Editorial Introduction: Plan, Develop, Design. Making Smart Cities and Architecture

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The world is urbanizing and digitalizing, and cities, communities and buildings are being developed as smart environments. Smart cities are not only about ICT, energy and transport infrastructures. Smart cities are also about smart citizens, who participate in their city's governance, are concerned about the quality of life in their city, and about protecting their environment.

However, there used to be little synergy between smart cities initiatives and citizen science. To-date, our living spaces are expected to be enriching—inspired by art and culture meanwhile responding to needs beyond mere functionality—, sustainably in harmony with nature, the environment and our planet, as well as also inclusively encouraging a dialogue across cultures, disciplines, genders and ages.

This raises a variety of questions for architectural research that in line with the architectural discipline, has been addressing planning, developing and designing of our living and operational environments. Therefore, the main question in this number of *Architectural Research in Finland* is how to plan, develop and design smart cities and architecture.

In more detail, this number examines, what kind of integrative processes and methods could be used to connect diverse development actions in smart cities, communities, environments, architecture and construction. In this number, these ways of looking for solutions for the built environment, are addressed in multiple scales subject to deliberate, purposeful planning, development and design actions. Hence, we have called for papers from five standpoints elucidating planning, developing and designing smart cities and architecture: Emerging urban form, Smart building design and construction, and Smart lighting—cross-fertilized with aspects of Business models, Experience and participation.

Planning toolbox expanded

Looking back in the history, the need to understand the interaction between social life and physical space had first catalyzed studies on spatial syntaxes. Along with the growth of cities, coupled with advanced transport and communication technologies, diverse network theories and related topomorphological research were highlighted. What is next, as our cities are turning smart? As **Ari Hynynen** and **Jari Kolehmainen** put it, what kinds of methods are needed to analyze urban transformations? Should the morphological toolbox be expanded? Do we need new planning and design principles?

In this scope they themselves analyze the development of Finnish railway station areas as part of a wider continuum of knowledge urban development where both economic and innovation policies unify with urban planning. Case studies confirm their outlook of knowledge-based urban development transitioning to a new phase. This provides the prerequisites for interesting connections between railway station areas, the concept of a smart city and open innovation. Their article introduces new kinds of spatial planning principles, which can be placed in three categories: 1) smart profiling, 2) smart design and 3) smart innovation.

Frederik Vandyck and **Inge Bertels** on their part, provide a typomorphological analysis of patrimony of industrial activity in the urban fabric of a productive hotspot of the Brussels Capital Region. Despite the observed shrinkage in the amount of active urban industries, a GIS informed hotspot analysis revealed a concentration in the Jette-Koekelberg area. The presented work therefore provides a typomorphological study bridging the urban form and the architectural type.

In built-up areas there is a tendency to let the processes of urban change take place instead of top-down planning, **Tommy K. Lindgren** exemplifies. This change is therefore not managed, but piecemeal, resulting in a patchwork of ‘stamp’ plans directed by narrow private economic considerations. He further explains that the life-span of buildings varies according to their material composition – also the type of a building and its spatial configuration affect its vitality. These attributes and conditions play a part in how long a building can endure before confronting the need for radical changes and can be aggregated from open-source data and modeled using historical referents as benchmarks. This information forms a layer of probabilities in the city, revealing dormant locations facing imminent change.

By mapping the information of the material conditions on the topography of the city, we can identify potentials for development. Identifying these latent sites in the city and engaging proprietors and landowners would give new tools for the City to affect the change and renewal associated with turnover of the building stock.

Cities’ preconditions for development may vary: some areas are more attractive for infill development projects than others. Therefore, **Hanna Kosunen** and **Irina Atkova** scrutinize the alignment of urban regeneration approaches with the specifics of low growth or stagnated contexts, to sum up alternative approaches to urban regeneration and infill planning. Their analytical framework originates from organizational learning theory of action inquiry, to suggest how urban regeneration visions, strategies and actions are adjusted to low growth contexts.

Relatedly, **Mari Oline Giske Stendebakken** and **Nils O. E. Olsson** search for alternative approaches to investigate and conclude on the cost-efficiency of the option of new build or the rehabilitation of a cultural heritage site. Their findings indicate the complexity of such assessment and the relevance of time span in the evaluation of a future project.

Ranja Hautamäki scrutinizes another planning tool, meant for rapidly growing cities. She demonstrates that a ‘national urban park’ can be seen either as a model for sustainable urban planning or as a legislative cage for development. On the one hand the NUP is regarded as restricting development, emphasizing static preservation, bringing no real added value, transferring municipal decision-making to the Ministry and engaging primarily environmental and heritage stakeholders. On the other hand, it is considered to be a long-term tool of urban planning, safeguarding values, contributing to tourism and engaging a broad range of actors. The research shows that the NUP process reveals the current tensions between continuity and change, and nature and city, in rapidly growing cities.

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As in planning, the importance of understanding the divergent views of different actors in the search for a shared vision of the future of the city, was just emphasized, planning was also set in charge to anticipate the demographic changes in housing design. **Ira Verma** explained that along with the Social welfare and health care reform in Finland, housing services, health promotion and wellbeing of residents will remain in charge of the local authorities. Environmental factors are important for independent coping of the elderly.

Individuality included

Correspondingly, design and construction of buildings and our nearby environment are developing towards smarter practices and solutions. **Henrika Pihlajaniemi** pointed that as technology and solutions are rapidly developing, there is a growing need for research about design factors, methods for implementations and the results of pilot projects. Common to the following articles is that they exemplify the focus on human experience in the design of the built environment.

Riikka Kuittinen, Eevamaria Juuti, Matti Lakkala and **Janne Pihlajaniemi** outline the essence of human-centered design in their paper *Individuality included,* by studying log house design processes and how users can participate to configuring their new homes. They conducted a consumer study and carried out interview for industry managers and found out that systematization of individual choices could benefit log house companies in terms of design resources.

In the end, in smart cities it is topical to ask, how smart development is changing our experience of the built environment. Perceptions of log and log buildings were examined by **Aale Luusua, Matti Lakkala** and **Janne Pihlajaniemi**. Log shows as a contemporary building material undergoing rapid technological changes expanding the repertoire available to architects when designing with log – with implications to ecology and occupant health that have been central objectives of smart development. However, in another paper by **Lakkala, Pihlajaniemi** and **Kuittinen,** it is argued that examples of architecturally viable industrial log are few meanwhile new opportunities are emerging.

With this same focus on human experience, smart lighting was seen to possess experiential value. As starting points, **Lucrezia Seghi, Sarunas Noskaitis, Spyridon Spanos, Mette Hvass** and **Ellen Kathrine Hansen** present diverse geographical positions and social and cultural contexts in different countries. According to them, these dedicated lighting cultures express distinctive relations of natural and artificial light.

In this setting, **Kjell Yngve Petersen** discusses ambient adaptive lighting that adjusts and reacts to the variations in the environmental conditions and user behavior. **Stine Louring Nielsen, Esben Oxholm** and **Ellen Kathrine Hansen** studied the user experience and patient satisfaction in the most sensitive context, interactive patient rooms of mothers just given birth. The authors found several areas that can be improved to meet the specific needs and thereby provide higher patient satisfaction.

Exploration of what might come

In this number, the ways of looking for solutions for the built environment, were addressed in multiple scales. Regarding action learning based smart city development, *exploration* has referred to the pursuit of what might come to be known through creativity, experimentation and learning. In sum of the above discussed articles, it can be concluded that planning, developing and designing smart cities and architecture, were foremost motivated by exploring of what might come through creativity, experimentation and learning. For sure, the extended toolbox can help us come up with new insights into both material and

immaterial city and reveal novel phenomena, be there heritage sites or pure potential.

Whereas *exploitation* has been viewed as the application of established competence to challenges, and as focusing on some efficiency-seeking routines. Most interestingly, there were also promising remarks of individual choices being systematized.