

# Alternative futures of transport

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**Abstract** Based on the experience of transport policy and scenario planning in South-East Queensland, this essay explores the alternative futures of transport. It does so by first exploring the weight of lock-ins that make creating new futures nearly impossible. Next, the ways that the future can be used to transform policy are explored. Three futures methods are used to articulate the alternative futures of transport. These are the futures triangle (the push, pull and weight of the future); scenarios (triple bottom line to Gaia, industrial realism to likely collapse, global technologization leading to artificial societies, and localization leading to a return of the past) and causal layered analysis. The essay concludes with a feminist unpacking of transportation futures.

## Long-term and lock-ins

Given the reality of the Los Angelization of South-East Queensland by 2020, with the population by 2021, "estimated to swell to 3.4 million . . . and [r]apid growth in the state's southeast corner likely to continue unabated for the next 20 years, accounting for more than a quarter of Australia's growth" (Heywood, 2002), any attempts to create alternative futures will certainly be appreciated by future generations. But the initial issue is why is the future relevant to issues of urban planning. Certainly, more than perhaps any other investment, a long term focus is crucial for transport. Investing unwisely can lead to economic losses in the billions. Of course, citizens will use whatever transport system is given to them, but issues of efficacy and efficiency have become more crucial. We know that the car-plus-roads system and the worldview that underlies it may be efficient, but when it comes to efficacy – in terms of criteria such as health (pollution and road deaths), lost productivity from traffic jams[1], and lost alternatives – it is far from clear that

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the path we have travelled, and continue to travel, is the right one.

Indeed, what we learn from chaos and complexity theory is that particular, sometimes accidental, decisions lead to lock-in toward particular futures. For example, M. Mitchell Waldrop (1992) writes in *Complexity: The Emerging Science at the Edge of Order and Chaos* (p. 41) that in the contest between the steam engine and the internal combustion engine, an outbreak of hoof and mouth disease – making water troughs impossible to access – was among the reasons that the steam engine did not take off. Once the internal combustion engine did take off, an entire system of suppliers, repairers, retailers took off as well. An ecology developed around the transport system. We are in a similar situation, in which we have a lock-in with petrol and the internal combustion engine. Other alternatives have a difficult time in breaking into this foundational lock-in: transport has become a transportation system.

Thus, the decisions we make now cannot be seen in isolation. Our travel choices are creating new systems, meanings and values (conscious and unconscious) around those systems, and indeed the basis for future civilization. Making mistakes – whether for economic, engineering, environmental or health reasons – must be taken very seriously. Once a new technology gets locked in, it is difficult to remove. Its lock-in, it is also crucial to remember, may not be based on long-run efficiency.

Given the seriousness of the future – as the saying goes, the future is not for wimps – we need to look as clearly as possible to the future so that we can make wiser decisions today.



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## Temporal, spatial and worldview distance

However, uncertainty increases as we go further out in time and in space as well as person. When we are in the “now” (temporality) in a space (geography) known to us and with just oneself or near ones (those who see the world in similar fashions), then there is some degree of certainty. But as we move further from the now to the what-was or to the what-will-be, or from our region to the globe to space and from who we know to who we don’t know, uncertainty dramatically increases.

The process of globalization has a number of features:

- Capital.
- Ideas.
- Labour.
- Problems.
- Identities and states.

First, it involves not just the globalization of capital but the globalization of ideas as well (Al-Jazeera versus CNN, for example) and even the hints of the globalization of labour (irrespective of Australian Minister for Immigration Ruddock’s efforts to create a Fortress Australia). As well, we are seeing the globalization of problems (the planetary environment), and the globalization of governance (issues related to the governance of and within nation-states and the development of transnational corporations and virtual states such as Al-Qaeda) quite clearly create a new world.

Essentially this means that as we move away from now, locale and our person and friends, we move from what we know to what we don’t know to what we don’t know we don’t know (see Appendix, Table A1). When the world was based on what we knew, it was perhaps easier. Yes – now going back a few centuries – the feudal lord pillaged, but there was some security against the barbarians outside; yes, plagues came and went but that was what the gods did with mortal souls. The world was understandable even if life was nasty, brutish and short (although even here there is debate, with many arguing that there were periods of history where we were at least time- if not material-rich).

Quickly moving to 1950s Australia, the USA and other rich nations, we quite clearly knew what we knew. But the feminist movement, the multicultural movement, quantum physics and then postmodernism, indeed, everything “post”, ruptured holes in the security and safety of truth, reality, nature and sovereignty. And by the time genetics and its claims to the eighth day of evolution came along nature had changed.

With heightened risk, we moved to the situation of what we did not know.

The response to the problem of risk has been solved, unfortunately, neither by innovation, civilizational dialogue, nor by leadership, but through scenario planning.

Again, let us be clear and bestow praise where it should go. Queensland Transport’s and Department of Main Road’s report on alternative futures of transport titled, *Fourseeable Futures*, is a remarkable accomplishment. The scenarios satisfy an important criterion in that they are distinct from each other (i.e. not the same old stuff and real divergence

between scenarios). “Carbon crunch” assumes a world where global warming and other environmental problems make transportation policies based on earlier definitions of oil economics problematic. Oil is far more expensive. It is a strikingly different world from the “Coastal bloom” scenario, where Queenslanders and other Australians flock to the seaside and try to develop sustainable communities there. “Coastal bloom” differs from the “Super city” scenario, in which the entire South-East Queensland area becomes one integrated international city. And this differs from that of “Global bust”, wherein economic hardships change the nature of development. Strategy can thus be developed based on these alternative futures.

Are these forecasts? Of course, scenario planners hide behind their statement that scenarios are not forecasts. Unfortunately, scenarios do become forecasts – even if we do not intend them to be so – indeed, they can become competing images of the future, competing possibilities. They are certainly not “hard” forecasts which can be judged by their accuracy. Rather, they are a map of the future, and can thus be seen as “soft” forecasts. But quite rightly so; the real test is not in precision, but in whether more strategic policy making results, that is, whether they are relevant to creating alternative futures.

But there is a deeper problem in *Fourseeable Futures* that is symptomatic of many scenarios’ exercises, and this flaw is near catastrophic. There is a claim that scenarios are not preferred futures, but merely analytic constructs. This is fine as it is, but ultimately a statement that can neither inspire nor create a different future.

The purpose of the thinking about the future is manifold. It is not just to create better strategy. Of course, we need to move from the jungle of life – the short term issues of survival – to strategic rational thinking (the image of the chess set is most suitable), and then to the broader alternatives, mountain tops, if you will. And this is crucial, mountain tops in this futures landscape[2] are not scenarios but different ways of seeing the world, with different stakeholders. They are authentic alternative futures, not merely scenarios with little variation from each other.

But beyond the mountain top is the star. This is the vision of the future. The vision inspires. The vision enables. The vision brings out the best in us. The vision cannot be too far away (we tire) nor too close (our skepticism prevails) but temporally just right so that we move forward and create a different future (or return to a previous future). The landscape of the future comprises:

- Jungle – survival – competition.
- Chess set – strategy – winning.
- Mountain tops – big picture – rethinking.
- Star – the dream – creating.

This is the “vision thing” that eluded George Bush Sr. But Australian Prime Minister John Howard learned from that experience, and made the Faustian bargain: instead of vision, he has used brilliant tactics, clearly stating that elections are not about the vision (where Australia would like

to go), but about not losing. The politics of morality was traded for the short-term satisfaction of victory. But we shall see. Perhaps history will find that when too much is in flux, it is not the Mandelas that are needed, but the Howards – those who slow history to a crawl, making us all feel safe, reminding us at the end of the day that it is about roads, rates and rubbish plus safety from foreigners (global warming or global labour) that is most important. Then again, perhaps history will judge otherwise. As Mao-tse tung commented when asked about the success of the French Revolution: “It is too soon to tell”.

Vision is also about the clarity of image. Certainly in the sensate down-to-earth world of roads and cars, of solving problems of transport, images of the future might seem somewhat fluffy. But it is the image of today that creates the future of tomorrow.

I quote extensively from Frederick Polak (cited in Milojevic, 2002):

Many utopian themes, arising in fantasy, find their way to reality. Scientific management, full employment, and social security were all once figments of a utopia-writers' imagination. So were parliamentary democracy, universal suffrage, planning, and the trade union movement. The tremendous concern for child-rearing and universal education, for eugenics, and for garden cities all emanated from the utopia. The utopia stood for the emancipation of women long before the existence of the feminist movement. All the current concepts concerning labor, from the length of the work week to profit-sharing, are found in the utopia. Thanks to the utopianists, the twentieth century did not catch man totally unprepared.

And it is crucial to remember that not all images are positive, some can be quite deadly. Ashis Nandy (1987) reminds us: “Today's utopias unless resisted are tomorrow's nightmares”. Thus the image of today can create the future of tomorrow.

But, you might argue, we should not be in the business of deciding tomorrow's future. Citizens should!

First, this is partly true. But more appropriately, the issue is that we are nonetheless creating the future. The default future will win out unless clear decisions are made to select otherwise.

For example, in education, it is quite clear why courses on the long-term future or futures thinking have not taken off; why, for example, the excellent work *Fourseeable Futures* is not required reading at every high school in Queensland, Australia. This may be because:

- Educators (in common with other fields) have strong disciplinary boundaries and resist information that they did not help create.
- The future is discounted, day-to-day actions are not seen to lead to a particular future.
- Education infrastructure, both physically and in terms of imagined/envisioned development, is still from the nineteenth century. That is, classes are still designed for the teacher as a fountain of information and youth as empty glass. The digital era might have begun, but our paradigm is still a few hundred years old. And even if the paradigm changes, what do we do with the classroom? What do we do with the roads?

- There is a cycle of image, practice and then institutional change, which then transforms the image.
- Centers of power tend to resist innovation until it has succeeded elsewhere, until the bottom line has been proven. The Swiss invented the digital watch but could not capitalize on it; and it took a Hungarian migrant to resuscitate the Swiss watch industry through the “Swatch”.

Thus, transformation is not easy. Creating desired futures is not for the faint-hearted.

Certainly citizens should be engaged in this process. But perhaps not through surveys *per se* but through visioning exercises, working with citizens to have them define their vision of the futures of transport, asking them what is important to them. From these answers, then, visions of desirable futures can be developed. These can be rigorously developed, tested, incasted, and then sent back to citizens. This creates debate and ownership. It also begins to elicit real alternatives. Thus, there is a real role for anticipatory and deliberative democracy. These perspectives can then move up and down the system, informing all levels of governance. The blocks to transformation can also be identified. Once there is a critical consciousness around the “weights” of the future, change is possible.

Finally, preferred futures also have forecasting efficacy in that we tend to create the futures we prefer.

### Multiple purposes of the future

The future can be used and has multiple purposes.

First, to develop strategy.

Second, to gain citizen input, to gain participation.

Third, as education. That is, the future serves as a way to train staff. Career planning, for example.

Fourth, as capacity enhancement; that is, developing the capacity to think in terms of the long term, in terms of alternatives, for example. Thus, it is less important what the future will be or even what we want the future to be, than that the organization/society/civilization has the capacity to innovate, to learn about learning.

Fifth, to move toward emergence, that is, toward the edge of order and chaos, where system transformation is possible.

Sixth, as memetic organizational transformation; that is, the future is used to enter new memes in the organization that challenge old memes. We are seeing this in city futures in the move from the city as defined by the roads, rates and rubbish meme to that of the smart-international-green city.

As well, if we examine the traditional organization, the dominating meme was: work nine to five, work hard, and retire (then die). A few decades ago, this changed somewhat because of globalization: upskilling and retraining along with adaptability and flexibility began to define the organization (downsizing was of course central to this). Most recently, the meme has become the learning organization. The new meme is the learning plus healing organization (taking into account employee's health, the impact of the organization on the

environment; the organization as a family – essentially, the triple bottom line approach). Whether it will be selected because of advantages it offers is not, however, clear at this stage.

One possible emerging meme for transport is the individualized public, that is, public transport but tailored for the individual. This could be done through seating, or boutique buses, of seamless integration:

To summarize, uses of the future:

- Strategy.
- Citizen input.
- Education.
- Capacity enhancement.
- Emergence.
- Memetic transformation.

### Which future?

The future that citizens prefer, however, should not be seen entirely as an issue of agency. Clearly, agency – our travel choices – is important. The Whitehall Health Studies show that health is directly related to the sense of individual agency or “destiny”, which in turn is largely determined by socio-economic position. Standard allowances for health such as smoking, diet, exercise were found to account for only a quarter of variations in health-agency and its related socio-economic position accounted for most of the rest (Marmot and Wilkinson, 1999). What this means is that individuals need to be part of active citizenship, active decision making on their transportation futures. Riding a bicycle is not just good for weight loss, muscle toning and reducing the likelihood of numerous diseases, but it also gives one agency. Road rage, I would argue, can be directly attributed to the absence of such agency – there is very little one can do in such a situation. To paraphrase a famous Hollywood movie, “Who you gonna call . . . Rage Busters”.

But agency is affected by other variables.

### The futures triangle

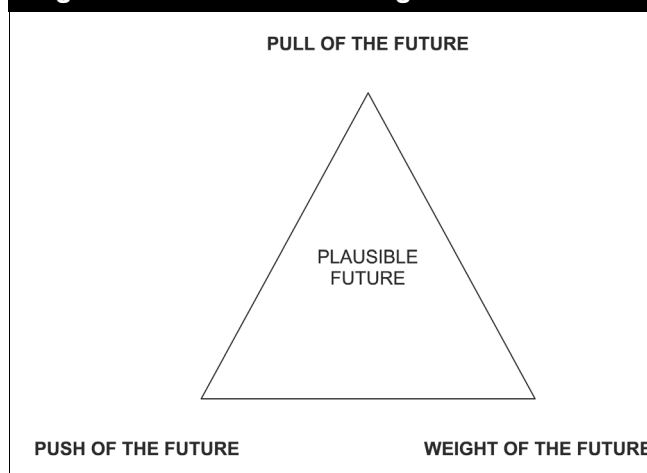
One way to map this is using the futures triangle. In this modelling method, three factors are crucial. First are the images of the future. These pull us forward. Second are the pushes of the future. Third are the weights. Taken together they create the plausible future (see Figure 1).

What then are some macro images of the future (at this stage going to a level above the meso of transportation futures)?

Four are crucial (for a diagram relating these to city futures, see Appendix, Figure A1).

- (1) From triple bottom line to Gaian. This is the image of sustainability, the new environmental paradigm that challenges the traditional industrial paradigm. It is not technology-averse, but the use of technology is for clearly defined values: gender partnership, global ethical governance, inner spirituality, social justice and ecological sustainability.
- (2) From industrial realism to likely collapse. This is the traditional way of organizing society, around silos using

**Figure 1 — The futures triangle**



non-renewable resources. Built into the model, however, are deep divisions based on gender, class, civilization and nature. Over time, this is likely to lead to society collapse whether from global warming, stock market crashes, terrorism or other factors associated with systems that have overshot their limits.

- (3) The third is global technologization leading to artificial societies. This is the mix of globalization plus new technologies, including genetic, artificial intelligence and nano-bots. It is a post-nation state world. Speed, tailoring, flexibility and the capacity for movement are crucial in this image of the future.
- (5) The fourth is localization leading to a return of the past, a craving for the 1950s in the West and for earlier empires in the non-west. It is a search for times simpler, slower – stability.

These four images compete to be the world we would like to see.

At the meso level what does this mean for transportation futures? I now analyse the scenarios generally from short, medium term and long term perspectives.

In the triple bottom line/Gaian image, the changes required are foundational to the transport system. Transport is linked to health which is linked to sustainability. Who defines the future of transport is as important as the technologies used and the organizational structure that brings them about. Transport planning must be linked to land use policy to educational policy to labour trends.

Engineering as well must become partnership based, focused not just on urban design, but on issues of sustainability. Becoming the global manager who has global portable skills is only part of the future, becoming a true *globo sapiens* is far more important (Kelly, forthcoming). The actual system would be far less reliant on cars, far more on tele-commuting, and slower and micro forms of transport. Greening cars (for example, the possible development of a pollution-free car that runs on air and can be refuelled for less



than \$3, and costs less than \$18,000 AUD (Massey, 2002)) would of course be a step forward in this future, but changing the grid that defines transport is far more important. Community making and building are thus crucial.

For the car to be challenged, however, far more than traditional notions of the public will be required. The traditional view of the mass – faceless, uniform – has changed dramatically. There many “publics” from many worlds, the dot.com to the baby boomers, the new migrants and the old migrants and the indigenous. Public transport must become more tailored for the diversity that we exist within. Thus, just as the car is tailored for the individual, the public will have to become tailored for the diversity that is more and more constitutive of Australian society.

Of course, in the short run the key is to reduce problems associated with traffic. In the USA, costs include \$500 billion a year in deaths and injuries, plus congestion, sprawl, noise, loss of forests and farms, and carbon emissions (figures from *Green: The magazine of the Australian Greens*, 2002). Further, the journal reports that:

... each car (on average) is responsible for 820 hours of life lost through a road traffic accident fatality and 2,800 hours of life damaged by a road traffic accident. Statistically, one individual in every 100 will be killed in a road traffic accident and two out of every three injured (p. 25).

Banning cars from central areas, cleaner fuels, fuel taxes, car sharing, coordinated transportation and land use policies go some of the way towards improving these figures.

In the medium term the goal is to funnel new investments toward rail, bus, and bicycle infrastructure so that people have a variety of attractive, non-car choices, with less damage to the environment.

In the long run, however, it is about creating car-free cities, as they offer a more sustainable, healthier, and happier future than any plan to “improve” the car or ameliorate its impacts.

In the second image – industrial realist – essentially this is no fundamental change. At one level, transportation problems can be solved by tinkering here and there, adding new routes, diverting traffic, adding lanes during rush hours, fiddling with oil costs. At a secondary level, the key is integrated planning, aligning different modes of transport as well as integrated transport plans between government departments and other stakeholders. However, in this scenario, growth remains defining. The purpose of the transportation system is to ensure that economic growth continues and that this growth takes place efficiently – making government, business and consumers happy. Experts know best. What has worked before will continue to work. Certainly, efficiency is required but good scenario planning can help us reduce risk and create a better system. Cars now, cars forever. Suburbs now, suburbs forever. The city continues its long-term trend towards anomie. Death by car is the price of progress. And, globally, it is stunning growth. “More than 17 million cars are sold each year in the USA alone, and demand is surging in developing countries like China, where sales are expected to grow from 600,000 in 2001 to 2 million in 2010” (Hamilton,

2002). Philip Morrison and Kosta Tsipis (1999) forecast that if current trends continue, there will be a billion private cars on the world’s roads by 2050.

In the third image, globalization of technologies leads to novel solutions. Even if these do not pan out, the focus will be on technology solving problems. In the short term this means: ending gridlock through GPS, tolls, active traffic management (sensors), shared taxes, integrated bus system, and shared taxis.

In the medium term, futurist Bob Olsen (2002a) argues that it will mean the development of dual modal transportation systems. Since people will not give up their cars (for efficiency and worldview reasons), a “dual mode transportation system” will result in transport that is safer, faster, cheaper, less stressful, and less polluting. Under such a system, vehicles will be used in two distinct modes: driven in the normal manner on the streets, and traveling automatically on high-speed dedicated guide-ways for trips of more than several miles.

In the long term, this means, for example, the development of new technologies such as:

PRT – personal rapid transit – with car-sized vehicles zipping all around on an ultra-light rail system that’s computer controlled. You call for a vehicle on your cell phone. It comes to within a few blocks of you within a few minutes. You push a button for your destination, swipe your credit card, and you’re off. There have been a few prototypes, but no systems like this yet built as far as I know. But this may be the ultimate in personalized “boutique transit” (Olsen, 2002b).

In this sense the tech future will make the car even more tailored. The durability of the car has been its capacity to be both mass-produced and tailored, solving one of history’s paradoxes: how to be mass and individual. As mentioned earlier, any public transport system that will gain the use of the public must be both public and individualized.

Related to changes in transportation technology is of course a change in the nature of the city, seeing it becoming smarter, wired, and globalized. If we add medical breakthroughs, we can well imagine scenarios in which those with genetic predisposition to risky behavior (fast driving, thrill seeking) may be banned from driving cars, or monitors will be installed in their vehicles so they are unable to speed, or their insurance rates will be adjusted, or just as with paedophiles now, we will know when a reckless driver has entered the community.

For a full extrapolation of the smart city, the smart car and smart transportation systems, the recent movie *Minority Report* does not seem far-fetched. The *Fifth Dimension* presents perhaps a more dystopian version, with the earlier *Blade Runner* giving an extreme dystopian version (all plausible, however).

In the fourth perspective, Return to the Past, the challenge is to create stable communities with cars as the main means of individual transport between cities. A further challenge is to ensure that oil supplies are safe from terrorists and rogue nations. Cities have become too big and must be

decentralized. As well, government departments have become too big; power should be returned to communities.

Of course, these images – while distinct – are not mutually exclusive; certainly the Gaian plus technology image results in the shift from the car to mobility. For example, “Mobility for all” could reduce environmental demand, increase accessibility, improve the quality of life of older and disabled people and offer new commercial opportunities to the very companies threatened by a reduction in traffic volume.

However, images of the future and what they mean at the macro and meso level is not the full story. There is the push and the pull. The push is from new technologies such as GPS systems in cars; cars that turn off in case the driver has an inappropriate alcohol level; as well as bots that learn about the individual’s behavior – interactive, smart, learning bots to help one drive, and navigate.

Other pushes includes a change in values, toward green values, largely spearheaded through cultural creatives. Aging also pushes the plausible future in particular directions – towards technology suited for a less physically mobile population. And changes in transportation planning push the future in a different direction.

Finally, along with the pull and the push is the weight. The weight is what makes change problematic. Such weights include silo-based transportation planning; lobby groups generally focusing on the car-road system, lock-in into our particular transportation modes; and the costs of developing alternatives. As well, weights comes from the deeper patterns of history – historical limits that when reached force history to change. The question is, have we reached such a limit. Or can the industrial realist model find a way to continue? Will the world end in a traffic jam – the worst case scenario if the industrial model fails and we have not created, invested, imagined, experimented with alternatives?

Philip Daffara of Maroochy Council writes that citizens on the Sunshine Coast do not desire the metropolitan future (Daffara, 2002). Rather, more than 30 percent prefer a Gaian image of the coast, over 30 percent prefer the coast as a cluster of small village type communities, and over 30 percent want to ensure that the development model is an urban one based on triple bottom line principles: prosperity plus care for the environment plus social justice. Only 5 percent prefer the industrial big city model. Contrast this to Peter Spearitt who, while writing of the dangers of Strip city, still believes that the population does desire a glamorous city outstripping Melbourne (Spearitt, 2002). Nevertheless, at one visioning workshop for Maroochy Council senior managers, the image of a Sunshine Coast “Melbourne” was considered the nightmare scenario.

### Causal layered analysis

But agency is not just influencing the push, pull and weight, it is important to note that there are levels of the future. Policy making needs to not only be expanded through breadth via scenarios, in depth through visioning workshops, but also through layers of analysis.

In terms of understanding the future of transport, four levels of analysis are crucial (see Figure 2).

First is the litany. This is the most visible dimension of policy, of understandings of the future. The litany here includes forecasts of the number of cars, pollution levels, population growth, and the plethora of new technologies that will save the day.

Second is the social, political, technological level – this is the systemic view. Generally, policy is constructed at this level, taking into account the data of the litany level (problems as well as population trends). Integrated planning finds ways to ensure that the different parts of the system interact in ways that meet the need of stakeholders.

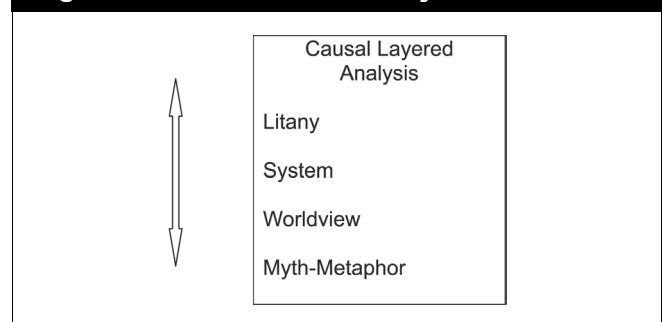
The third level of analysis, the worldview level, is often forgotten. Most policy ignores this level of analysis, seeing it as stable and unalterable, or as unimportant or inaccessible. However, as demographics change and notions of “we” change, worldview is quite crucial. At a far less grand level, there are the worldviews or cultures of the different players in transportation futures: the automobile industry, urban planners, federal, state and local governments, citizens, to mention a few. Their cultures may be aligned or they may not be. Each tends to see the litany quite differently; for example, is the solution smarter cars or car free cities? Is the solution safeguarding oil fields or searching for alternative sources of energy?

The myth/metaphor or the story level is the deepest and the longest term level of analysis. This is the unconscious dimension to why we do what we do, what we don’t know we don’t know. This is the car as more than simply about transport but about individual freedom, representing the Western way of life. At this level, roads are essentially about communication and trading, but also about “citifying” the earth, about man making his mark, and our relationship with nature – living with it or conquering it.

Let me give some examples. Examining the health and quality area, at the litany level, the data are horrendous: deaths caused by the medical system are the third biggest killer in the USA each year, accounting for between 60,000 and 100,000 deaths each year (National Academy of Science, 1999; Boodman, 2002; ABC Online, 2002). The litany solution is to find better GPs or cleaner hospitals, or . . .

At the system level the solution is ensuring proper communication between the GP, the nurse, the hospital

**Figure 2 — Four levels of analysis**



administrator; that aisles are safe (tripping is a major source of breakages in hospitals); ensuring that the entire system communicates in seamless and safe ways based on the needs of the patient. At the worldview level, it is about challenging the expertise of the GP; problems arise because patients are disempowered. It is the vertical nature of allopathy that needs to be transformed. Different worldviews – Naturopathic, Chinese, New Age – thus offer healing alternatives. They solve the problem of the quality and safety of health in alternative ways. Deepest is the myth/metaphor level, about the nature of life and death, about risk and the modern technological system.

The point is that policy should move up and down all these levels. As well, agency should be seen in the context of these multiple levels; agency is contextualized in the litany (the data), the system, the worldview and the myth/metaphor story. If one wants to understand and transform the world then transportation policy must be able to move up and down these multiple levels. Staying only at one level will lead to failure since the complexity of reality will not be addressed.

Merely adding more roads as a solution to the problem of traffic jams is likely to only create more congestion in the long run. Integrating highways with trains with work schedules again will alleviate the problem in the short term; but the deeper issue is of city design, of suburbs, of sprawl. At the worldview level, we can develop policies based on different assumptions: for example, the images of the future presented earlier. Each one constructs the litany differently – a car-free solution; an integrated planning solution; a high-tech car solution; an connected villages solution.

Each one leads then to a different scenario for the city.

## Scenarios

In research done for the Insurance Manufacturers Association, four scenarios were identified (Saul, 2002; Inayatullah, 2002a, b):

- (1) *High-tech world*: the smart city is integrated with smart homes and smart cars. The key driver is new information and communication technologies (transformation via technology). The city “senses” through technology. Totally wired.
- (2) *Global village*: There is a shift from individualism to community and the environment. Non-economic values and deeper meaning become more important. The key driver is a values shift to spiritual perspectives (steady state plus Gaian transformation)
- (3) *City-based villages*: inner cities villages are created, creating community via high density urban development. The key driver is the desire for community as well as the negative impacts of urban sprawl (steady state plus growth).
- (4) *Fortress city*: The system no longer works, thus cities go into protection mode. It is as well the return to core functions – roads and sewage. Globalization, regional relationships and alliances stall. The key driver is failed globalization (return to imagined past).

I present these scenarios not only to illustrate how worldviews and the drivers we focus on create different possible futures, but the necessity for updates.

Scenario planning must be revisited over and over. This means testing the scenarios in a variety of ways.

- Are there new emerging issues that are likely to impact on the relevance, validity and even accuracy of the scenarios? New emerging issues could be new technologies (nanotechnology) or cultural shifts (11 September 2001).
- Are the variables used to incast the scenarios shared? That is, is STEEP the most appropriate variables or through action learning can others be developed that better reflect stakeholders concerns?
- Are there new stakeholders whose views must be taken into account?
- Has the preferred future shifted?
- Are the scenarios lived?

This last point is perhaps the most important. Many a report ends up in the office of dusty plans. This is partly because the scenarios are seen as either fantasy production, or because those that create them do so as planners and not as directors (as those that can create change, albeit this is a top-down perspective). Nor is authentic participation sought. For scenarios to be lived, we need to go back to the purpose of futures. There are multiple levels: as strategy, as education, as capacity building, as emergence, as memetic transformation.

They must also be correlated with competing images of the future, with the pushes, and of course, the weight – what is difficult to change.

And, finally, depth is needed. Our travel choices are not merely litany ones. We are also changing systems by government policy. Worldviews and deeper stories frame policy. If we wish to understand where we are going, we have to understand the layers we live in, and the ways we constitute the futures through these layers.

One excellent example is a recent article by the Finnish social scientist, Vuokko Jarva (2002). In this article, she argues that we need to rethink the past and future of transport based on how men and women construct their needs. She writes:

Early networks of transportation infrastructure were apparently created predominantly for men’s needs. They traveled long distances . . . [and] served the important functions of making a living and protecting the home base. There is nothing about women’s mobility and transport systems in transport history books (Jarva, 2002).

The historical division of labour led to two types of transport systems: male, based on macro mobility, and female, based on micro mobility (see Table I). This in turn was related to the public outer male circle (commerce, governance, distance) and private inner female sphere of reproduction and the close or local economy. Thus one has focused on the *gesellschaft* (competition and statecraft) and *gemeinschaft* (participatory organic communities). In terms of the images of the future

**Table I — Characteristics of transport systems**

| Male                   | Female          |
|------------------------|-----------------|
| <b>Macro</b>           | Micro           |
| <b>Large distances</b> | Short distances |
| <b>Fast</b>            | Slow            |
| <b>Individual</b>      | Community based |
| <b>Expensive</b>       | Affordable      |
| <b>High risk</b>       | Safe            |

outlined earlier, the first is the realist and the second the Gaian. The first is thus focused on covering large distances, on speed, on the individual, is expensive and life costly. The second is focused on local areas, is slow, is community based, is cheap and does little harm to humans and the environment.

While this may appear to be an ideal type, recent empirical studies in Finland generally confirm Jarva's hypothesis (men have more accidents, travel further than women, have greater access to cars, use macro mobility). Furthermore, Finnish researchers have argued that the disadvantages of transportation affect women more, that is, male transport styles tend to favor men.

Jarva then develops alternative scenarios based on this typology. The first scenario is the "male macro" and the second the "female micro". The total domination of either model seems unlikely, at least in Northern European countries where transportation alternatives are seriously considered and funded. The third scenario is total integration. However, this too she argues is unlikely since the biggest dominate, even with bicycles and pedestrians: it is the faster and larger that take over.

What then are realistic alternatives? The first is that of the feminine society. Here, the micro dominates (the inner circle) and the macro is marginalized. Access is central and investments are moderate. The weakness in this model is efficiency – it is perhaps too slow and too participatory. The second possibility is the balanced society wherein men and women disconnect from their gender roles; there is fluidity of identity in terms of economic occupations and child rearing. In this scenario, a true global village can develop. Ecological design and sustainability go hand in hand with technological progress.

In both these scenarios, transportation policy is no longer always macro-oriented, focused on the needs of global capital and large construction projects (read: male design). Rather, micro alternatives are explored. Thus by switching worldviews, from masculine to feminine, alternative scenarios are developed. By going deeper into history, additional drivers are developed to explain transportation futures.

It is this type of thinking that can help us move out of our current conceptual gridlock.

## Conclusions

First, once again your efforts at scenario planning should be commended. In times of technological transformation, long

term projects become riskier. New technologies may make investing billions wasteful. Political transformations may dramatically change the price of oil.

The best way to reduce this risk, I believe, is not merely scenarios of alternative worlds, but developing an understanding of the depth of the future; that is, going beyond the litany, clarifying the system, and the competing worldviews.

Understanding the vision of the future also reduces risk. While the car and its accompanying road system is a modern miracle, there is dissatisfaction with it. I see this dissatisfaction in visioning workshop after visioning workshop. Individuals dream of car-free cities. They also yearn for neighborhoods, for the recovery of community, of meaning in life. This is a search for a new sort of community space, not the national public space, but something perhaps more intimate. (I wonder what the Gold Coast and the Sunshine Coast in South-East Queensland would look like if the private canals had been designed to be public. In one workshop, one planner imagined the Coast as an Australian Venice.) Our travel choices a generation ago were about individualism and profit. While these have not disappeared, another aspect of modern "man's" life now calls on "him" to connect. Perhaps this is the female aspect of modern man now speaking, searching for a different Australia, and a different transportation system to support it.

However, as George Bush Sr has said, the American way of life is not negotiable.

I am not so sure about the Australian way though. With more of us aware of the real costs of water, roads, and cars, alternatives that once seemed utopian now suddenly do not appear so. Initially, change seems inconceivable. However, over time it becomes impossible. And finally, the possible emerges. The first step on the road to a different future is imagining an alternative.

Perhaps the future will be like the movie *Minority Report*, zooming cars, safe and secure, videophones, and the future used to control. Perhaps it will be otherwise.

## Notes

- 1 Traffic congestion is estimated to cost Brisbane \$A2.6 billion per year and this may rise to \$A9.3 billion a year if correct trends continue (Johnstone, 2002).
- 2 I am indebted to Hardin Tibbs for the notion of a futures landscape.

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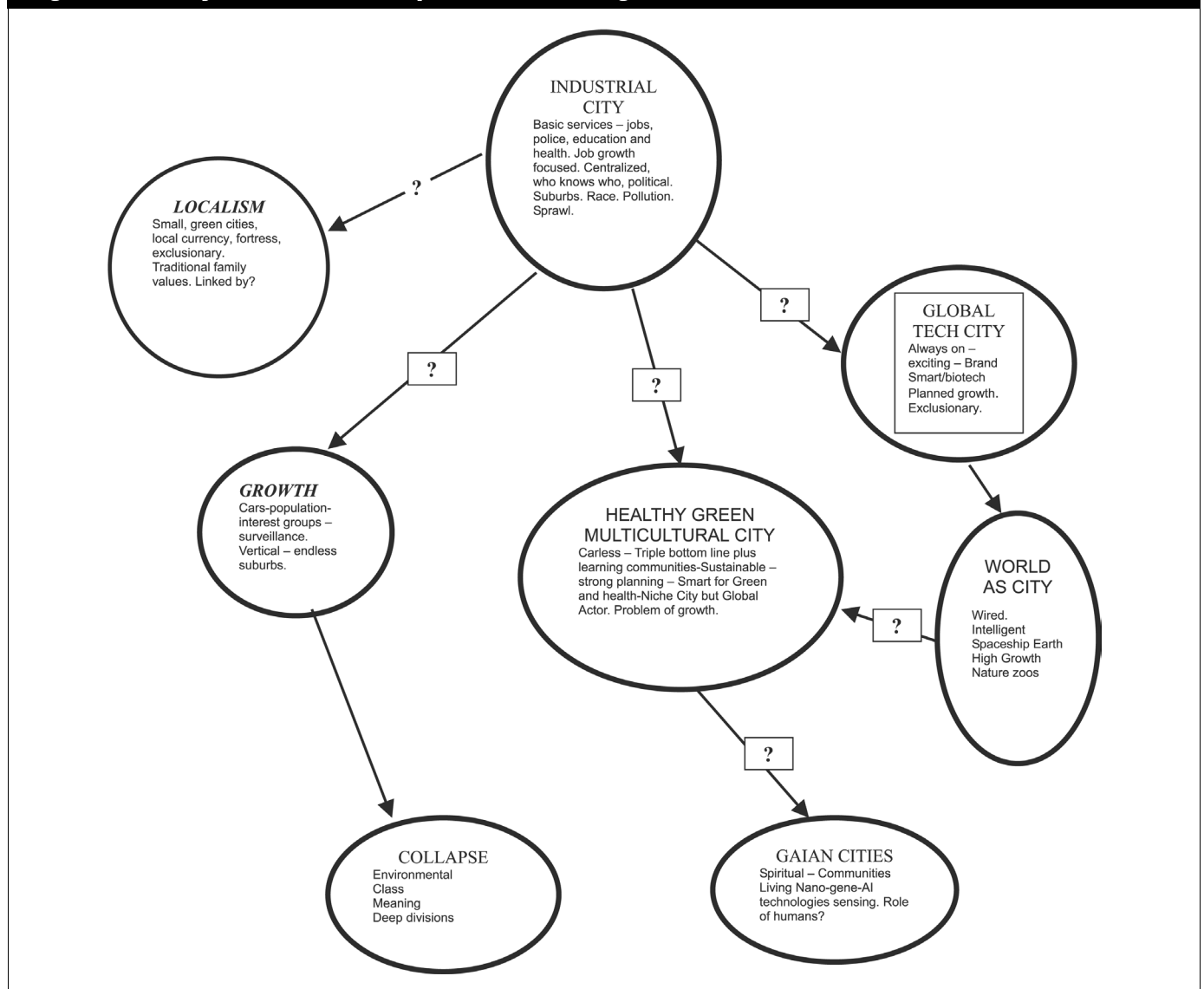
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## Appendix

**Figure A1 — City futures: from the present to the long-term**



**Table AI — Knowledge and ignorance**

| Know  | Don't know   |
|---|--|
| <b>Type 1</b><br>What you know<br>Day to day given reality<br>Uncontested – accepted<br>Forecasts – data  | <b>Type 4</b><br>What you don't know<br>Day to day challenges to given reality<br>Study – trend analysis<br>Learning from others<br>Being conscious  |
| <b>Type 2</b><br>What you know you know<br>Reflection<br>Science, especially testing of hypotheses<br>High degree of certainty – information                    | <b>Type 5</b><br>What you don't know you know<br>Unconscious understanding<br>Superconsciousness<br>Intuitive foresight<br>Wisdom  |
| <b>Type 3</b><br>What you know you don't know<br>Scenarios are the most useful tool as they help contour<br>uncertainty – frame areas of ignorance<br>Knowledge | <b>Type 6</b><br>What you don't know you don't know<br>Only way to approach this is by entering other ways of knowing,<br>moving outside comfortable paradigms<br>Epistemic futures<br>The problem of consciousness – enemy, friend or transcendence |