *Futures Research Quarterly*), September/October 1981, pp. 25-31.

<sup>7</sup> Glenn, Jerome C. *Future Mind: Artificial Intelligence: Merging the Mystical and the Technological* (Washington, D.C.: Acropolis Books, 1989 and Tokyo, Japan: TBS-Britannica, 1994).

<sup>8</sup> Interview by the author with futurist David Snyder.

<sup>9</sup> Coates, *Op. Cit.*

<sup>10</sup> *Ibid.*

<sup>11</sup> "Integrating Socio-Political Developments into the Management Process: New York

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Telephone's Experience," *The Diebold Corporate Issues Forum*, March 4, 1980. (New York: The Diebold Corporation).