Name: _____ Class: _____

JURONG PIONEER JUNIOR COLLEGE

JC2 Preliminary Examination 2023

GENERAL PAPER **8807/02**
Higher 1 **30 Aug 2023**
Paper 2 **1 hour 30 minutes**

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READ THESE INSTRUCTIONS FIRST

Write your name and class in the spaces provided above.

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Michael Bond writes about the hidden ways in which architecture and urban design affect how we feel.

1 "We shape our buildings and afterwards our buildings shape us," mused Winston Churchill in 1943 while considering the repair of the bomb-ravaged House of Commons. More than 70 years on, he would doubtless be pleased to learn that neuroscientists and psychologists have found plenty of evidence to back him up. For example, buildings and cities can affect our mood and well-being, and that specialised cells in our brains are attuned to the geometry and arrangement of the spaces we inhabit. Yet, urban architects have often paid scant attention to the potential cognitive effects of their creations on a city's inhabitants. The imperative to design something unique and individual tends to override considerations of how it might shape the behaviours of those who will live with it. That could be about to change.

2 Recently, the Conscious Cities Conference in London considered how cognitive scientists might make their discoveries more accessible to architects, designers, engineers, neuroscientists and psychologists. Greater interaction across the disciplines would reduce the chances of repeating such architectural horror stories as the 1950s Pruitt-Igoe housing complex in Missouri, whose 33 featureless apartment blocks became notorious for their crime, squalor and social dysfunction. Critics argued that the wide open spaces between the blocks of modernist high-rises discouraged a sense of community, particularly as crime rates started to rise. The project was eventually demolished in 1972, highlighting the need for greater consideration of behavioural insights in urban design.

3 Psychological studies today have consistently shown that people are strongly affected by building façades. If the façade is complex and interesting, it affects people in a positive way; negatively if it is simple and monotonous. For example, during a study in Manhattan, subjects' arousal and mood states plummeted as they walked past the long, smoked-glass frontage of a Whole Foods store, only to improve when they reached a stretch of lively restaurants and stores, where (not surprisingly) they reported feeling a lot more lively. Urban specialist Charles Montgomery said this points to "an emerging disaster in street psychology". In his book Happy City, he warns, "As suburban retailers begin to colonise central cities, block after block of bric-a-brac and mom-and-pop-scale buildings and shops are being replaced by blank, cold spaces that effectively bleach street edges of conviviality."

4 Another oft-replicated finding is that having access to green space such as woodland or a park can offset some of the stress of city living. Vancouver has made a virtue of this, with its downtown building policies geared towards ensuring that residents have a decent view of the mountains, forest and ocean to the north and west. As well as being restorative, green space appears to improve health. A study of the population of England in 2008 found that the health effects of inequality, which tends to increase the risk of circulatory disease among those lower down the socioeconomic scale, are far less pronounced in greener areas. One theory is that the visual complexity of natural environments acts as a kind of mental balm. Virtual reality experiments found residential street scenes with the most architectural variation the most mentally engaging. Most people also feel better in rooms with curved edges and rounded contours than in sharp-edged rectangular rooms.

5 The importance of urban design goes far beyond feel-good aesthetics. Urban living has been linked to an increased risk of mental disorders, including schizophrenia, depression, and chronic anxiety. Researchers attribute this to "social stress" caused by a lack of social bonding and cohesion within neighbourhoods. Furthermore, urban environments can alter brain biology, resulting in changes to specific brain regions associated with early-life stressful experiences.

6 It sounds counterintuitive: surely the sheer number of people makes social interaction more

likely. While this may be true superficially, the kind of meaningful social interactions that are crucial for mental health do not come easily in cities. Social isolation is now recognised by urban authorities as a major risk factor for many illnesses. Therefore, urban design that fosters genuine social interaction is crucial for creating a kinder and more inclusive society. Hence, sociologists have advised urban planners to arrange objects and artefacts in public spaces in ways that nudge people physically closer together to encourage interaction. In 1975, the Project for Public Spaces transformed the way people used the Rockefeller Center in New York City by placing benches alongside the yew trees in its basement concourse (instead of people-repelling spikes), along with smaller parks and plazas throughout the complex to create a network of public spaces that serve a diverse community.

7 Enriching public spaces will not banish loneliness from cities, but it can help make residents feel more comfortable with their surroundings. Living among millions of strangers is a very unnatural state of affairs for a human being. Cities have the duty to accommodate this problem, to build a society where people can treat each other kindly even in such settings. That is more likely to happen when people feel good.

8 One thing guaranteed to make city dwellers feel negative is a constant sense of being lost or disorientated. Knowing how things relate to each other spatially is essential to feel connected to a place. Some cities are easier to navigate than others – New York's grid-like street pattern makes it relatively straightforward, whereas London, with its hotchpotch of neighbourhoods all orientated differently and the Thames meandering through the middle, is notoriously confusing. A sense of direction is equally important inside buildings. One of the most disorientating buildings is the Seattle Central Library, which has won multiple awards for its architecture. In the words of Northumbria University's Dalton, it is fascinating that a place so "universally admired by architects … can be so dysfunctional". One of the issues is the huge one-way escalators that sweep visitors from the ground floor into the upper reaches with no obvious means of descent, defying expectations on how navigation works, which confuses people. One of the library's users commented that she had "left the building as soon as I could figure out how to get out, hoping I wouldn't have an anxiety attack first.''

9 But that is the thing about cities: people who live in them do a good job of making them feel like home despite all the design and architectural obstacles that may confront them, be it in a byzantine library or a sprawling park. A visible manifestation of this are the "desire lines" that wend their way across grassy curbs and parks marking people's preferred paths across the city. They represent a form of mass rebellion against the prescribed routes of architects and planners. They are part of a city's "distributed consciousness" – a shared knowledge of where others have been and where they might go in the future.

10 Ultimately, there is one thing that architects, neuroscientists and psychologists agree on: that successful design is not so much about how our buildings can shape us, as Churchill had it, but about making people feel they have some control over their environment. We are creatures of the place we are in. Welcome to the new era of 'neuro-architecture'.

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