





Autor: Dietrich Schwarz

From Modernism to the One Planet Society

Modernism was the architectural style of the 20th century, with the avant-garde, its early forerunner. It sought to express in formal terms the spirit of the age and its ideals, the emphasis moving away from the representative and towards the functional.

The collapse of the great European monarchies in the First World War created space for ideals such as social justice and democracy. Industrialisation experienced a further stimulus through the resulting growing demand for consumer goods and the exploitation of petroleum as a source of energy, and culminated in the economic boom of the post-war years during the second half of the century, that is to say barely two generations ago. Everything ran smoothly. To provide for the welfare of the citizens, the welfare state was expanded, financed by continuing economic growth. The social market economy became Europe's model for success. Democracy became the established form of government, at least in the First World.

In many places, post-war Modernism degenerated into the architecture of speculation. The enormous economic growth led to an uncontrolled development in the urban agglomerations. The art elite reacted against this drab uniformity with postmodernism. Blind faith in innovation was questioned. The one-dimensional nature of functionalism was contrasted with the diversity offered by a philosophy which accorded equal validity to disparate approaches. From the field of mathematical physics, chaos theory found its way into the architectural debate: nothing is predictable, so nor can anything be planned.

The oil crisis was, for a brief period at least, a wake-up call; the Club of Rome was founded, Marion K. Hubbert's Peak Oil theories from the year 1956 were confirmed academically, but ignored by the economic elite. The miracle weapons advocated to counter the effects of the oil shock were globalisation and nuclear energy. Energy resources and consumer goods would be traded freely and new technologies would deliver unlimited sources of energy for this purpose. The once incorrigible Soviets were forced to concede bankruptcy, Gorbachev told Honecker that «life punishes those who come too late». By 1989, the spectre of Communism had been laid to rest with the fall of the Berlin Wall, the ideals of the past quickly forgotten. The BRIC countries were presumed to be the new future, emerging countries with high rates of economic growth, but a poor record in terms of social justice. Russia and China were transformed from the former arch enemies of the western establishment into eagerly-courted suppliers of resources and growth markets. The old «First World» now needs to be concerned about losing its access to raw materials; the odd retaliatory military strike, supposedly mounted in defence of the ideal of democracy, fails to obscure the fact that competition for access to raw materials has become the key geopolitical issue.

What has happened? For the first time in human history the Earth's limits of sustainability have been exceeded, at present by a factor of one and a half globally, in Europe by a factor of three. This is only possible because our planet possesses large reserves of natural resources and an ecosystem which displays considerable tolerance in this respect, so the uninformed citizen is unlikely to notice any immediate impact.

The response to this challenge is the «One Planet Society». It addresses the existential challenge of examining the relationship between the world's population and their home, the blue planet, the most wonderful planet in our solar system, Mother Earth, and acting on the resulting implications. The transformation should not take longer than two generations – we find ourselves on the threshold of a new era. Architecture and spatial planning, responsible for more than 40 per cent of global energy consumption, are disciplines which need to address these challenges directly and very closely, proactively rather than in hindsight.

A paradigm shift needs to take place in the fields of spatial planning and urban development, away from the primacy of the built-up area towards achieving a balance between development and landscape. However daunting the task, everything possible must be done to try and achieve the ideal of regional self-sufficiency. This will be achieved, among other things, through a densification of development sites located in key strategic positions like the former Färbi and Geistlich sites by the railway station in Schlieren, for which appropriate design plans were developed. In the future, such nucleus developments will also possess the potential for further internal consolidation, allowing them to help absorb the marginal sprawl surrounding urban agglomerations. In this way, open spaces will be reclaimed again as landscape, considered as a

resource. The plots earmarked for development will be built up with a density factor of 2.5 to 4. This is equivalent to the kind of urban structures we find in any historical city centre.

The generation of energy will be integrated into the natural cycles of our planet; the renewable energy sources – sun, wind, water and biomass – will have to cover virtually all of our energy needs. This can only be achieved if all consumers act as energy-efficiently as possible. Photovoltaic installations will be concentrated in built-up areas and spaces used by infrastructure, for example the spaces alongside rail and road routes. On no account may the agricultural use of land be displaced for the purpose of energy generation. Regional food production will be a key issue. Greater value must be attached to our own agricultural sector. Visions which degrade peripheral marginal regions to the status of waste land are mistaken, because extensive, functioning infrastructures are essential for the production of food, energy, and resources. Thus, in the future too, consideration will be given to achieving a balanced relationship between the urban and rural population.

On a project-scale level, buildings which are self-sufficient in terms of energy must be realised. Buildings which produce the same amount of renewable energy as they themselves consume. As pioneers in this field, Schwarz Architekten already achieved this in 1996 with the multiple award-winning Solarhaus I. In 2007, we channelled all our experience into designing the Eulachhof in Winterthur, the first major project in Switzerland to aspire to this goal. In the future, structures will be created in which the building envelope and building service systems complement one another optimally, resulting in a minimal primary energy requirement which is generated using roof or façade surfaces. In Mellingen, Schwarz Architekten built the currently biggest housing development in Switzerland to conform to this sustainable energy standard (Minergie-A-Eco). In addition to the energy aspects, social sustainability is a key consideration, the aim being to create a multigenerational neighbourhood. A multilayered development structure makes it possible to achieve a diverse social mix.

Structural design will become increasingly important, because only through the precise combination of optimally selected materials and appropriate structures can a sustainable whole be created. Natural materials emanate a sense of quality. Our senses perceive this in their appearance, their smell, and their haptic qualities, architecture becomes a sensual experience. As is traditionally the case, geographical conditions, the availability of materials and the intended use of the building become key parameters. Regional differences lead to distinct architectural cultures and identities – creating a sense of identity with the locality.

«Neugrüen Mellingen» is the first residential development in Switzerland with energy standard Minergie-P-Eco and A-Eco. The small town on the river Reuss has been extended with a new, coherent district built in timber construction, a neighborhood with the character of a naturally grown village. Already in the planning process a mix of housing was carefully selected to meet the needs of the new residents, young singles, families, silver agers, and to provide them a home. The urban composition consists of terrace houses with split-level conception, tall blocks and a larger ensemble on the main road with flats and local commercial spaces on the ground floors. These typologies are woven in a fine-meshed network of passageways, private gardens and squares. The spaces created therefore generate an appealing balance between communal and private and can be used differently. The energy concept follows the strategies for energy efficiency: well insulated facades, well balanced building technology, own energy production and recovery. For the operation, no additional energy is required. A photovoltaic system operates the heat pumps, a heat recovery system with a heat exchanger utilizes the energy of the used hot water and feeds it back to the buildings.

According to Vitruvius, every building must bring into harmony the virtues of «firmitas, utilitas and venustas» [stability, functionality and beauty]. I am convinced that these qualities which have been pursued in architecture for 2000 years have been achieved in our projects, resulting in beautiful buildings which will remain sustainable well into the future.

Dietrich Schwarz
Professor for Sustainable Design at the University of Liechtenstein
Managing Director of Schwarz Architekten

MILESTONES
ENERGY EFFICIENT BUILDING DESIGN



2014 socially sustainable urban development in Minergie-A-ECO standard

Housing development «Neugüen», Mellingen
Certificates: AG-001-A-ECO to AG-075-A-ECO
Competition: 2009, 1st place
Building owner: Credit Suisse Investment Foundation Real Estate Switzerland



2013 first residential high rise in Minergie-P-ECO standard

High-rise building am Rietpark, Schlieren
Certificate: ZH-028-P-ECO
Competition: 2009, 1st place
Building owner: Credit Suisse Real Estate Fund Green Property



2012 energy efficient refurbishment

Housing Complex «Im Langacher», Greifensee
Certificates: ZH-4250 bis ZH-4264
Building owner: Seewarte AG Zürich
Award: Prix Lignum 2012, 2nd place, Region North



2007 first zero-energy large scale project in Switzerland

Housing Complex «Eulachhof», Winterthur
Certificates: ZH-001-P-ECO, ZH-002-P-ECO
Building owner: Allianz Suisse / Profond Pension Fund
Awards: Swiss Solar Prize 2007, Lighthouse Project of 2000-Watt, Watt d'Or 2009



2004 first large scale project in Minergie-P standard

House for the elderly, Domat/Ems
Certificate: GR-003-P
Building owner: private
Awards: Swiss Solar Prize 2006, Detail-Award 2007 – Special Prize for Energy-Efficient Building Design



2000 first zero-energy house with Phase Change Material

Solar House III, Ebnat-Kappel
Building owner: private
Award: Swiss Solar Prize 2001



1996 first zero-energy house in Switzerland

Solar House I, Domat/Ems
Building owner: private
Award: Swiss Solar Prize 1996