PERMACULTURE IN JAPAN: FOREIGN IDEA OR INDIGENOUS DESIGN?

This extended essay was the distillation of my first (month long) trip to Japan in 2004. It provides an insight into Japanese expressions of permaculture and related sustainability concepts and movements for a western audience. It was "published" on our website in late 2005 along with a gallery of photos from that trip and a shorter return trip in 2005. The essay explores some themes found elsewhere in my writing; the connections between permaculture and related concepts; the function of forestry and wood as a renewable resource, high tech vs low tech solutions, preservationist and evolutionary approaches to ecology and landscape, and of course reading landscape.

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In early 2004, I accepted an invitation for a permaculture speaking tour in Japan. During the northern summer, my partner Su Dennett and I spent 4 weeks traveling (5,500km - mostly by rail), presenting the permaculture concept to a diverse range of audiences. The very good organisation and generosity of our permaculture hosts allowed us to experience traditional Japanese rural culture, as well as learn from modern sustainable solutions and networks which build on those traditions. These included Natural Farming (Japanese organics), Satoyama (Japanese Landcare), Teikei (Community Supported Agriculture) and Tsubu Tsubu food (modern cooking with the traditional food grains of millet, sorghum & buckwheat).

My impressions of the contribution of Japanese permaculture activism[1] over the last decade to a sustainable future are complex. Much of that complexity relates to that tension between the commitment to tradition and the modern tendency to emulate foreign, especially Western ideas. It appeared to me that traditions and modern sustainable design solutions developed in Japan, tend to be undervalued while the reverence for foreign ideas has sometimes led to inappropriate application of design solutions which do not suit either the natural or social environment.

Here are some of the Japanese sustainable design solutions that reflect permaculture principles and by contrast those that show difficulty in appropriately adapting foreign design solutions. Naturally what I say must be tempered with a sceptical recognition of how limited time and language (despite excellent translation) may have constrained the quality or depth of my observations.

NATURAL FARMING

Mention permaculture and Japan in the same breath and most permies think of Masanobu Fukuoka and Natural Farming. The translation into English in 1979 of Fukuoka's *One Straw Revolution* had a profound influence on Bill Mollison, recorded in *Permaculture Two* published the same year. Put simply, Fukuoka had developed a system for grain cultivation which reflected the ecological design principles which we had outlined for perennial systems in *Permaculture One*.

Fukuoka's four principles of Natural Farming are: No cultivation, no fertilisers, no weeding, no pesticides. Many would view these as an ***ideal*** for ecological farming, something to work towards but not necessarily achieve, a kind of holy grail.

Fukuoka's work has gone on to influence ecological agriculture in western countries both through the agency of the permaculture network as well as independently. Prior to the visit I had a view of Natural Farming as developed largely by Fukuoka in the context informed by Japanese traditional agriculture, modern scientific agriculture, and the modern organic farming movements which began to emerge in the west in the 1930's. Within this

1 The permaculture movement in Japan sprang from a Permaculture Design Course for Japanese participants taught by Bill Mollison in 1990 and the translation in 1993 into Japanese of the ***Introduction to Permaculture*** by Bill Mollison.

historical perspective I saw it as a more recent branch of the tree of ecological agriculture, sprouting alongside and related (in conceptual terms) to the branch called permaculture.

Fukuoka is now 92 and unfortunately it was not possible for us to meet him during our visit but we saw other examples of Natural Farming. In Nagano prefecture while staying at Shalom Hutte guesthouse we ate food grown using Natural Farming methods which the practitioners distinguished somewhat from "Permaculture gardening" which they also practiced. But we were also taken on a tour of a nearby natural farming research station, complete with many employees, two storey office and laboratory centre where vegetable varieties suitable for Natural Farming were being bred. It was one of several such centres in Japan run by a religious organization Sekai Kyusei Kyo.

The main field trials shown to us consisted of neat long rows of crops between strips of winter grains, and other green manure crops which were cut as mulch. Although there was no deep cultivation, surface tilling was used to create seed beds and allow the plants to become established before mulching. It didn't look like the image of natural farming conveyed by Fukuoka's books. In another smaller trial area, seeds and fruit from vegetable varieties were scattered into weed stands, which were cut once the seed germinated. Intense competition allowed the strongest plants to dominate which were then thinned to breed varieties able to cope with competition. This looked more like Fukuoka's methods.

Vegetable seed selection trial plots for commercial production using natural farming methods at Research centre in Nagano prefecture (green manure intercrops cut for mulch)

The literature our guides gave us (in Japanese and English) traced Natural Farming back to Mokichi Okada in the 1930's, a pioneer thinker who's works have not been translated to my knowledge.

So natural farming was not a branch off the tree of western ecological agriculture at all but a tree in its own right germinating in the same era (1930's) during the industrial and imperial expansion of Japan. My analogy of western ecological agriculture being one tree is not strictly correct anyway, because Biodynamics which emerged from Steiner's work in the 1920's was somewhat parallel but independent of the English organic agriculture pioneers such as Sir Albert Howard and Lady Eve Balfour.

It certainly is not clear from Fukuoka's work, or at least the English translations, that Natural Farming has a longer history than his own work, and the theory and practice are as diverse as nature or, organic farming. As far as I could tell from my limited observations at several sites described as natural farming, and what I was told about Natural Farming by our hosts and interpreters, the absence of deep cultivation does seem characteristic, but more important is the minor role of animals. Animals are integral elements of Organics, Biodynamics and Permaculture providing ecological services, and manure, and of course meat and other products.

In essence, natural farming could almost be described as vegan agriculture integrating soil, plants and humans although it was not explained in that way to me. It responds to the workload that this would demand of people (or machines) by attempting to work with natural plant/soil cycles. Rather than just looking at the theory or the practices of natural farming it is useful to understand its emergence in the ecological and cultural context of Japan, and more broadly of East Asia.. The rice and wheat-based cultures of east asia have sustainably supported some of the highest population densities in the world for many centuries. The geologically young alluvial and volcanic mineral base combined with reliable rainfall and highly evolved infrastructure for water distribution and nutrient capture and retention has created landscapes composed almost completely of high nutrient demanding human foods. Plants rather than animals provided the major source of protein. Humans rather than working animals provided the "horsepower". Recycling of all human waste within the systems, even if not directly to food crops, was essential for fertility maintenance. These systems provided some of the historical evidence for the argument that animals were an unnecessary part of productive agriculture posed by Francis Moore Lapp in the influential book *Diet For A Small Planet*.

ANIMALS IN AGRICULTURE

In contrast to Japan, animals dominated early farming systems in Australia. Much of this can be attributed to European pastoral heritage but the paucity of the natural environment for crop growth[2] also reinforced the central place of grazing animals. Even today, where machines and artificial chemicals sustained by cheap fossil fuel energy have replaced working animals, livestock remain important, not just because Australians eat a lot of meat. Their role in converting fodder plants that are useless to people, providing manure

2 Predominantly ancient, infertile soil, unreliable rainfall and water supply options

and natural pest control remains important, a practise and heritage which permaculture draws on in the design of systems to make better use of the ecological services.

The use of animals to control weeds and pests, while fertilising and cultivating the soil, is an agricultural example of the permaculture design principle "Integrate rather than segregate". In the process of providing ecological services and replacing non-renewable inputs, domestic animals can be allowed to express their true nature rather than being confined in artificial and inhumane conditions. The classic example promoted in permaculture teaching is the chicken tractor in which hens are used in rotation with annual vegetable and/or grain crops to eat weeds and crop wastes and prepare ground for the next crop.

Beef cattle grazing in the Aso region, a rare site in most of Japan. (Local breed of cow specific to region)

The traditional segregation of livestock from crops in Japanese farming requires people to do the work of feeding the animals, removing wastes for composting and preparing crop fields, appearing to contradict this permaculture principle. Efforts to demonstrate the chicken tractor in Japan that I saw were at the garden scale and not well developed, even though I saw great potential for it to be used at a field scale in vegetable cropping systems. My suggestion, both in presentations and personally, of the potential to use pigs to control and manage bamboo and other invasive plants appeared a novel idea to many Japanese people including farmers used to the idea that animals live in sheds. Modern intensive livestock husbandry that has evolved from this tradition are some of the most wasteful, energy inefficient and polluting aspects of Japanese (and Western) industrial agriculture[3].

3 In this regard Australian broadacre grazing systems are much more sustainable even allowing for the problems of land degradation due to less than ideal design and management of land.

Despite this history of segregation of animals from cropping in Japanese traditional and industrial agriculture, and difficulty in adopting permaculture examples of integration from Australia, the rice/duck farming system that we saw at several organic farms in Japan is one of the best examples of integration of animals with annual cropping. Unlike the chicken tractor systems which involve a sequential rotation of birds and crops, the ducklings in the rice paddies forage weeds and pests during the growth of the crop. This requires precision in the breeding and rearing of ducklings, protection from predators, supplementary feeding, and culling of mature birds for meat. Takao Furuno[4] suggested (when we visited) that the system has not spread as far in Japan as in south east Asia and China because the Japanese don't eat much duck. I can also see that there are fewer reasons for Japanese farmers to adopt simple low tech solutions than there are for farmers in poorer Asian countries without the structure of subsidies for agriculture that Japanese farmers receive (directly or indirectly)

Aigamo ducks controlling weeds and pests and providing manure in rice paddy on organic Teikei farm in Chiba prefecture

So, is the rice-duck system of Japan an example of Japanese ecological innovation or another case of Japanese refinement of solutions developed elsewhere? My limited knowledge of the origins, variety and details of traditional use of ducks in Asian paddy rice production make it hard for me to makes that judgement. In any case, the work of Furuno and others is amongst the best of Japanese "sustainable technology" exports which we could adopt in Australia to produce "permaculture rice"[5].

4 See ***Power of Duck*** Tagari Publications

5 The high summer rainfall coastal river valleys of north NSW and SE Queensland are probably the ideal places where the water demands of paddy rice are more sustainable than in the traditional inland rice growing districts. In particular the decline in sugar cane growing provides the opportunity for rice growing

TSUBU-TSUBU CUISINE

With globalisation of the Japanese diet has come increased consumption of wheat flour and potatoes as staples competing with white rice which is generally understood to be the traditional staff of life in Japan. But it was not always so. In times past, a wider range of grains including the Tsubu-tsubu or small grains of millet, sorghum and buckwheat were important elements in agriculture, cuisine and nutrition. In the modern era, higher yielding rice and wheat dominated farming and the tsubu-tsubu grains became associated with peasant food. These changes along with increased sugar, dairy and meat consumption in recent decades, have seen a decline in the very healthy and balanced traditional Japanese diet with accelerating obesity and a string of other degenerative diseases. During our trip we never saw an obese older person but the problem was very noticeable in the under 20 year olds.

In English speaking countries, health food concepts have involved recognition of the value of neglected traditions (often of non-English speaking migrant cultures, including Japanese) and the design of new food combinations and habits in response to new opportunities created by modern food production and distribution. Like the West, Japan has a diversity of health food ideas and movements which have developed in reaction to modern industrialised diets. In Japan, the local traditions have provided a stronger foundation for similar responses. Macrobiotics is perhaps the best known outside of Japan[6].

We spent our last week in Japan staying with Yumiko Otani and her family in rural Yamagata at her Ecological Lifestyle Study Centre. Yumiko has been a pioneer for nearly three decades in the revival of the cultivation and cuisine of millet and other tsubu-tsubu grains including brown rice. Through her books (16 published) of recipes as well as ideas, her restaurant and whole foods business in Tokyo, the International Life and Food Association (ILFA)[7] and her courses, she has designed an extraordinarily diverse, largely

Tsubu-tsubu cuisine: Soba (buckwheat noodles), millet and sorghum fried dishes, wild vegetables and pickles.

6 Macrobiotics is a system of diet for health (integrated with ideas about agriculture and design) developed by George Ohsawa in the 1950's based on earlier work especially that of Sagen Ishizuka

7 See website www.ilfa.org

vegan[8] cuisine based on these neglected grains. Her aim has been to lure Japanese, used to a modern high protein and fat diet, back to the traditional roots of Japanese culture and nutrition through creative food design.

In Australia, especially South Australia, seasonal and bioregional food design is creating new gastronomic culture by blending relevant migrant food cultures[9] but most of this work focuses on animal protein, vegetables and fruits rather than grains. Tsubu-tsubu food is solidly grounded in traditional sustainable Japanese culture[10] but involves a deep creative redesign of how to use the diverse culinary potential of these neglected grains which themselves have been the basis of many food cultures around the world. The diversity of textures and tastes from such simple ingredients was astonishing. The results were certainly very attractive to our senses and showed us ways of expanding our previously limited use of grains we already grow (buckwheat) or others that may be suited (millet).

Tsubu-tsubu cuisine: Soba (buckwheat noodles), millet and sorghum fried dishes, wild vegetables and pickles.

Helping to plant out the season's millet crop, collect wild vegetables in the mountains and in the kitchen partly fuelled by gas from a human waste methane digester provided further evidence that, in the Japanese context at least, a sustainable low energy culture without animals may be possible. I remain sceptical that sustainable low energy agriculture, nutrition and cuisine without the use and help of animals is as easy in Australia with its minerally depleted soils and erratic, unreliable seasons but Tsubu-Tsubu food is certainly relevant in decreasing Australian nutritional and culinary dependence on refined wheat flour, sugar and animal products (dairy and meat) for the sake of human and environmental health.

8 Vegan in the sense that it is based on plant foods but not Vegan in the sense that it involves any hard line moral rejection of limited use of animal products or even flesh food which is often associated with Vegan concepts in the West.

9 There are many more examples of nouvelle cuisine in Australia that are a mishmash of concentrated animal and plant proteins and out of season produce from all over the continent or globe. For those with a deeper connection to the seasons and their environment, such food is at best an occasional titillation, at worst an aesthetic abomination.

10 Especially of the inland mountain regions where there was minimal consumption of seafood except for seaweed which was very easily dried and transported from the coast.

TEIKEI (COMMUNITY SUPPORTED AGRICULTURE)

Permaculture principles can be used to critique commercial agriculture, including organic systems for their over dependence on fossil fuels, soil cultivation, annual crops and general lack of diversity, but in recent years the critique of what happens beyond the farm gate is more fundamental. Fresh food exported to the other side of the world is the most unsustainable food regardless of how it is produced[11]. It was therefore very exciting to see how organic farming in Japan is more focused on producing a diversity of yields for local consumers through the Teikei systems. During our trip we visited several commercial organic and natural farms. In all cases the farmers have a close connection to their customers and in some, they sell a mixed box of vegetables and other produce direct to a group of regular customers or subscribers who pay in advance of each season. The customers are sometimes involved in helping with harvesting and other labour-intensive tasks on the farm. In the USA (and Australia) this is called subscription agriculture or community supported agriculture.

In Australia, interest in CSA's, box marketing and farmers markets is growing rapidly while in the USA there is over 1000 CSA's. The Americans got the idea from Japan. What struck me about the Teikei farmers we visited was their expertise in growing such a diversity of produce (40-70 varieties) and how they see that diversity as a measure of their success because the demand from customers is for as much variety (within seasonal limits) as

Rice paddy within Kyoto residential suburb with new house construction on ex food producing field.

11 The concept of food miles is one of the most important measures of sustainability. Not only does it measure the massive amount of fossil energy used to transport (especially perishable) food, but is also a rough indicator of the degree of large scale control and ownership of production as well as exploitation of agricultural labour. The further the food travels the worse its total environmental record.

possible. In Australia pressure on a typical organic grower supplying central markets is the exact opposite; specialization to the point of monoculture and maximizing yield. Having seen these forces at work reducing diversity of production by producers otherwise highly committed to the permaculture principle of diversity, it was interesting to see the Teikei system driving farming towards polyculture.

During our visit I did not get a detailed explanation of Teikei. Like the community management of water for rice growing (see micro hydro story below) it appeared to be almost taken for granted, an old established idea. Its widespread influence (even domination) of the organic and natural farming scene in Japan means there is much less interest in, or importance attached to, organic certification in Japan than in Australia where most organic food is either sold through capital city markets or exported. Within the International Federation of Organic Agriculture Movement's member organizations (eg NASAA and BFA) certification of farms and produce appears to have become the purpose of their existence. Maybe Japan isn't such a large player in the international organic agriculture scene because "local food for local people" is the dominant idea rather than "serving the global marketplace". This counter flow within the organic movement is not restricted to Japan. The emergence of an Australian gastronomy in recent decades and the Slow Food[12] movement from Italy but now world wide are examples of ideas which reinforce this trend.

It was back in Australia, at a presentation by permaculture activist and CSA manager and facilitator, Robert Pekin, that I learnt that 5.5million households in Japan get their food directly from farmers. Why were the Japanese so advanced in this cutting edge aspect of sustainability? Another question I should have asked my Japanese hosts but maybe they would not have thought about this because it is just normal in Japan.

Here are some possible factors.

- The degree to which food production from vegetable fields and rice paddies were inter-threaded through the suburban and even urban landscapes was perhaps the first thing I noticed on the train from Osaka airport. Food production is very close to where people live. This encourages direct marketing while excellent transport infrastructure makes more remote areas accessible for urban consumers.
- During our visit, I was amazed and excited to see the degree to which rural self-reliant culture was alive and well. It seemed even stronger than what I had seen and known about in Italy[13]. Many urban Japanese families still have links to a home village where relatives farm on land owned by many extended family members. I got the impression that many people still get their food from their home village, even from their own land in the form of bags of rice as rent for use of the land.

12 Founded in 1986 with 80,000 members world wide, see www.slowfood.com

13 Mainly from my partner Su Dennett who married into a Neopolitan family with rural roots.

- It is not only staples and vegetables which maintain links to home villages. We were exposed to the great diversity of regional and local foods and recipes, which have considerable status for affluent Japanese. If getting your food from relatives in your home village prepared by traditional methods has status rather than shame, then the incentive for other urbanites (who don't have those connections) to organize them through Teikei and similar organizations is logical.
- The very strong social and collective spirit and organisation of the Japanese probably makes the practical aspects of organizing Teikei systems an easy, even pleasurable process, while Australian's might think it's a lot of trouble compared with a visit to the supermarket any day of the week.

In the emerging and global energy descent future, food prices are likely to rise dramatically, while variety and quality of fresh food from central markets will decline. There will be an escalating need for people to get their food from local farmers and others with the skill and capacity to grow it. Despite Japan's manifold disadvantages in a low-energy future, its Teikei heritage will provide the Japanese with a head start.

SUSTAINABLE FORESTRY

Above: Small sawmill in mountains of Kyushu with stock of Sugi posts and sawlogs
Right: Sugi logging coupe on very steep country with retained deciduous trees and slash laid on contour to prevent erosion

Sustainable nature-based forestry around the world provides some of the best examples of permaculture principles. One of my main interests for the trip was to see Japanese forestry. For decades I had been aware that Japan had managed to maintain a balance between timber production and watershed protection in its predominantly mountain

forests. While the examples of agriculture that I saw were mostly organic and therefore alternative, the examples of forest management that I saw were more mainstream and therefore not restricted to small networks of alternative minded people.

Forests cover nearly 70% of Japan and most of that area is managed to some degree for timber production. About half is plantations of traditional conifers: Sugi, Hinoki, Larch and Pine, while most of the remainder is a complex mix of deciduous and (in the south) evergreen hardwoods as well as bamboo forest. Almost everywhere we travelled in Kyushu and Honshu, conifers, hardwoods and bamboo formed a carefully managed patchwork across the mountains on slopes that appeared to defy the possibility of access let alone logging. Management appears to be so pervasive and intensive (by Australian standards) that, during 4 weeks of travelling we saw very few old (or dead) trees other than those which mark temples, shrines and cemeteries.

In the heart of large scale timber production country in mountains behind Miyasaki, we saw cable logging of deciduous oak forest as well as softwood plantations at various ages up to 120 years old. In all cases, the size of coupes and proportion of the landscape harvested was small. Like many eucalypt forests in Australian, only a limited proportion of oak is good enough for sawlogs. While woodchips (much of it exported to Japan) is the major use of lower quality hardwoods in Australia, oak limb wood is used in very large quantities for growing shitake (the most popular Japanese mushroom) as well as charcoal, widely used as both a smokeless fuel and for water and air filtering.

Commercial shitake mushroom production using inoculated oak billets from local forests in Miyasaki

Wood, both hardwoods and softwoods, are central to Japanese traditional architecture, art and culture and the status of indigenous species for traditional uses is very high. Before visiting Japan I had the impression that only the rich could afford Sugi and other traditional timbers but the extensive and well managed forests of Japan actually supply a substantial proportion (about 2/3rds) of all wood used in Japan for durable goods and building construction. Many public building such as Onsen (bathhouses) make abundant, even extravagant use of wood. The wood from Japanese conifer plantations is very different from our Radiata pine plantations. Japanese plantations grow at moderate rates over relatively long rotations 40-120 years but produce wood which is moderate to high durability, fine grained, stable and suitable for joinery, panelling and furniture. Imported North American wood (eg Douglas Fir) which we recognise as superior to our locally grown Radiata pine is regarded as inferior to local wood in Japan.

While ecological diversity of these plantations is much less than that of Japanese deciduous forest, plantations do have much higher ecological values than conifer plantation in Australia for the following reasons;

- The long rotation reduces impact of harvesting and allows a more mature understorey and soil ecology
- The scale of plantation coupes is small, creating a patchwork of different forest ages
- The timber species are indigenous to Japan
- No apparent use of fertilisers or herbicides (or poisoning of wildlife) to establish trees.

The fact that local forests supply a large proportion of Japan's abundant use of wood for a population of 120 million while maintaining watershed and ecological values is in stark contrast to Australia where much more extensive forests yield less high quality timber for a population of only 20 million. In Japan there is 0.2ha of forest per person[14] (including reserves and unharvestable areas), while in Australia there are about 8.5 ha of forest per person (including extensive woodlands, low forest and reserves which produce no timber yields). For a more realistic comparison, in Victoria there is more than 1ha per person of tall eucalypt forest (capable of some timber production, including reserves). If my impression that wood use for durable purposes in Japan is higher than in Victoria while imports are no higher than Victoria, that would make Japanese forests about 5 times more productive than Victorian forests.

Whatever the actual figures, the greater quality of Japanese timber and its widespread use in competition with imported timber was abundantly clear to me as a builder and woodworker. This productivity and quality is at least partly attributable to the labour intensive management of forests, especially in thinning and pruning but also in the care of harvesting and the diverse range of products and end uses to which wood of varying form

14 Earth Carrying Capacity Literature Reviews http://home.alltel.net/bsundquist1/index.html

Display house all made from local timber in Miasaki hinterland based on traditional forms combined with energy efficient design. Building design by regional planner and permaculture activist Osamu Matsushita

and quality can be directed. The diverse and highly skilled wood-using industries (from traditional crafts to high tech processing) is an important part of this equation.

It might be assumed that this combination of well paid, skilled labour, and sophisticated equipment and small scale production must only be possible because of government subsidies. As far as I could tell, forestry, unlike agriculture, appears to thrive without direct subsidies (although generous funding for rural development and infrastructure probably acts as an indirect subsidy). And my assumptions about the rarity and cost of Japanese wood were definitely wrong. In Miyasaki it was actually cheaper to build a traditional style house from local rather than from imported wood.

In Australia, after thirty years of trench warfare between environmentalists and the timber industry, maybe we could learn some lessons from the country that buys most of our woodchips. Many Australians (environmentalists and foresters included) seem to think that Japan is totally dependent on unsustainable logging from other countries because it either has no forest worth mentioning and/or they are all locked up for watershed protection. Maybe these false impressions derive from visitors who think Tokyo is Japan and those who have been to the countryside and not seen a logging coupe or recognised forest management.

While forests in Japan are intensively managed by Australian standards, it is ironic that country folk in Japan, see these same forests as in a relative state of abandonment compared with the manicured landscapes that existed when Japan was a more rural and frugal society. Today, many plantations established since WWII remain unthinned, most bamboo stands are neglected and hardwood forests have grown wild from lack of traditional coppice harvesting. Lack of labour, low wood prices, imported bamboo and wood products and substitution by plastics and other industrial products are some of the reasons for declines in forest management (in Japan, as well as other affluent countries).

SATOYAMA

This problem of landscape abandonment has been addressed by the Satoyama movement which could be described as "Japanese Landcare". It involves people (often from the city) working in private and public forests to restore the natural and cultural values. One interpretation of the origin of the Satoyama concept is "the integrated system of rice paddy and fields with the mountain footslope forests and including the village typically nestled at the edge between cultivated and wild nature. Japanese permaculture teacher Koji Itonaga[15] interprets Satoyama as a traditional expression of permaculture design.

We visited three Satoyama projects in different parts of Honshu. All involved volunteers working on private land restoring ecological and traditional productive values, mostly by cutting vegetation and in some cases by supplementary planting as well as restoration and maintenance of water management structures and rice paddies. Clearing bamboo forest from rice paddy terraces, thinning conifer plantations and patch felling oak forest to make charcoal and grow shitake mushroom might not sound like environmental restoration, to Australians, but they certainly are to the Japanese. That human management is not a part of nature is a modern environmental idea that appears to have made little impression on Japanese attitudes to their forests.

Satyoma project site near Nara recovering rice growing terraces from invading Moso bamboo and restoring coppice management in oak forest

We saw how

- in a few decades, Moso bamboo runners can destroy drystone terrace walls which have stood for 350 years, so maintaining the ancient boundary between paddy and bamboo is landcare.
- thinning conifer plantations ensures the next generation has an abundance of high quality Sugi and Hinoki essential to

15 Professor, College of Bioresource Science, Nihon University and president of Permaculture Centre of Japan. See ***Permaculture In Japan: Suitable for the Natural and Cultural Conditions*** of Japan by Itonaga et al in ***Proceedings of the Sixth International Permaculture Conference and Convergence*** PAWA 1996

maintain traditional buildings from family farmhouse to the most elaborate temple.

- the ecological diversity of wildflowers and wildlife is highest when oak forest includes a patchwork pattern of coppice regrowth and older forest.
- the revival of traditional charcoal making to use harvested bamboo and oak is the traditional use (similar to the revival of bender furniture made from hazel coppice in Britain) necessary to sustain the forest as a cultivated ecosystem.
- the harvesting of delicious bamboo shoots, growing of shitake in thinned forest glades from coppiced oak, and the collecting of wild vegetables are all a natural part of the rewards for volunteers helping to restore neglected forests and fields of rural Japan.

These examples show how Satoyama reflects an integrated understanding of people as part of nature.

Satoyama group members discussing age of Sugi tree cut as part of a thinning program to maintain timber and ecological values in private forest in Tokyo region

Landcare in Australia arose in response to land degradation due to excessive intervention (to clear land of perennial vegetation)[16]. However it has increasingly become characterised by vegetation removal (in high rainfall and urban areas at least) where undesired plants (weeds) have become the prime focus. While Satoyama projects might superficially look like Australian Landcare projects[17] removing unwanted (weed) vegetation, the aim is always management, respect and appreciation for the abundance of nature rather than the typical attitude of Australians hoping to rid the landscape of pest plants and animals.

This raises the tricky issue of indigeneity. When questioned about whether a particular species of common tree was indigenous to Japan, permaculture activists, qualified foresters and farmers were often uncertain, even of the concept in some cases. Moso running bamboo, one of the most pervasive elements of Japanese landscape and the economic resource base of a thousand traditional manufactures was apparently introduced from China

16 See "The Landcare Movement: Community Based Design and Action On A Scale To Match The Continent" 1995 in ***David Holmgren Collected Writings 1978-2000*** for my take on this history.

17 At least in high rainfall and urban landscapes where nature has been more successful in her own revegetation.

around 300 years ago, not that much longer than the arrival of many species to Australia via European colonisation. Several permie activists I spoke to were also unaware that the Black Locust (Robinia pseudoacacia) which is widespread and wild in some regions we visited, is from North America.

Maybe this lack of awareness about indigenous vs exotic is because surprisingly few plants from elsewhere seem to have naturalised in Japan. Apart from Moso and Black Locust, I saw almost no tree species in forest landscapes and few in amenity plantings that, as far as I knew, were modern migrants to Japan. Questions to foresters about whether any exotic species had been planted in plantations drew a definite no, as to whether there were forest arboretae where species had been trailed, they thought 'maybe' though they had never seen any. They concurred with my observation that planted Himalayan cedar trees were growing very fast but were sceptical about their potential value as a replacement for Japanese pine which has been adversely affected by disease. This conservatism about appropriate timber trees for Japan appears widespread but it has little to do with the anti-exotic attitudes which are common in Australia and other predominantly Anglo nations. Instead it seems part of a deep conservatism about land, nature and culture, which is in stark contrast to the eager adoption and refinement of technological innovation in Japan that has been so widely noted by western commentators.

Although it has its downsides from a permaculture perspective, this conservatism about land and forests has allowed Japan to maintain and increase its forest resource base during the era of cheap energy, while in Australia, we have, to a large extent, continued to degrade our own. Although the challenges of supplying the needs of 120 million people in a low energy future are serious, Japan has a head start over Australia in a sustainable forest resource base for future generations.

RENEWABLE ENERGY

Use of renewable energy and resources (in preference to non-renewable energy and resources) is a permaculture principle that many at the government, corporate, and community level also recognise. Traveling through Japan by train, we were struck by the number of houses with either solar hot water heaters and/or photovoltaic panels (presumably feeding into the national grid). While the numbers of solar hot water heaters seemed relatively normal by Australian standards, the number of photovoltaic arrays was a surprise especially given the lower sunshine levels in Japan. Despite my skepticism about the net energy yield of photovoltaic panels, the decision, by what must be hundreds of thousands of Japanese households, to become renewable energy producers in this way seemed commendable and put to shame Australians who, with abundant sunshine and green power premiums, still choose to support coal generated electricity. In reality, photovoltaics will never be a major source of energy in Japan once the era of cheap fossil fuel passes because the net energy gains are less than those achieved from spending

Photo voltaic grid feedback electric power array on rural house in Nagano prefecture

the same resources on higher yielding renewable sources such as micro-hydro power, forest biomass or even wind. Better still the same resources spent in saving energy (conservation) is the most profitable of all "new energy" sources, so called negawatts[18].

I got the impression that incentives for grid feedback solar power were not particularly good. A series of possible explanations for the high incidence occurred to me; Japanese personal affluence; love of fashionable high technology; and/or environmental commitment to alternatives to the nuclear industry. The adverts on the Shinkansen[19] boasting that Sanyo was the world's largest photovoltaic producer reminded me that the profits from the solar revolution flowed back to Japanese industry. Maybe all of these factors play a part but it was only researching for this article that I discovered two important facts that underscored the importance of market forces. Electricity costs in Japan are the highest in the OECD, and three times higher than Australia. In addition to this incentive for saving energy, the Japanese government in the late 1990's provided higher rebates on the installation of solar power than any other country including Germany.

Large wind turbines are more dramatic symbols of the renewable power revolution sweeping Europe, America and belatedly Australian, and New Zealand. While the net energy yields from wind power appear to be much better than for PV panels, this is very dependent on the consistency of the wind. Continental west coasts in the 30-40 latitudes are generally the best wind power environments. While I was told about good wind regimes in northern Japan, the wind turbines at the Kita-kyushu "Eco-town" industrial recycling site seemed more symbol that substance. Estimating wind fields is notoriously difficult but my reading of Kyushu coastal landscapes suggested on-shore winds were very mild. Trees growing right to the coast with no sign of wind pruning suggested a wonderful horticultural environment but not so good for wind farms.

18 While in Japan we were told, on more than one occasion, that the power to run all the vending machines in Japan requires more electricity than produced by one (or two!) nuclear power stations.

19 Electric powered "bullet" trains travelling at 250kph which form the main trunk rail system. This very convenient and comfortable network provides for major inter city travel over distances similar to the Australian east coast without the need for more energy demanding and inconvenient air travel.

MICRO-HYDRO

In contrast to the modest potential for sun and wind power in Japan, the untapped hydro-electric power potential of the hundreds of thousands of small rivulets, mountain streams, rice paddy channels, river drop structures and flood control dams, must be enormous. None of these uses would reduce the existing productive or environmental service uses of these water flows and in some cases they would reduce erosion of existing infrastructure. From almost the first day in the country, I found the abundance of water and the development of water management infrastructure, both traditional and modern, amazing, almost overwhelming. As we toured the countryside, the absence of any sign of micro or mini hydro power seemed strange, given the major contribution of large hydro-electric schemes to power production in Japan. Perhaps the adverse environmental impacts of large dams may have made hydro a less fashionable form of renewable energy than solar or wind. This has certainly been the case in western countries. My persistent questions in Japan drew many blank looks and, what appeared to me, some half thought through explanations. Gradually a plausible story fell into place. In the early years of the 20th century small hydro power plants were common but nationalisation of electric power generation and large scale hydro power supplying the national grid in the 1930's eliminated any alternatives. It has apparently remained difficult for autonomous, let alone grid connected micro-hydro, to get established because water is owned by the government.

River regulation structure in northern Kyushu with substantial potential for mini hydro electric power production

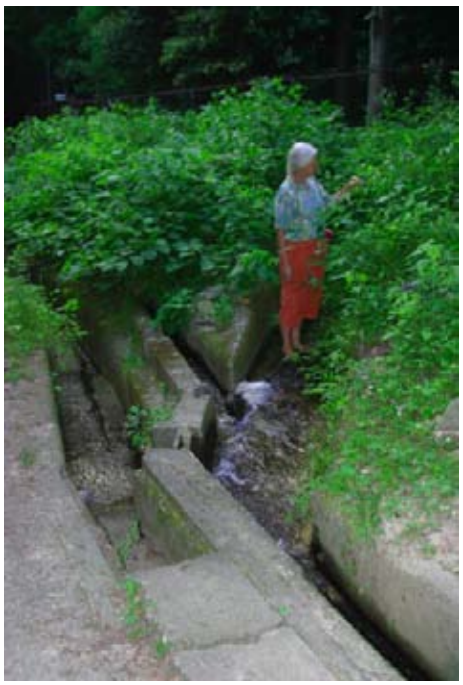
Finally my questioning paid off during a rest and recreation stay at Shalom Hutte permaculture guest house in Nagano prefecture, at the foot of the Japan Alps. With typical Japanese organisation and attention to detail, the local micro hydro and bio-diesel activist, complete with Powerpoint presentation, materialised to answer my questions and discuss the great opportunities for micro-hydro in Japan.

His NGO was running a test case for approval of a community run micro-hydro plant; a two year process as complex as that required for a major new public dam. Even if micro-hydro potential in Japan was only 20% of current hydroelectric production, that would represent

20GWhrs (about triple Australia's current hydro electric production. It would take about ten million typical rooftop domestic photovoltaic systems to generate this amount of power (at much greater financial and embodied energy cost).

I suggested to my permaculture colleagues that linking the micro-hydro potential of rural Japan to the traditional village systems of water management and distribution for rice farming was a rural development opportunity that reflected permaculture principles much better than photovoltaic panels on every house. The diversity of required turbine technology, infrastructure adaptation and stakeholder participation make these systems difficult for large corporate and government interests to plan, design, construct and manage. This same situation provides an ideal opportunity for farmers, local community organisations and small business to become significant contributors to renewable and socially sustainable power generation in Japan. The potential of micro hydro for rural electrification in many poor tropical countries is immense. Japanese industrial design and construction capacity combined with community organisation and rural development expertise could provide a model for overseas development aid.

COMMUNITY GOVERNANCE OF WATER?



Rice paddy water supply race infrastructure on outskirts of Kyoto with perennially flowing water suitable for micro hydro electric installation

I was left with more questions than I had answered about how the centuries old regulation and distribution of water to rice farming worked in today's Japan. Was the complex organisation involved invisible to the visitor because it was so deeply embedded in traditional village life and governance structures that the Japanese take for granted? It is tempting to think that the super abundance of water in Japan eliminates any difficult decisions or conflicts, but I suspect we could learn a lot from Japanese water management before we pat ourselves on the back too much about landmark agreements between Federal and State governments to sustainably manage the Murray Darling system.

Japan is an affluent country, so much so, that at times I actually felt like I came from a poor country. High wages are one of the measures of that affluence so I was surprised to see so many examples suggesting a bias toward employment of people rather than capital, technology and resources which we take for granted in Australia as an inevitable byproduct of high wages. From workers manicuring parks and cleaning public places, to those in agriculture

pruning fruit trees or cutting grass on paddy field bunds, craftspersons and caterers who maintain labour intensive traditions in the face of factory and machine efficiency, petrol station attendants who swarm over your car attending to every possible need and service personnel in lifts and public transport, who intone information to customers; all these people apparently gainfully employed at profit to their employers. Much greater differences of this type are obvious elsewhere in Asia but very low wages relative to Australia is the easy explanation that cannot be applied to affluent Japan. Many individual explanations are also possible. Agriculture is highly subsidised, making labour intensive activities economically viable. Safety regulations prevent self-service in petrol stations, and the culture of personal service rather than self reliance bias management decisions everywhere towards employment of staff.

All of these factors and others are no doubt involved but I think the cost of energy - both transport fuel and electric power may be a big underlying driver in these differences. The difference in energy costs between countries like the USA and Australia on the one hand and Europe and Japan on the other is often recognised as a force driving energy efficiency and technological innovation in those latter countries but the general effect on the competitiveness of labour is rarely mentioned. With electric power prices triple Australia and petrol prices double ours, Japanese labour is more competitive in both traditional and modern parts of the economy than we might otherwise expect.

In Australia we see so many places and situations where the employment of manual and skilled labour could be employed with relatively little investment of capital to create a better environment and society. But so often we are told that the American solution (lower wages) is the only way to get more employment. Japan provides an example of other possibilities. Abundant high quality and cheap energy has been the historic basis for the replacement of labour with technology for hundreds of years in industrial economies. Increasing cost and declining supply of high quality energy will see a reversal of this trend. But if the habit of employment and the skills of working with pride and care have been lost, we are disadvantaged in the energy descent future. Japan appears to have maintained that work culture despite the ravages of affluence and technology, at least partly through the agency of progressive energy pricing policies.

ECOLOGICAL BUILDING

Appropriate building methods and design for energy efficiency using local and readily available natural materials are key issues in the permaculture network around the world. In Japan, the process of taking the best elements from traditional timber house construction (very good summer performance) and combining that with good insulation, thermal mass and solar gain for winter performance is an aim which ecological architects and builders have addressed. We saw some good examples but I also got the impression that the application of ecological principles to innovative building design in Japan still has a long way to go.

Recently constructed ecological office building Kitikyushu with simplified "OM Solar" roof mounted active air collector supplying thermal mass storage for heating and cooling.

In recent years, straw-bale has become popular (in ecological building networks in the USA and other countries) as a high insulation, cheap renewable material for house wall construction. While some of my most respected colleagues have been pioneers in developing straw-bale building, I have long been a straw-bale sceptic. Although I recognise it is an appropriate material is some climates and bioregions, in others it is more problematic. The problems from over enthusiastic adoption of ecological fashions are as great as those from conservative resistance to innovation. My observations of Japanese experiments in straw-bale building suggest my scepticism is particularly appropriate to restate.

The excellent insulation properties of thick straw-bale walls is well known but this potential value is only fully realised in very cold (and/or very hot) climates. Without comparable or superior roof insulation, even in very cold climates, the advantage of the very good wall insulation is substantially reduced.

The space occupied by the very thick straw-bale walls is not a serious problem in large buildings but for smaller houses and other buildings it is significant. Conventional concrete footings amplify the problem. The issue of limited space for building in Japan hardly needs emphasis.

In buildings, with a few large (or grouped) windows and doors, the material and labour costs in openings in the straw-bale are not excessive but where design requires a large number of separate windows and doors, the costs rise rapidly.

The risks of damp in straw-bale are significant even in many Australian climates but in Japan, very high rainfall and summer humidity amplify the risks.

However, the main problem with straw-bale in Japan is the apparent absence of any tradition of straw bale production in agriculture and the fact that the climate does not allow the growth, curing or harvesting of hard dry straw in high density bales necessary for durable straw-bale construction. One of the great ecological arguments for straw-bale is that it makes use of an abundant and cheap (even waste) agricultural product. The bales we saw were loose, poor quality and damp. Loose (very dry) straw can be used as an insulation material in cavity construction but this is not straw-bale construction.

Partly constructed "strawbale" experimental building at Permaculture Centre Japan garden site

Permaculture design requires that we study and understand the sustainable traditions of the local region, recognise the limits or weaknesses in those traditions for current conditions, identify solutions from traditions in similar climates as well as the special opportunities to reduce and recycle wastes created by affluent, high-energy society.

After nearly three weeks of enjoying sleeping in traditional houses on a thin futon over tatami[20] I saw a truck loaded with old tatami, (probably headed for the district incinerator) and immediately realised a permaculture solution to insulating Japanese houses. How many slightly worn and soiled tatami are disposed of in Japan each year? The mind boggles thinking about all those mats being burnt that would make perfectly good insulation panels.

I wasn't in Japan for long enough to find out about tatami recycling and insulation ratings but I am sure that some innovative designer has already developed the tatami wall insulation system. But of course I couldn't stop myself mentally designing a walling system for weather protection, insulation and thermal mass based on traditional methods we had seen throughout rural Japan. Here are the results of my musings.

20 The floor covering in a traditional house. It is a medium density straw board with woven covering manufactured in standard sizes which act as modules to define the size of rooms.

Tatami floor mats sample cross section typical of those widely used in Japan with recycling potential as wall insulation

The traditional post and beam construction could be set to the standard tatami module with an external wall cladding of timber vertical boards over a sarking. Horizontal bamboo spacers could be used to separate either 1 or 2 "retired tatami" insulation panels from the cladding and the lining. Further horizontal bamboo strips provide keying for an inside rendered earth/straw or lime mixture up to 50 mm thick and flush with the timber frame. This traditional (exterior) lathe and plaster (or wattle & daub) system would provide the thermal mass necessary to store some of the heat from appropriately sited, south facing windows. In less wet areas or under large eaves, good quality earth render over bamboo lath and plaster could be used as the exterior wall surface instead of timber.

RURAL RESETTLEMENT AND ECO-VILLAGES

Eco-villages and co-housing projects have been some of the most prominent application of permaculture design around the world. In the Japanese permaculture network, interest in eco-villages is strong and many of the Japanese permies we met had been to Crystal Waters eco-village in Queensland. On my third day in Japan, I was asked my opinion of the potential of a large, mostly forested site in Amakusa for an eco-village[21]. I naturally felt uneasy about assessing the biophysical potential of the site without any knowledge of the land use planning, social and other contexts for eco-villages in Japan.

Current and recent eco-village projects, especially in English-speaking countries, have developed in a context of many attempts at forming intentional communities since the 1970's. Most have been on rural "green-fields" sites but in some cases, including Crystal Waters, eco-villages have evolved directly from those previous communities. These efforts at planned rural resettlement are part of a much larger and sustained "back to the land" movement which has been very strong in countries such as Australia, New Zealand, Canada and the US, where access to cheap land has allowed (mostly young) people to use savings from work or modest inheritance to become independent land owners.

21 A campaign by environmentalists had stopped a proposed golf course and a unfinished and bankrupt development project had left the local government open to proposals from the community.

Organic farmer and environmental activist Shun Nakai overlooking potential eco-village site in Amaksa, Kyushu saved from golf course development

In Australia this availability of cheap land, combined with access to social welfare, has (until recently) made single family property development rather than communities, the norm of Australian rural resettlement. The great open spaces of Australia, with its distributed farm settlement pattern has also allowed new rural settlers to experiment with land use, building and lifestyle without adversely affecting, or being constrained by the norms of the local community. On the other hand, very few new settlers become successful farmers and many give up growing their own food. The marginal and unproductive nature of the land, combined with savage economic conditions for agriculture, including no government support, low prices and poor access to markets are some of the reasons. Much of the rural resettlement in Australia has created a type of super dispersed version of suburban life totally dependent on the motor car and outside income.

Intentional communities on the other hand have promised economies of scale in development of infrastructure and land use but (until recently at least) the lack of flexible land ownership structures and the challenges of cooperation and compromise, even with philosophically aligned co-owners has been difficult, if not overwhelming. Despite these problems more people are interested in eco-villages than ever before. Part of the interest in new eco-villages is due to more flexible ownership structures, realistic governance rules and better designed infrastructure. It is also true that land prices and stricter planning controls are making individual property development more difficult than ever before. Thirty years of collective experience has also made prospective rural settlers more realistic about how hard it is to build a house, develop a property, grow your own food all by yourself (or with a partner and young children). That collective experience has also exposed the problems for families with older children on isolated rural properties.

The situation in rural Japan for prospective new settlers is different in almost every respect. Rural-urban migration has left many of Japan's 140,000 villages with few, mostly aged residents. Given the extraordinary longevity and vitality of the elderly in rural

Japan, it is not unusual to see villages where farming, forestry, landscape and building maintenance is all done by people over 70[22].

Excellent sealed roads, power, telephone and postal services are available in all but the most remote and rugged mountain settlement. Central government funding of rural infrastructure, agriculture and community facilities provide an extraordinary high standard of living in the villages but this has not been enough to stop the drift to the city. Current government policies to reduce support for agriculture and increase average farm size from an incredibly small 1.5ha to 20ha over the next decade threaten to accelerate the depopulation of rural Japan. From an Australian perspective, rural Japan offers a sense of space missing in the city (especially in larger traditional farm houses), close connection (often within 100 metres) to wild mountain forests and streams of stunning beauty, unimaginable soil fertility and abundance of water, combined with a level of transport, communication and community facilities that rural Australians can only dream of.

Elderly farmer heading to work (with brush cutter in trailer) along bitumen sealed access tracks between rice paddies.

So why isn't there a vibrant back to the land movement in Japan? Many reasons come to mind.

- the cost of land is definitely a factor but from what I could see the greatest factor is the difficulty in buying land at all. There appear to be no real estate agents in villages and even small towns. Ownership of land is typically fragmented and vested in extended family members, many of whom may live in the city.

22 In one remote village we were introduced to an 86 year old woman, the last remaining resident, who still works about a hectare, (with regular visits and presumably help from her son). She produces the vegetables for her family in town but her primary reason for holding on is that if she goes, the village is dead.

- these city dwellers may get a significant part of their food supply (including rice) as rent, directly from relatives who farm the family land. In addition to the economic and food security value of this connection, access to special local and wild foods with very high cultural status is often through ownership of land. Conservative values and culture, in which decisions rest with the older generation, respect for the ancestors (ever-present in the family or village cemetery) combine with a deep cultural intelligence which understands (at some level) that after the frenzy of fossil fuelled affluence has passed, the land, both rice paddy and mountain forest, will again be the source of enduring wealth.
- for those who might manage the change from city to rural life and ownership, the opportunities for independent action are heavily constrained. However it is not so much bureaucracy and regulation (as I imagined) that impedes rural resettlement. For example, planning controls on effluent disposal seem much more flexible in densely settled Japan than rural Australia. Maybe the tightly clustered pattern of villages and fragmented pattern of paddy ownership demands a much closer cooperation between landholders in both village living and land use decisions. While this is commendable it restricts innovation and experimentation far more than the distributed farm structure of rural Australia.
- the numbers of urbanites interested in the shift to the country may have been small because the pull of the city has been very strong, until recently. The explosive growth of urban affluence after the devastation of the Second World War made urban life so attractive to relative rural poverty. The common confidence about Japanese technological and economic achievement overwhelmed doubts about sustainability that characterised the western return to the land.
- lastly the rugged individualism required to swim against the social tide may have been more difficult given the Japanese tendency to collective thinking and action.

While rural resettlement in Australia is not well documented or understood, perhaps the process in Japan is even more unacknowledged, subtle and almost invisible. For those with family and land ownership ties to the country, the conservative nature of village life probably suppresses interest in returning to the land. Nevertheless, the minority of young people who do return to their home villages after education, travel and residence in the city or abroad may bring with them ideas and values from elsewhere including a post-modern respect for many aspects of traditional life. We stayed with folk who had made that transition. The opportunity to buy (through family connections) a 400 year old farm house, a livelihood from organic farming and home-based, globally connected work and the old folks, relatives and ancestors all close by, were all elements in their success.

Cemetery behind houses on land owned by the same families for centuries in Aso region Kyushu. A common sight throughout Japan

Young urbanites without connections wanting to return to the land often rent run down houses and (typically separated) small fields for growing vegetables and maybe a rice paddy that has been neglected. Large numbers of older and affluent Japanese are also making the reconnection to nature and traditional culture through rural tourism, craft classes and other activities after a lifetime of city work. A more limited number, disillusioned with mainstream values and society, are moving to rural areas, in part to escape the consumer madness of their peers and children.

So how else can permaculture design thinking and activism facilitate an acceleration in rural resettlement and what role might eco-villages play in that process?

The large numbers of young Japanese who have travelled and experienced Western efforts at sustainable living through WWOOFing, permaculture courses and similar experiences, provide a pool of people more likely to recognise the extraordinary value of the still living sustainable culture of village Japan. It seems likely that this contribution to rural resettlement in Japan will continue and maybe increase so long as air travel is cheap. Australian permaculture education centres and eco-villages in Queensland, and to a lesser extent other states, are already involved and there is opportunity to expand to, range of options especially in cool climate southern Australia. What is needed is a diversity of options from the "toe in the water" eco-tourist experience to the serious internships which allow genuine exchange so we can be sure that visitors are gaining worthwhile experience and that we can learn from Japanese people especially those with rural and traditional knowledge.

The rarity of large contiguous parcels of land, which have low intensity land use (pasture or forest) and are even remotely suitable for Australian style eco-village development, is striking for a Australian permaculture designer. The site I looked at in Amakusa seemed to be a relatively uncommon example. By Australian standards, this site was not remote and had good access to services but it might still be hard to attract substantial

Koji Itonga Regional planner, professor at Nihon University and president of Permaculture Centre of Japan

numbers of people to a site so distant from centres of employment and with no immediate infrastructure for farming. It seems likely that "green-fields" eco -villages will inevitably come to Japan in some form and it is possible that the Japanese tendency to favour the group identity and values over that of the individual may lead to greater success in co-operative decision making and action than has been the case in Western eco-villages. Maybe another case of success through refining and improving on a foreign idea.

While in Japan I was impressed by the examples I saw of rural community and economic development influenced by permaculture thinking and supported by government and academia. In particular the work of permaculture activists Osamu Matsushita in Kyushu[23] and Koji Itonaga at Nihon University[24] demonstrated many aspects of ecological thinking that reinforced local traditional systems and values. Such projects can contribute to a dialogue between conservative rural folk and predominately urban permaculture activists that builds trust, mutual respect and exchange. They may also provide "a foot in the door" so to speak for permaculture activists to find employment in rural areas and therefore the feasibility of living, locally and lay the groundwork for re-invigoration of existing villages by co-ordinated in-migration of groups of new settlers.

Satoyama projects linking city people to land owners with neglected land in need of restoration is one obvious model for learning relevant skills and social connection with landholders which could grow towards some closer integration. Similarly Teikei systems offer the potential for close links and relationships between established organic farmers and prospective new settlers taking up opportunities to become farmers on rented land in the same locality.

Rural development projects, Satoyama groups and Teikei systems, all have potential to act as "carrots" to open local communities to innovative solutions from outside. At the same time, the reality of abandonment of houses, and rice paddies to advancing Moso and Kudzu may act as "sticks" driving local communities to accept and encourage any

23 Two examples:
- a display home bringing together traditional wood craft, modern manufacturing & with convenient and energy efficient design to support the local timber industry.
- a botanical garden of traditional medicinal plants as an eco-tourist project.

24 Two examples:
- a rural local currency system called Rivers sponsored by the local government.
- a charcoal making kiln to produce a traditional and valued product using wood from Satoyama projects managing coppice oak forest

newcomers. If reduction in central government funding for agriculture and infrastructure eventuate, then the opportunities for newcomers should grow.

A co-operative or similar organisation formed by prospective rural settlers could search for and identify villages with the right mix of land use, ownership structure, housing stock and social profile. Some of the primary filtering could be done systematically using public data bases and geographic information systems but the real work to achieve significant rural resettlement will come from a more organic process of developing trust between people

Once new settlers are established as residents in a village, opportunities to become house and land owners may emerge. One model from overseas which might be relevant to formalising a beneficial exchange between older village residents and young newcomers comes from Austria. Carers looking after aging owners in their homes for the rest of their lives gain eventual title to the home after the owners pass away. A legal contract specifies rights and responsibilities of both parties.

My aim in floating these ideas in another version of this article was to stimulate discussion within the Japanese permaculture network about creative strategies to tap these emergent opportunities for renewal of village life and culture by allowing young people from the city to gain a stake in a sustainable future.

The rapid emergence of the energy descent future will demand models for substantial and rapid ruralisation of Japanese society and economy. Flexible models allowing for organic evolution such as I am suggesting may have a much better chance of working than the formal planning, design and development of eco-villages on green-fields sites. For the permaculture network in Australia with its strong connections to the three decades-old rural resettlement movement, they may give food for thought about how we might grasp the opportunities of the energy descent future.

The existing village model of rural resettlement also has some relevance to Australia where land prices are restricting access to land in locations close to cities, the coast and other desirable cosmopolitan rural growth areas. This is not a new idea. In 1979 when Bill Mollison and a group of permaculture inspired prospective rural settlers formed the Tagari community, they bought houses in the small Tasmania port village of Stanley and secured access to farm land within walking distance of the houses. For various reasons the community broke up after a few years but the idea of beginning a community within the bounds of an existing traditional community using existing housing stock rather than pioneering on “green fields” sites still has merit.

Similarly the idea of developing relationships between existing rural land owners and non-owning newcomers has application in Australia. Many older rural settlers are wondering how they can stay on the land or at least in their community while young people are wondering how they will ever get secure access to land. WWOOFing has acted like a “toe in the water” for Australian individualists to experiment with how they might share land and resources for mutual benefit.

CONCLUSION

While cultural contact between Australia and Japan has been strongly based in the world of trade and business for many decades, as well as academia and popular culture in more recent times, the permaculture movement is generating a cultural exchange at a new level which promises to help inform and stimulate the further development of ecologically robust and socially flexible solutions in both countries during the era of energy descent.

Apart from the Japanese innovations such as Teikei, Satoyama, Natural farming, Rice-duck farming and Tsubu Tsubu food that I have discussed, or its whole forestry and timber industry, there are more general aspects of Japanese culture from which we Australians could learn. The view of people as part of nature rather than apart from nature which is better understood and expressed in Japan is an important lesson for Australians. The reality of older people leading healthy productive lives within extended families and local communities is a badly needed example in Australia. Perhaps most fundamentally the Japanese can show us that co-operation with one another is possible. If we can learn that lesson then we may be better placed to take advantage of the wonderful opportunities in a continent with only 20 million people and avoid totally fragmented lives beholden to media illusions and corporate agendas.

David Holmgren August 2004