

Preservation of Architectural Heritage Through Adaptive Reuse and Its Value for a Sustainable Environment

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The central question of this paper is: Can adaptive reuse - following hundreds of European models - contribute to a sustainable environment in New Zealand? European influence on New Zealand's historic buildings is not deniable. Could adoption of European conservation practice help to secure New Zealand's architectural heritage and environment?

Adaptive reuse of quality buildings instead of building anew will support the endeavour to preserve history and conserve the environment simultaneously. The preservation of architectural heritage is a valuable link to the past, revealing cultural, social and historical changes over time for present and future generations. Unfortunately, it is impossible to preserve all buildings only on historical, cultural or social grounds. It is not affordable. Other factors have to be teamed up to support the case. These factors might have economic and environmental backgrounds – factors that are of increasing importance in today's life.

Ensuring and protecting a sustainable environment is frequently seen as the task of planners and the Ministry of Environment. They seem to be able to work at bigger scales and with more effectiveness than can be achieved by small-scale piecemeal solutions. The macro-cosmos of cities is their domain, thinking regionally, whereas the architect cares for the micro-cosmos in the form of individual houses and, in even smaller format, for interior design of single spaces. For years, discussions have been ongoing amongst green fundamentalists and researchers regarding the need for preservation of resources and environmentally friendly behaviour, by any means. Some believe it is the responsibility of the individual and little by little will eventually add up to a reasonable amount of protection. Others argue that ideally a global approach only is effective to prevent the worst (Vale and Vale 1993, pp.93-110); although, the Vales distinguish between long-term and short-term approaches and completely agree that in the short term it is worthwhile to make use of simple methods.

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This introduction includes all built environment, new and old. Yet, for this paper a close look at the latter is essential to demonstrate the link between sustainable urban growth, culture and conservation architecture. Very little research has been done so far to address this matter of old buildings. Sustainability of the environment is not obviously related to heritage protection. It has to be looked at it in depth to see the link. What has sustainability to do with conserving buildings? Is sustainability not solely the conservation of natural resources and related to new buildings?

In historic preservation at least three distinct categories of sustainability can be recognised:

- (1) sustaining historical, architectural and cultural evidence through heritage protection, which has tended to be so far the sole reason for safeguarding a building,
- (2) increasing environmental sustainability through the re-use and recycling of existing buildings, and
- (3) economics, linked to the environmental approach, sustaining financial resources.

Adaptive reuse as a method to increase the number of buildings which can be kept is a relatively new movement in the field of architectural heritage protection, developing over the last decades and had its origins more in the lack of living-spaces in European and American cities than in a new attempt to preserve history (Powell 1999). With adaptive reuse the conservation of architectural heritage is focused on a sustainable future and development in life, compared to a strictly preservationist's approach of freezing important architecture. Reuse is not solely, but mainly, an urban process, since in the inner-city it is rare to build anew without demolishing existing architecture. The reasons for reuse are diverse. A global resource crisis, greater awareness of the need to make better use of existing building stock, desire for nostalgia and stability of mental images of the environment, and a historic or archaeological interest in buildings, are forces that inspire the reuse of existing structures (Markus 1979). In the best of cases, several aspects of adaptive reuse can be combined: preserving a significant structure, conserving natural resources and saving money in the building process. More commonly in practice, expectations of adaptive reuse are restricted to one or two advantages of reusing building stock. But as Lyn Murphy shows with examples in Wellington, it is advisable (Murphy 1998). The argument proposed here is that the possibility of significant advantage makes it worthwhile to change the thinking and attitude of owners, developers, authorities and architects towards heritage protection.

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Adapted Culture and Vernacular Style

In Berlin, Germany, for instance a tendency for adaptive reuse was developed earlier than elsewhere in Europe, since Berlin had as a western island within the former GDR, very limited space to fit in its 3.5 million residents. Germans are very aware of their history and have shown early on the urge to protect their heritage by promulgating (as the third European country after Sweden and Portugal) a decree for the protection of heritage in 1818 signed off by the Grand Duke of Hesse (Delafons 1997). Examples in Berlin like the Rudolf-Virchow Hospital mainly built between 1899 and 1906, which is used including all its small old buildings to house the largest Heart Centre in Europe show what can be done in an urban environment, although

the Europeans have been particularly challenged through the destruction during the Second World War. The Rudolf-Virchow Hospital is proof of how well old buildings can fit into a brief of developing a modern, technologically up to date environment, while taking heritage into account. Cities like Berlin, New York or Paris live from the relationship of old and new buildings and radiate a flair that many people are positively attracted to. The Reichstag in Berlin is another example of reuse of existing building stock in an urban environment, modified with modern technology and design. For years it was abandoned and neglected, just like so many buildings at the Auckland waterfront. Through projects like Britomart and its effort to reuse buildings like the Central Post Office and hopefully many others, Auckland retains in its CBD valuable and necessary images from its European past. At the same time it recreates itself in the image of some of the world's great cities. That is what can be seen at the waterfront and the approach will be further developed to form a modern and usable part of the city-centre.

The idea of adaptive reuse is not yet common in New Zealand, but is something which was adapted (a good example is the Nestle premises in Auckland) from the ideas emerging in Europe several centuries ago, and which are now entering their peak time. Although Europe has not come to a standstill in its development of historical conservation, over the past few decades adaptive reuse has come more and more into focus (Jokilehto 1999). Berlin with its special geographical situation and the political changes at the end of the last century provides hundreds of recent examples to learn from.

Changing Approach

Historians and archaeologists are frequently involved in heritage protection for a good reason, but they often tend to restore existing buildings for the pure sake of historic evidence, keeping them as cost-intensive museum pieces, like Pompallier House in Russell or Ewelm Cottage and Kinder House in Auckland, or preserving entire sites as substantiation of the past, with no everyday use. John Delafons explains this approach over time, calling it in Robert Hewison's terms: *the museum culture*. (Delafons 1997). It is left to architects to deal

with the vast number of buildings, which cannot fit in the categories of the museum or the important archaeological site, but are nonetheless significant in terms of cultural and architectural tradition. Surprisingly the argument about cultural heritage and its preservation is frequently discussed by a variety of disciplines in their own particular way, from historical, anthropological, archaeological, ecological and economic backgrounds, but very seldom by architects. This creates a fundamental problem architects have to deal with, since they are the ones who write conservation plans and design for restoration and new use. It has to be asked: what is worth keeping, measured in terms of significance and value, and what can be afforded to be kept under environmentally and economically sustainable aspects? Viewpoints cannot be restricted to one dimension; ideally, preservation should work for all disciplines. Adaptive reuse has to ensure retention of the historic and architectural character of the building, significant historic materials, craftsmanship, and landscape features that contribute to the historic setting, while simultaneously taking into account economical and ecological aspects (Park 1998, p.14).

Not every old building is suitable for conservation. Lack of money, space and resources compel the limitation of the collection to the most significant, suitable and valuable buildings. This applies to heritage protection in general, and to adaptive reuse. Adaptive reuse on the other hand is a way to increase the amount of buildings which can be conserved, creates income, occupies a building and makes it part of everyday life again. Kenneth Powell has shown successful examples in *Architecture Reborn* (Powell 1999). It seems these are two sides of a coin, but looking at it closely, the efforts can be combined and the contradictions - need for rigorous selection versus greater amount of buildings which can be kept through adaptive reuse - made to support each other.

Ecological Aspects

Society does not live in the past and life is formed through change. New technologies make life easier and quicker. All the same, roots are wanted to be passed on to future generations. Also, the earth's

capital has to be protected and financial resources have to be saved. Only recently society realized, compared to the time when industrialisation began, that resources on this planet are finite, but despite many people who care and make great effort to preserve natural assets, there is still a culture of large-scale waste-producers and resource wasters.

Most of the historic buildings use mainly natural building materials that are not ecologically invasive and therefore are arguably more sustainable than many new buildings. Provided with appropriate insulation they may also consume less energy. Reused they reduce waste-production and prolong the life cycle of the materials while minimizing the life-cycle impact of embodied energy. This matches pure sustainable design principles. For conservation architecture, this combination is the link to a sustainable environment. In addition, many people enjoy historic buildings. They like to look at them, move around in and between them, feel comfortable in their presence and learn from them. A whole industry, the heritage branch of tourism, tributes to this fact and researchers like Jamieson, Brink, Nahkies and Warren point out tourists' great interest in built heritage (Brink 1998; Jamieson 1998; Nahkies, Warren et al. 1999). Historic buildings relate back in time and give a rooted feeling of security and stability. These attributes contribute to a healthy atmosphere. Michael Holleran describes vividly how much needed historic buildings are in a city (Holleran 1998).

The New Zealand Energy Minister points out in the Draft National Energy Efficiency and Conservation Strategy (NEECS) that: *Buildings are long-life assets and stock turnover is very slow. It is estimated that 90% of the stock that will be used in 2010 has already been built. About 23,000 new houses are built per year, 8,000 to replace existing homes.* (2001, p.17). That gives only 15,000 new houses a year in addition to the many hundred-thousands of existing, which demonstrates clearly that adaptive reuse has to become more practised and accepted, if the goal is to make life more sustainable. It is not enough to apply a sustainable approach exclusively to new buildings, since they makeup just 1% of buildings in use annually.

One of the objectives of the NEECS strategy is to upgrade existing buildings, to better meet energy-efficiency requirements. The demand to preserve and upgrade existing building stock leads in the direction to look at the historic building stock in order to help conserving natural resources and energy. In 1999, the West Midlands Regional Sustainability Forum in the UK analysed their strategy of sustainability objectives and found that 7 principles out of 50 led back to some extent to heritage conservation, quality of built environment and adaptive reuse to ensure sustainable development (West Midlands Regional Sustainability Forum 1999). That shows a contribution to a better environment through preserving quality heritage buildings is possible.

It is a fact that older buildings may often be more energy efficient than later buildings (Smith 1978, p.1). An old building, professionally well designed for optimal natural lighting, ventilation and heat storage can be more energy-efficient than a newly built building with high embodied energy costs like air-conditioning, large glass facades or mainly artificial lighting. It is worth pointing out, as discussed earlier, that only the best will be kept. Badly designed and detailed, low quality buildings, with no merit at all are not included. To make life as comfortable as possible at the time, our ancestors used whatever measures were applicable. They followed logical physical rules. Physical rules do not change and that is the reason why profit from their designs is still possible, and why they should be kept and the best has to be made of an existing building. That does not mean leaving an historic building just as it is. Bringing well-established and functioning designs together with today's technology and knowledge will generate an even better outcome for the environment. It is necessary to improve an existing building as much as possible, considering its historic appearance and the need of continuity in its historic character. Reducing air infiltration, insulation that ensures adequate attic ventilation, basement and crawl-space insulation and duct and pipe insulation are the most efficient and the least intrusive measures to upgrade an historic building to a good or very good level of energy efficiency, as Smith states (Smith 1978). Although his findings are dated, these particular efforts are still valuable today.

A number of Government policies and strategic plans include the protection of built heritage and reuse of existing building stock as instruments to ensure sustainability. Agenda 21 resulting from the UN conference in 1992 on environmental issues includes historic places, as was picked up by Berntsen (Berntsen 1996, p.3). He notes that in Norway second hand materials like bricks are happily used, especially on renovations of older buildings (1) to save the production of new ones, (2) to save the transportation to distant locations and (3) to avoid waste production (bricks) while taking down another building. Here he shows that a little goes a long way. There is a close relationship between sustainability of the environment and conservation architecture. Julia Wallace et al. take the view that: *...conservation can and should use sustainability to support its case...*, (Wallace, Higgins et al. 1999, p.56). As stated before, only a few new buildings provide a chance to build in a sustainable manner.

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To be able to manage the conservation process adequately questions of relative importance of values in a building like the social / environmental value or the historic / architectural value are inevitable and argued frequently. Agreement is hard to find. It divides the preservationists into two parties, the ones who preserve solely for historic reasons, without acknowledgement of environmental and economical issues and the ones who add and convert without crediting architectural, historical and cultural aspects. This paper proposes the combination of two advantages (1) sustaining historical evidence with (2) making a contribution to a sustainable environment, rather than their separation into two distinct camps.

Quality of Built Structures

The whole argument about sustainability in buildings only makes sense when quality is taken into serious consideration. A principle in conservation is to preserve the, in any respect, good examples, not the bad. Hence, quality is for architecture, and especially conservation architecture a crucial matter and an important factor in decision-making, in favour of or against the keeping of a building.

To be able to preserve any building it has to be of reasonable, or better high, quality. This expectation exceeds the usually guaranteed lifespan of a building in general, which commonly is 50 years (New Zealand. Building Industry Authority. and Standards Association of New Zealand. 1998). Although, Johnstone found that New Zealand housing lasts on average longer than that, the only houses that could be surveyed for longevity exceeding 50 years are already historic or old buildings by New Zealand standards (Johnstone 1990). To ensure continuing historic protection in the future it is important to maintain a building adequately, replace faulty materials in time and keep it in good working condition. This can be achieved foremost through simply using it. Otherwise, it would be a matter of reconstruction and would miss the point of preservation as Sack, Glaser or Dehio agree (Dehio 1921; Sack 1996; Glaser 1997). At the same time, the quality of the materials used is of importance. A building is cheaper and easier to maintain, if the quality of materials is of first-class standard. The quality of the entire building is an accumulation of aesthetic, technical and functional parts. This generally applicable model of accumulation of quality aspects is as useful to assess new buildings, as it is to assess historic ones. For New Zealand Tippett and Runeson developed a method to score quality aspects to evaluate residential buildings and Isaacs et.al. generated a model to assess building quality in office and retail buildings (Isaacs 1993).

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New Zealand suffered an immense setback in the late 70s and the 80s, when a building boom convinced developers to maximise short-term profits to the disadvantage of quality (Byrnes 1987). Serious difficulties will arise in protecting those buildings as historic in the future because of their low quality. Most of them might be demolished. Buildings today are erected very seldom for the owner but for a tenant, lessee or buyer. The process of building is often used to create wealth and income and to invest in quality is contradictory in the short-term. Therefore, quality has not a high priority with developers and clients who are intending to sell after a few years. For most people quality costs without paying off the advantages to the one who invested initially. People in New Zealand move on average every 4-5 years which is about as long as the best guarantee given by the

building industry. Most designs are not purpose built for one particular family or occupant, which makes it harder to convince a client to invest in better quality. The building boom eased a long time ago, but the quality standards are not yet back where they should be. It is, despite a major drop in the property market in the late 90s, still attractive to make money with property development. A comparison can be made with the Germans, who build their homes for an extended lifetime, it is not surprising that quality is more in focus for their buildings.

Conclusion

Summing up, it is possible that adaptive reuse can contribute to a more sustainable environment for New Zealand. From successful examples overseas and especially from Berlin its techniques can be learned and tailored for New Zealand needs, so that sustainable urban growth, architectural heritage and its conservation no longer are in contradiction. It is important to include historic buildings in the effort to be sustainable, since most buildings in use are not newly built. But conserving historic buildings must not necessarily mean to protect everything and certainly has to include revitalizing the buildings, instead of producing numerous unaffordable museum pieces. The endeavour to save resources through adaptive reuse serves two different causes (1) to live in a modern sustainable manner, and (2) to protect architectural and cultural history. Both are of great importance for future generations not only to show how life has changed over time and how cultural influences have moulded the appearance of our cities

Reuse of existing building stock in a sensible way, which means acknowledging its history, cultural development, character, architectural features and landscapes, craftsmanship and historic materials, will add notably to a healthy, lasting and enjoyable environment, especially in urban areas, where inevitably old and new live side by side. In big cities like London, New York or Berlin the multi-cultural occupants are a strong part of the landscape. Also in Auckland, one of the biggest Polynesian cities in the southern hemisphere with very strong influences from Europe and Asia, the multi-culture is vibrant and very much visible in the buildings of the

past. To ensure the most effective outcome for successful urban growth and the retention of examples of its development several measures have to be considered simultaneously; architectural, historical and cultural importance, ecological characteristics and quality aspects, as discussed in this paper, but also the economic viewpoint, which is worth a separate discussion. All factors are of equal importance to achieve a successful outcome.

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