Building technologies – Should we still rely on traditional building methods if we know that we are continuously stuck in a housing crisis for over 100 years?

Cultural Studies, Semester 1, Year 5

Konrad Kolodziej

Content Page:

DEPARTMENT OF ARCHITECTURE

University of Strathclyde Engineering

Declaration of Authorship

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PgDip/MSc Urban Design

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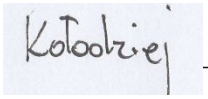
Name: Konrad Kolodziej

Signed: 

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Department of Architecture
Level 3, James Weir Building
75 Montrose Street
Glasgow G1 1XJ

t:+ 44 (0) 141 548 3023/3097/4219

e: architecture@strath.ac.uk

Foreword:

I am an architectural student in the second year of my Master's degree. I arrived from Poland where previously I completed an Architectural-constructional technical school in Warsaw instead of high school between 2010-2014. There I learned basic knowledge about subjects like architectural design, building construction, and material science.

Now I am delighted to continue my learning process at the University of Strathclyde. Unfortunately, this task is not easy as I am learning different (sometimes upside-down) design approaches or technological solutions in comparison to what I have learned in previous schools. It is also exciting to be able to see the differences between different architectural solutions, threats and constraints.

Also this year I spectated the last panel discussion at The Biennale Architettura 2023 in Venice, led and curated by Lesley Lokko, which highlighted how important understanding of the student's background is by his tutor and this is why I decided to write this foreword.

Additionally, I experienced the performance of Rhael 'Lion Heart' Cape who is a British poet, spoken word artist and an honorary RIBA Fellow. This event was special because it changed my mind about my approach and the need for emotions accompanying the preparation of each design response.

"Architecture without emotions is a psychosis" – Lion Heart [1]

When I arrived in Scotland there were a load of positive emotions accompanying almost every interaction with Scottish citizens who are always open-minded, helpful and unbelievably friendly.

The second picture that was drawn in my memory was the widespread problem of houses in poor or unhabitable conditions which are still on the market constantly influencing the health and well-being of communities in a bad way.

Unfortunately, these two contrasting pictures are bringing a lot of frustration, sadness and anger seeing so many community members impacted by unhealthy houses or just lack of them.

Introduction:

It is over 100 years since Glaswegian communities struggled with the housing crisis. [2] The problem does not only have a place in Glasgow but is a widespread issue around the whole United Kingdom.

The problem is prolonged and deeply rooted in political and economic grounds. A series of wrong decisions in the past led to the later handover of public housing stock in the hands of private ownership.

Many aspects are contributing to the problem such as political, economic, socio-cultural and other external influences.

Previously prepared research as part of the design studies (5A) was focused on pre-1919 traditional dwellings in Scotland and their issues. There are 77.000 of them which is 23% of the whole housing stock in Glasgow[3]. Data provided by the Scottish House Condition Survey (SHCS) 2021 shows that 25% of pre-1919 built dwellings are in a state of urgent disrepair due to one or more critical elements. The term urgent disrepair is used when the repair is needed to stop any further deterioration of the building or to stop negative impact on the occupant's life and wellbeing. It urged further preparation of design response to mitigate further deterioration of these buildings by well-prepared modernisation as part of the (5B) design studies.

Scottish House Condition Survey reports that only 7% of inspected dwellings raised after 1982 are in urgent need of repair. [4] This is a very positive score in comparison with older housing stock. However, to confirm this information and confirm that chosen buildings are not in danger of

further deterioration in the future there will be a report prepared about post-2000 housing developments from a chosen research area.

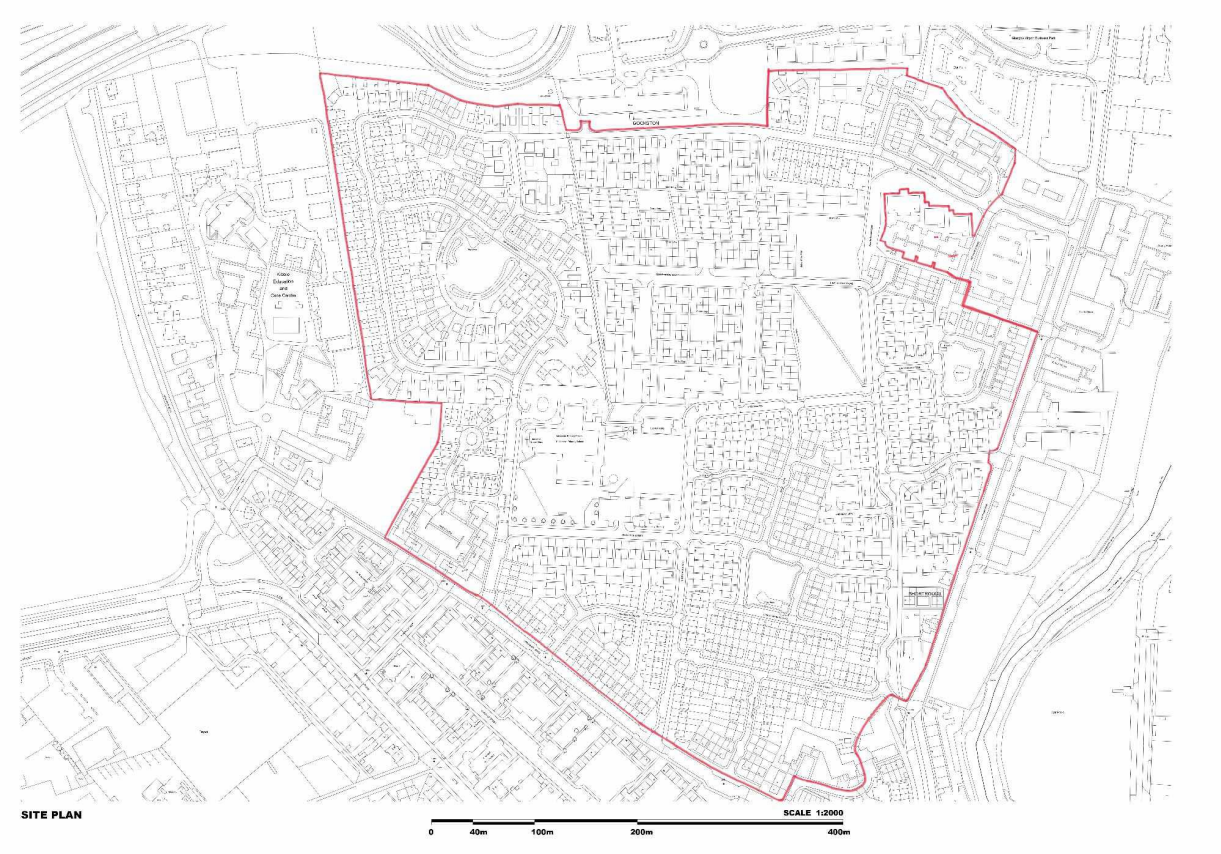
In an era marked by rapid technological advancements, the construction industry stands poised at the threshold of a transformative change. The United Kingdom, known for its rich architectural heritage, faces the pressing need to integrate new building technologies into its construction practices. This essay aims to explore the multifaceted arguments both for and against the adoption of these innovative technologies and examines their potential impacts on sustainability, the economy, society, and the built environment.

Can the import of technologies help us to mitigate the problem of housing shortage? Can these technologies be cheaper in terms of labour? Can decreased cost of labour allow us to achieve more qualitative designs for the social housing sector and the same increase the overall quality of housing architecture?

Methodology:

To establish if the numbers shown in the Scottish house condition survey regarding new-build houses are relevant when compared to the specific site chosen located at the south of Glasgow airport. Subject for further research is a series of different housing developments raised after the year 2000 located at Gockston and Shortroods in Paisley. They will be visually inspected and results will be reported and shown in the context of SHCS. Outcomes will be further analyzed seeking an answer if known construction technologies and building techniques can positively influence Scottish architecture extending the lifespan of buildings, reducing carbon emissions, or saving construction time and cost.

The investigation will be focused on the critical external elements, which do not need internal access to the building. External elements that will be considered are external walls, windows, gutters/downpipes and roof coverings as elements commonly affected by the effect of disrepair.



Job creation, economic growth vs. skills and training requirements

New building technologies that can be applied to the Scottish construction industry can transform the sector, it can create new job spaces, stimulate economic growth and help to achieve sustainable advancements. This introduction can help to create new work opportunities boosting the economy through investing in research, development and manufacturing. This kind of investment should have a double positive impact because of the creation of new job opportunities within the building industry and it can also revitalize the Scottish economy.

The introduction of new technology relies on having a skilled workforce. To meet skill and training requirements there should be established training and education programs designed to familiarize construction workers with the nuances of construction methods.

These two opposing arguments show an important point: accommodation of new building technology for the Scottish building industry has the potential not only to boost economic growth and create new job opportunities but also can contribute to the country's sustainability goal and provide a lot of training possibilities giving technical skills to the community. For the best benefits of these advancements, strategic investments in education and training programs should be essential.

New technologies introduced to the building industry can offer a better path for the Scottish construction industry and its economic growth together with the creation of new workspaces. Achieving the best results and benefits depends on creating good training programs to prepare workers for the challenges and opportunities brought by new solutions.

Enhanced affordability vs. high initial cost

The introduction of new technology to the Scottish construction industry can offer long-term benefits connected with affordability caused by improvement in energy efficiency and material sustainability. New technologies have the potential to reduce significantly operational and maintenance expenses which can help to provide more affordable housing options long-term.

Development of new technologies may be challenging because of the high initial cost. The initial development where these technologies will be used will need to face high upfront costs that can create a sort of obstruction to introducing new solutions.

These two arguments need to find balance by introducing effective policies and financial support. Subsidies, tax reliefs or grants can be a key tool in making new technologies more accessible. Financial encouragement may be crucial to minimise problems of initial costs and additionally can be helpful to promote affordability.

Investing in research and development for cost-effective alternatives can be essential. Exploring new solutions that can reduce initial expenses associated with new technologies can play a major role in mitigating financial barriers.

The long-term benefit of innovative building solutions that can decrease costs can help to solve the problem of housing affordability in Scotland. To make it possible, there should be strategic policies to encourage and introduce such innovations into the Scottish housing sector.

Long term affordability can also provide housing avalability across different socioeconomic groups, therefore it can bring more inclusive and sustainable housing opportunities in Scotland.

Energy efficiency vs. uncertain performance and reliability

New building technologies are often focused on better performance and energy efficiency. Optimization of building performance can let us minimize energy consumption and carbon emissions. A lot of advancements are based on sustainable materials and innovative solutions, willingly reducing energy consumption and its impact on the environment.

On the other hand, another challenge associated with introducing new solutions is possible uncertainty of the performance and reliability. Often new technologies and their behaviour in real-life environments can differ from the initial expectations set in laboratory conditions. Issues connected to reliability and performance can have adverse effects and can form challenges during implementation.

These two opposing arguments show the necessity of finding a desired balance between them. Energy efficient solutions are key for future sustainable developments, but the same importance should have reliability and performance confirmation. Proposed methods should be tested, quality checked and monitored for a certain amount of time to verify and confirm their properties in the desired environment.

Further investments in research and development may be an important part of tackling the problem of uncertainty of performance and reliability connected with new technologies. Also, collaboration of the industry experts, researchers and policymakers is meaningful in establishing standards ensuring reliability and performance consistency.

Focus on energy efficiency in the new building is crucial for sustainability. Uncertainties in performance may be challenging, this is why continuous testing, development of innovation and collaboration are very important to ensure that introduced technologies will help to increase the quality of buildings in Scotland, not the other way.

Environmental sustainability vs. resistance to change

A lot of new technologies are prioritizing environmental sustainability. New methods often utilize eco-friendly materials and advanced systems to reduce the impact of the building industry on the environment. The main goal of many new technologies is to create more energy-efficient solutions, which can decrease the amount of carbon emissions and overall they are more environmentally friendly.

On the other hand, the introduction of new technology may encounter resistance caused by the challenge of departing from traditional building methods. There may be hesitation to introduce new approaches because of established standards, concerns connected with reliability or unfamiliarity with the new methods.

Finding a balance between these 2 arguments is crucial to achieving already set environmental goals in Scotland. To encourage acceptance of these technologies by society there should be an educational part about the long-term benefits that those technologies can offer together with the provision of evidence of their positive impact on the environment and their practical advantages.

Focus on environmental sustainability may spark the need for introducing new technologies as materials are getting more expensive and regulations are getting stricter about the thermal properties of new-build houses. Strategies aimed at education and information dissemination may be an important part of a proper demonstration of the technology to promote sustainability and mitigate possible problems of resistance to change.

Improved safety standards vs. building standards and norms

New solutions offer enhanced safety standards. They often include advanced health and safety features and construction methods created to make new buildings safer. Very often new technologies tend to be created in a better and safer way for builders as well as for occupants.

However, the introduction of newly imported technologies may face challenges within the regulatory context to fit the existing standards. The fact that they are very often aligned with European norms can be helpful as there are still many long-time tested technologies available in Europe that can help mitigate issues which can be met in many Scottish buildings.

A good evaluation of these two arguments is needed to achieve improvement respectively to all rules that are already set. Meeting the building standards, integrity and adherence to existing norms is crucial to providing safer and more innovative solutions.

Summary:

The essay explores arguments and counter-arguments for and against the introduction of new construction technologies in Scotland. When grouping these arguments in pairs we can see interconnections between almost responding for themselves. Counter-arguments do not clearly stand against the thesis, they highlight possible issues and areas that need to be considered for proper technology implementation. Additionally, it shows the need for architectural education and industrial advancement in the direction towards new technologies.

The essay is written in a way that allows to investigation of different innovations against a group of arguments which can help to find the most effective way for introducing any new technology.

There are a lot of different technologies that can be introduced, however, as shown above, these introductions can be costly at the beginning. To establish the most needed technology there will be a report prepared to show what are the most problematic elements of the building to find the most favourable method which could solve the most common issues of today's buildings possibly extending the life-span of them.

Looking at the above argumentation it can be seen that modern technologies can decrease the cost of houses in multiple ways, it can be long-term savings or it can be technology which can bring down costly labour hours making us able to provide more affordable housing. Reduction of building costs can also let us achieve better quality with a similar overall cost. Clever use of these technologies can also help to reduce prices of already existing housing stock or encourage proper maintenance of existing stock.

Unfortunately, new technologies can be costly at the first stages of introduction, therefore we should start introducing them starting from the ones which will bring the biggest benefit to the community and the country.

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