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**CONNECTIVITY
IN DESIGN:**
A 'JOINED-UP' APPROACH TO
HEALTH AND WELLBEING

Wednesday 1st December, 2021.

Environments by Design: Health, Wellbeing and Place

ARCHITECTURE_MEDIA_POLITICS_SOCIETY
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INTRODUCTION

PEOPLE & PLACE RESEARCHERS



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*Environmental Comfort, Retrofit,
Practices of Dwelling.*



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Ethnography, Design Process.*



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*Housing Design, Design Process, Healthy
Ageing*

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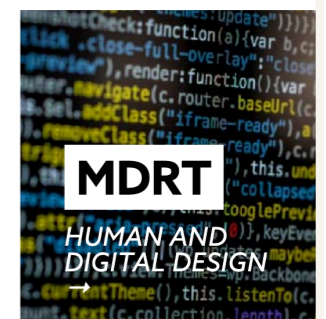
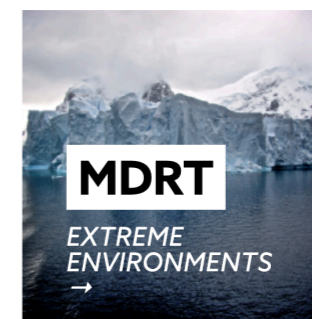
PEOPLE & PLACE RESEARCH INTERESTS

- Sustainable Futures
- Placemaking
- Education
- Urban Morphology
- Wellbeing & Health
- Real Estate and Markets



MULTIDISCIPLINARY RESEARCH THEMES (MDRTs)

- Energy Futures
- Biodesign for the Bioeconomy
- Extreme Environments
- Human and Digital Design

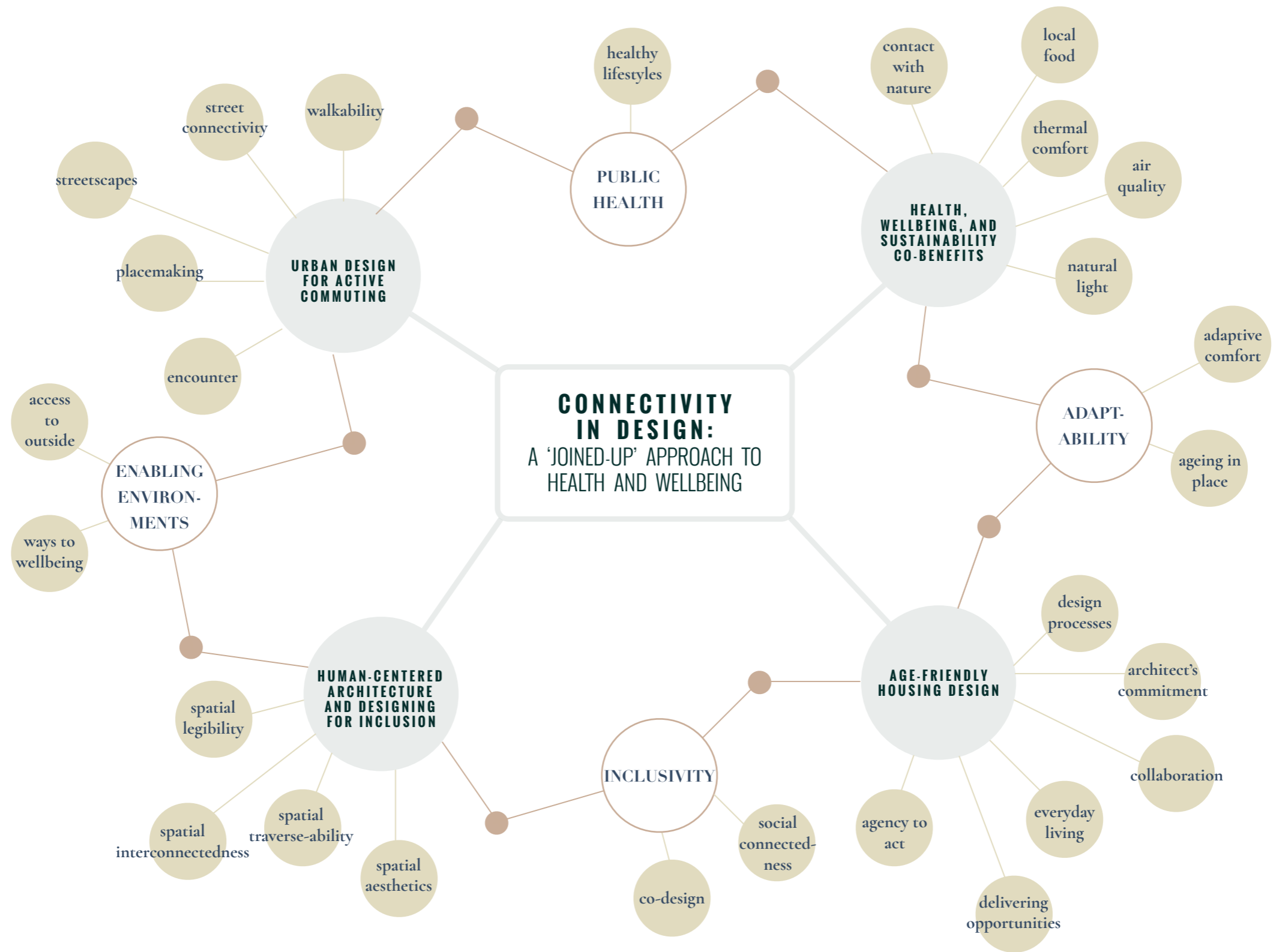


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INTRODUCTION

WHY? THE PROBLEM

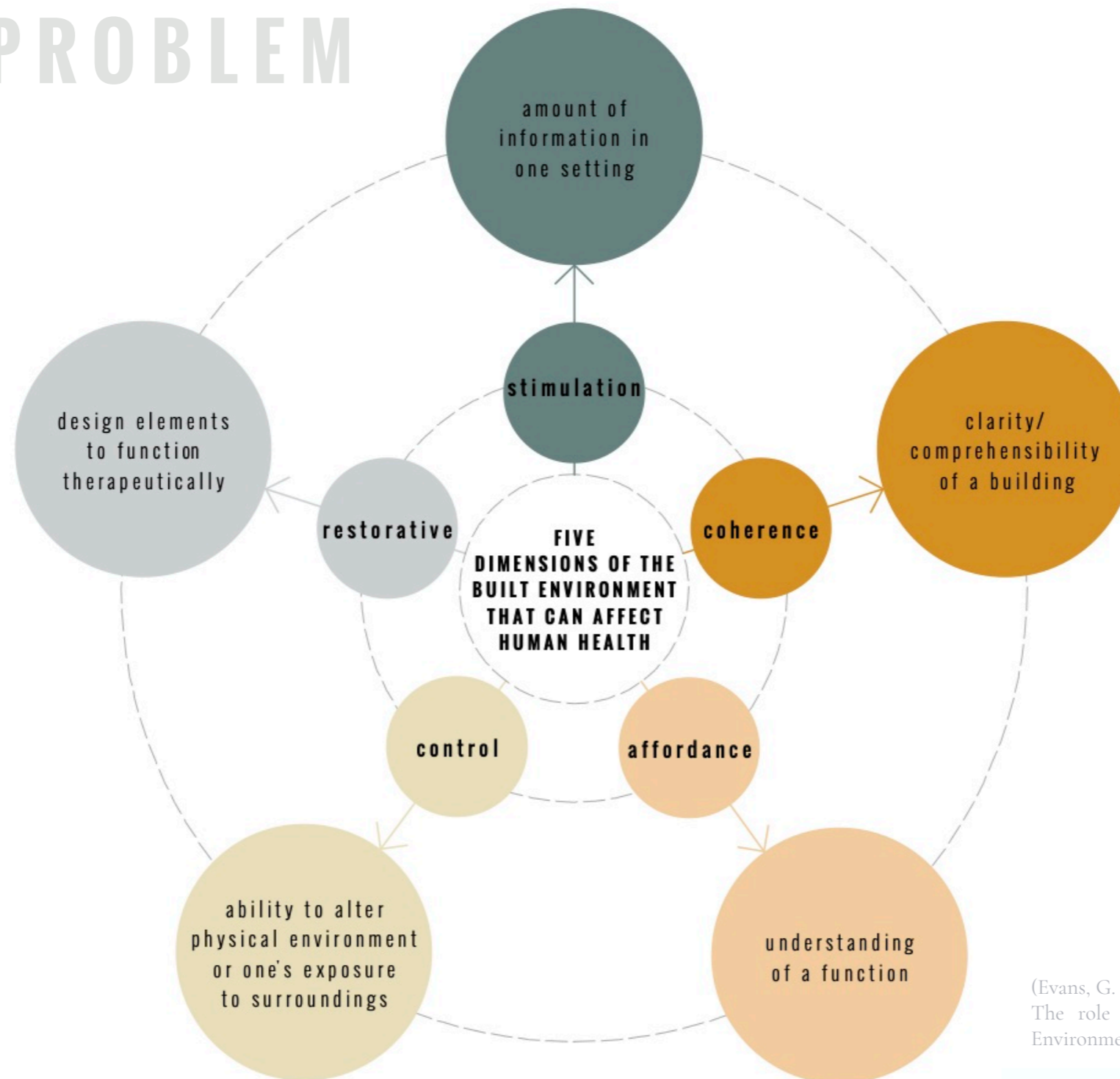
The World Health Organisation (WHO) defines health as:

“ a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity ”.

(World Health Organisation, "Constitution of the World Health Organization: Principles," <http://www.who.int/about/mission/en/>.)

INTRODUCTION

WHY? THE PROBLEM



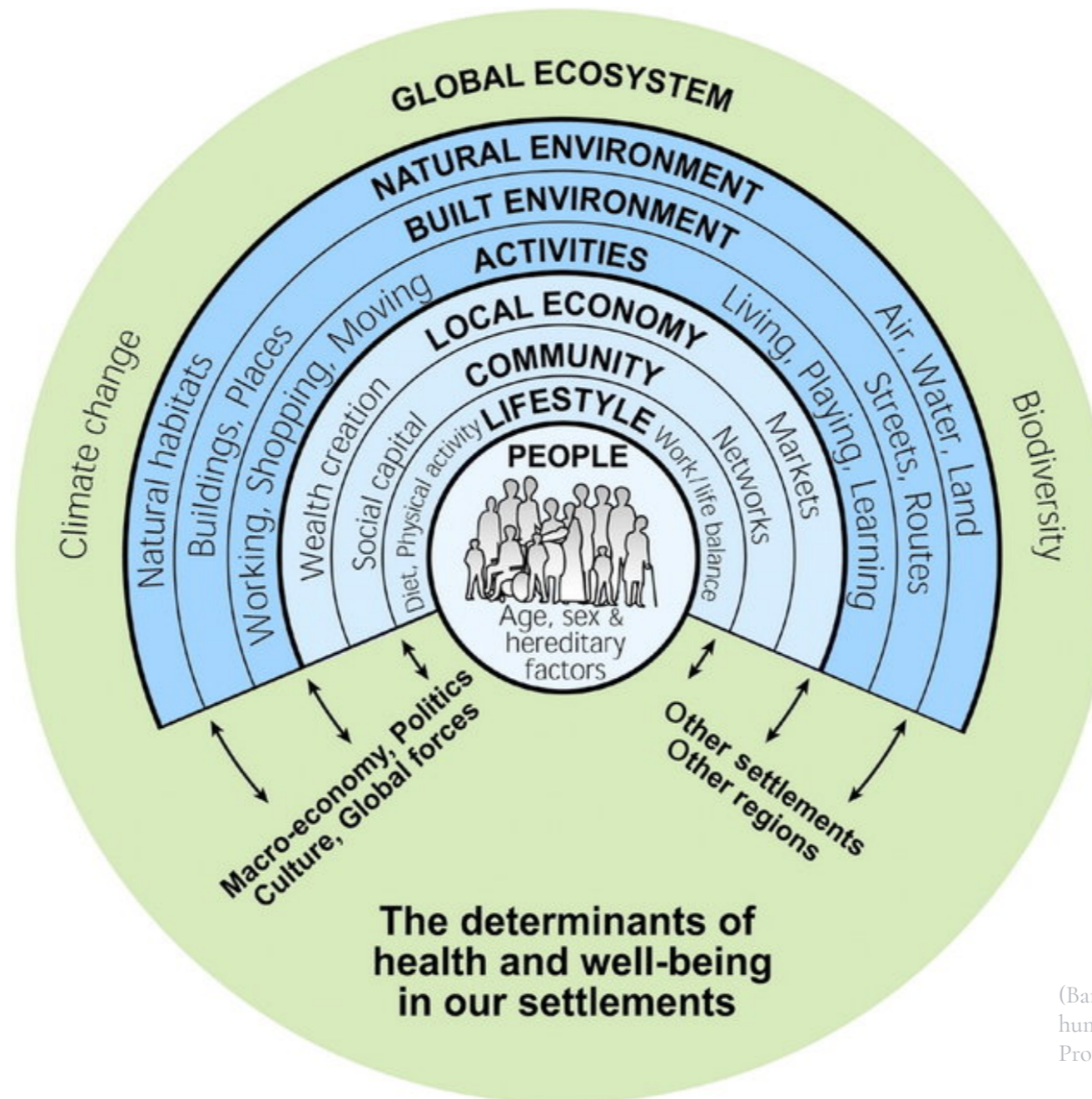
(Evans, G. and McCoy, J. (1998) When buildings don't work: The role of architecture in human health, Journal of Environmental Psychology, 18(1), pp.85-94.)

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WHY? THE PROBLEM



(Barton, H. and Grant, M. (2006) A health map for the local human habitat. Journal for the Royal Society for the Promotion of Health 126 (6), 252–253.)

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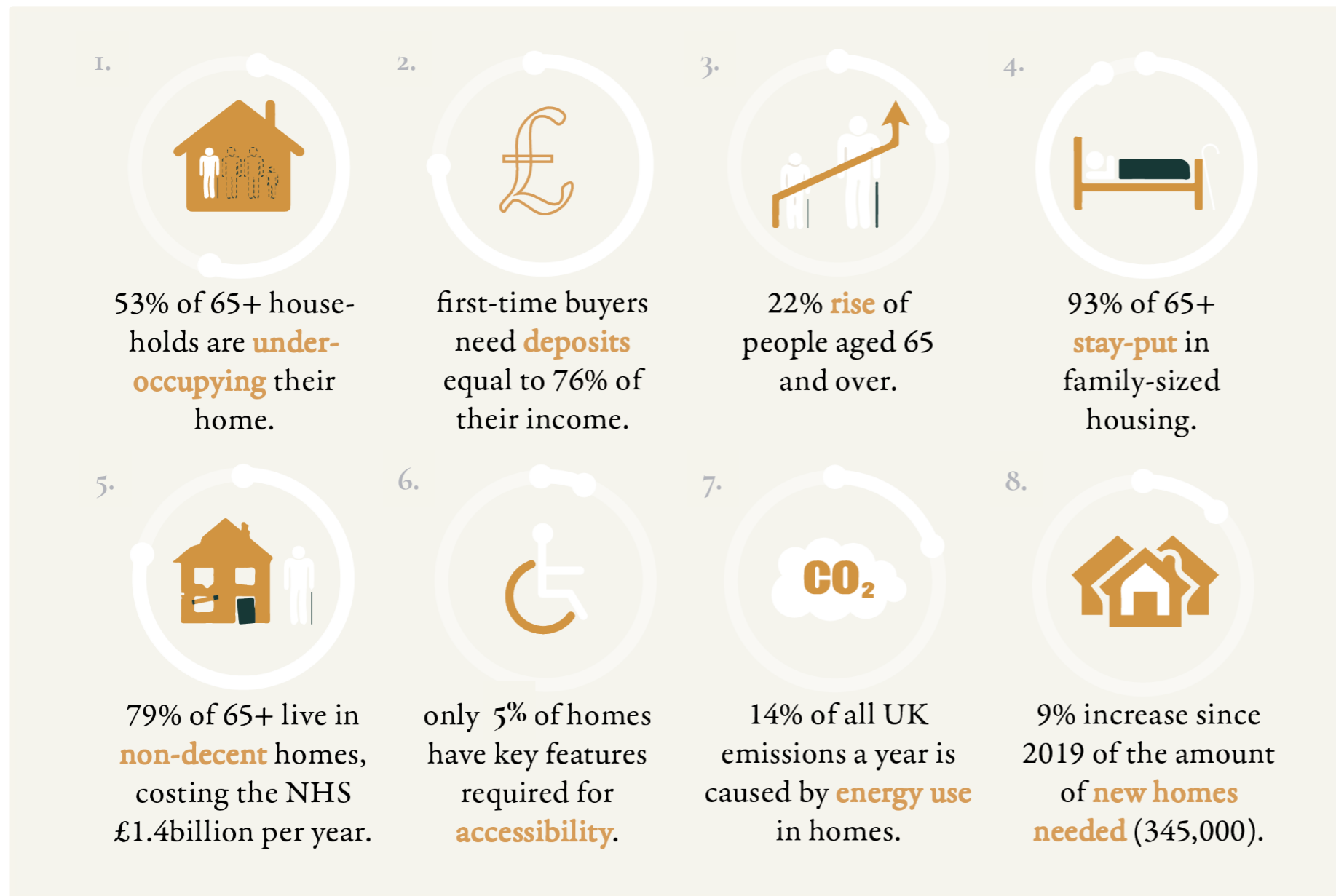
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1. ONS, Households under-occupying their home, 2020: <https://www.ethnicity-facts-figures.service.gov.uk/housing/housing-conditions/households-under-occupying-their-home/latest>

2. Slattery, The Ageing of Great Britain: Grey Nightmare or Agenda for a Silver Age?, 2019

3. AgeUK, Later Life in the United Kingdom, 2019: https://www.ageuk.org.uk/globalassets/age-uk/documents/reports-and-publications/later_life_uk_factsheet.pdf

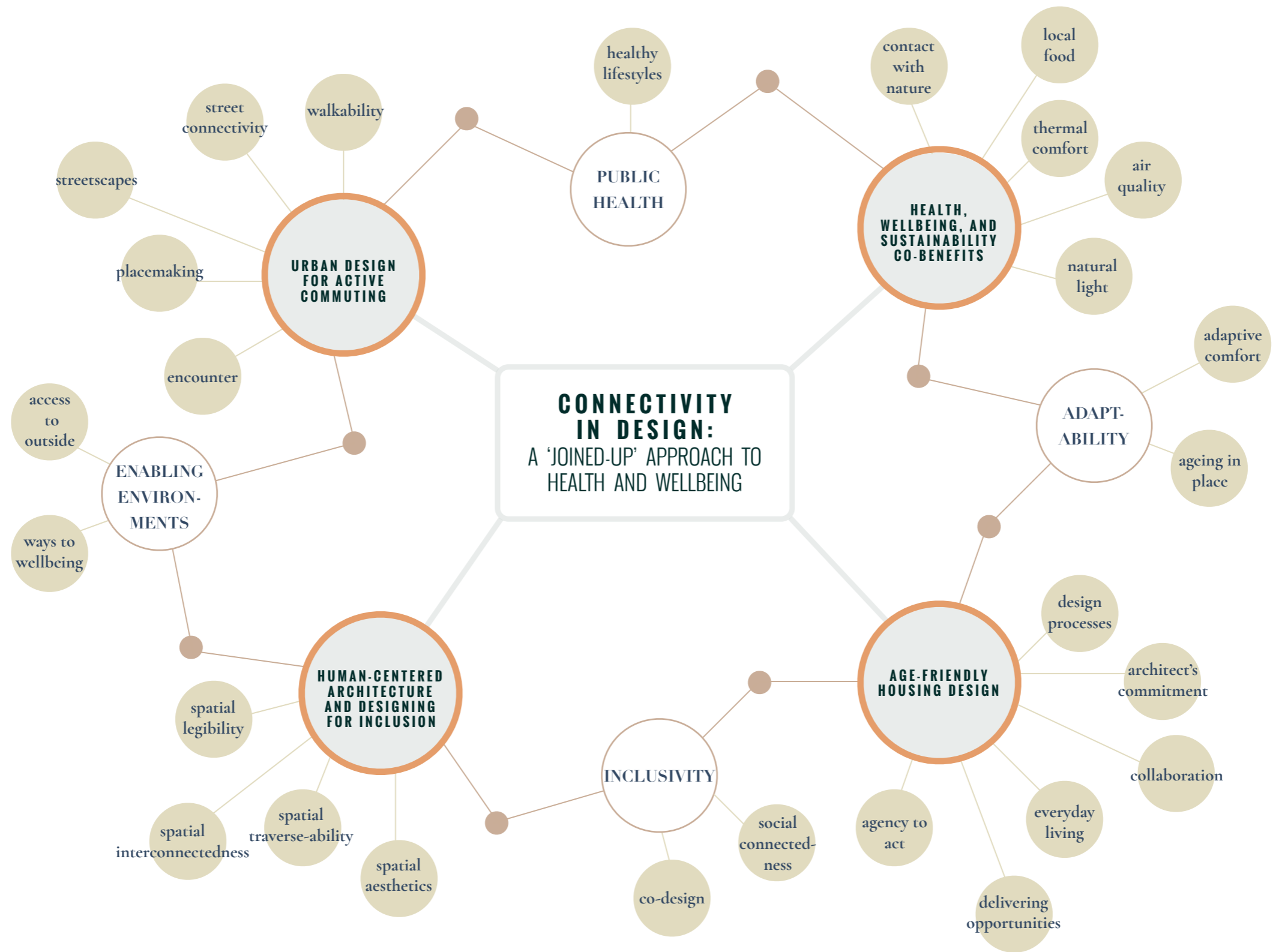
4. Park & Porteous, Age-friendly Housing, 2019

5. Foresight, Future of an Ageing Population, Government of Office for Science, 2016: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/816458/future-of-an-ageing-population.pdf

6. Centre for Ageing Better, Home and Dry, 2020: <https://ageing-better.org.uk/sites/default/files/2021-08/Home-and-dry-decent-homes-later-life.pdf>

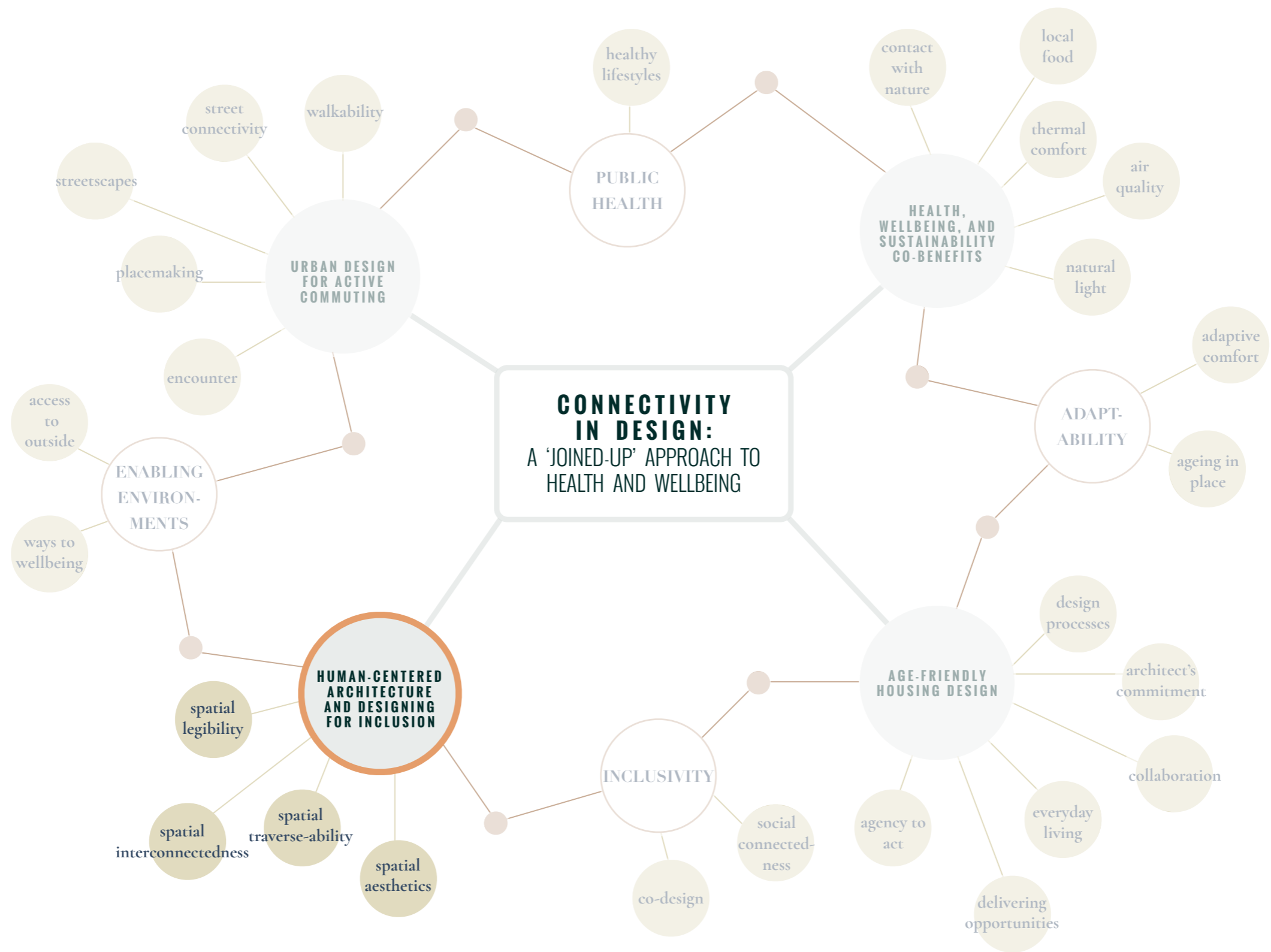
7. GovUK, English Housing Survey, 2020: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/898205/2018-19_EHS_Adaptations_and_Accessibility_Fact_Sheet.pdf

8. Parliament, Tackling the under-supply of housing in England, 2021: <https://commonslibrary.parliament.uk/research-briefings/cbp-7671/>



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SETTING THE SCENE

WHY? THE PROBLEM

- Changes in population demographics
- Architecture of Care Home Environments
- Research and Practice: Defining and translating 'Wellbeing' into design
- Interdisciplinary Challenge



1. Heatherwick Studio's Maggie's Centre Leeds <http://www.heatherwick.com/project/maggies/>
2. Foster+Partner's Maggie's Centre Manchester. Sourced from Architect Magazine https://www.architectmagazine.com/technology/architectural-detail/maggies-manchester-centre-timber-frame_o. Copyright: Nigel Young/Foster+Partners

RESEARCH QUESTION(S)



Design for Wellbeing: Ageing and Mobility in the Built Environment.

- How can the built environment facilitate physical ability and wellbeing* in care homes?

A collage of logos and resources. At the top, from left to right: University of Dundee, Newcastle University, Research Councils UK Lifelong Health & Wellbeing, and Digital Economy. Below these are logos for Collective Architecture, Balhousie Care Group, and Bupa. At the bottom is a graphic titled "Five Ways to Wellbeing" with five panels: Connect, Be Active, Take Notice, Keep Learning, and Give. A footnote explains the origin of the Five Ways to Wellbeing.

UNIVERSITY OF DUNDEE

Newcastle University

Research Councils UK
Lifelong Health & Wellbeing
Research for Healthy Ageing

Digital Economy
Transforming Business and Society

COLLECTIVE ARCHITECTURE

Balhousie Care Group
sharing your care

Bupa

Five Ways to Wellbeing

Connect Be Active Take Notice Keep Learning Give

*Wellbeing – The Five Ways to Wellbeing were originally devised by the New Economics Foundation, for further information please see: [://www.gov.uk/government/collections/mental-capital-and-wellbeing](http://www.gov.uk/government/collections/mental-capital-and-wellbeing)

RESEARCH TACTICS

HOW? EMBEDDED IN THE CARE HOMES



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RESEARCH TACTICS


HOW? METHODOLOGY

Observing a 'Week in the Life' of the Care Home.

- The AEIOU technique enabled observations to be documented under 5 mutually exclusive elements of Activity, Environment, Interaction, Object, and User.
- Architectural drawings were made as well as basic recordings of time and space recorded on an annotated floor plan.

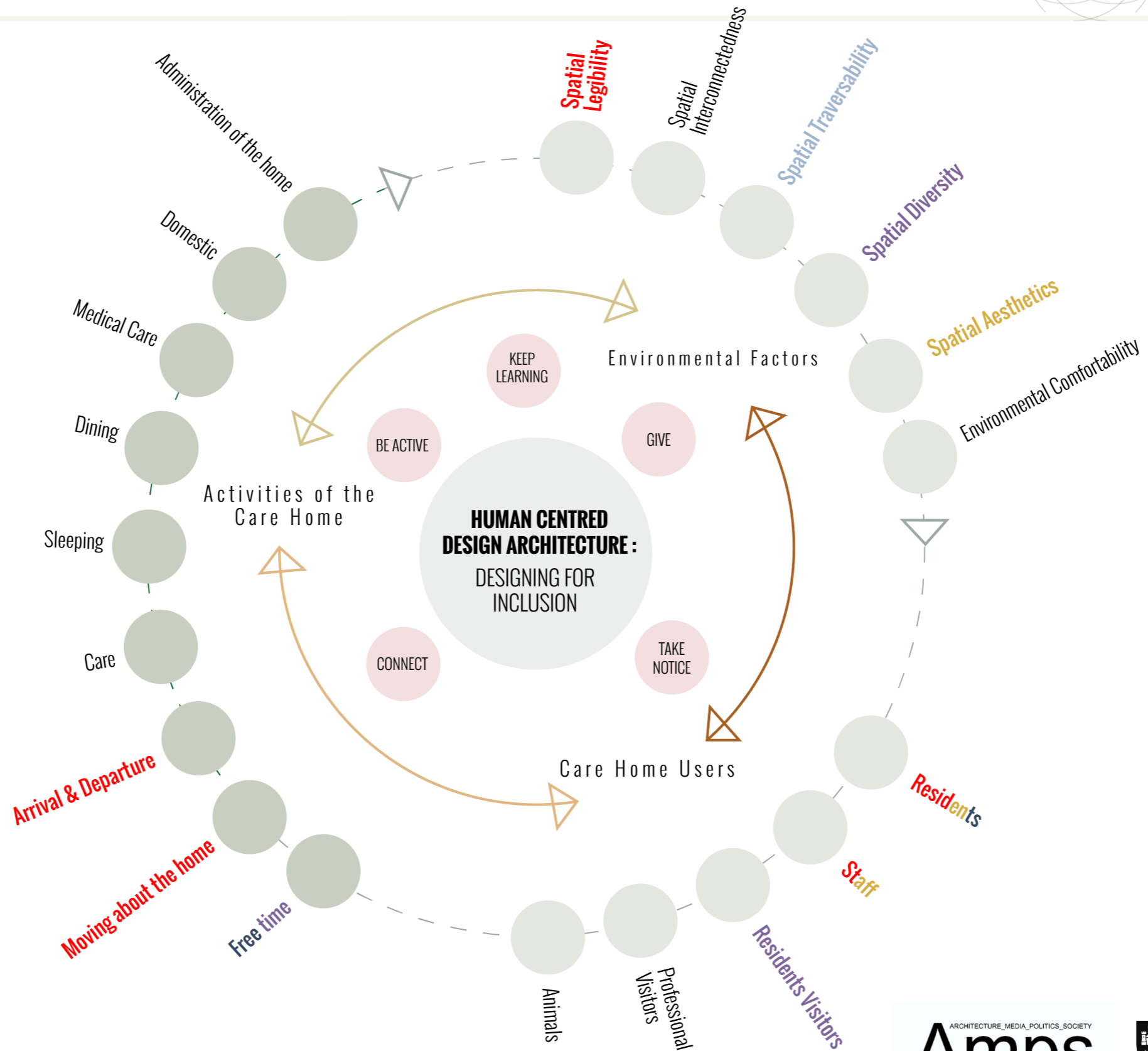


| | |
|-------------|---|
| Activities | Goal/intent driven action(s) that indicate what users want to do <i>What is the context of the objective or intent behind Interaction(s)?</i> |
| Environment | Context description of the space (inclusive of smell, atmosphere, sound etc.) <i>What environmental factors are affecting activity?</i> |
| Interaction | Exchanges that happen between people, spaces, building elements or things. <i>What exchanges are happening between people, spaces, building elements or things. (Including Object and User)?</i> |
| Object(s) | Components of the space. The things that are being used and interacted with (e.g. a chair, the T.V. remote control, a window) |
| User(s) | People who provide the behaviours, needs, and preferences to this study |



Using AEIOU to structure ethnographic observations. This technique originated at Doblin in the 1990s and was further refined by elab. It is a common heuristic in the field of Design Ethnography and we built on the version described by Bella and Hanington in Universal Methods of Design

RESEARCH OVERVIEW



RESEARCH INSIGHT

WHAT? POTENTIAL WAYS TO WELLBEING

Five Ways to Wellbeing



Activities included:
Receiving Visitors
Meals
Organised Activities
Chatting



Activities included:
Walking for walking's sake
Finding, fetching, and carrying
Arrival for meals



Activities included:
View Watching
Cultural Consumption
Laundry



Activities included:
Playing and Hobbies
Organised Activities



Activities included:
Cleaning and tidying
Laundry
Chatting

The five ways to wellbeing were devised by the New Economics Foundation, for more information please visit <https://www.gov.uk/government/collections/mental-capital-and-wellbeing>

RESEARCH INSIGHT

WHAT? **SPATIAL LEGIBILITY**

- Spatial Lies hindered legibility and were seen to affect activity.
- The Front Door to the Home
- *A door 'advertising' itself as a door, but not 'acting' like a door should.....*
- Residents became visually frustrated as they repeatedly tried to push and pull the door handle until a staff member intervened.



POTENTIAL WAYS TO WELLBEING:

Spatial lies were observed to specifically impact on the enablement of residents to be active and resulted in the need for staff intervention.

A positive result of these interventions was that they often led to social interactions

RESEARCH INSIGHT

WHAT? SPATIAL DIVERSITY

- “ There is nothing nicer than saying, when people come in, “have a cup of tea”. Because I think if people have a cup of tea you get the idea they are going to stay for a while. ”

(Care Home Resident)

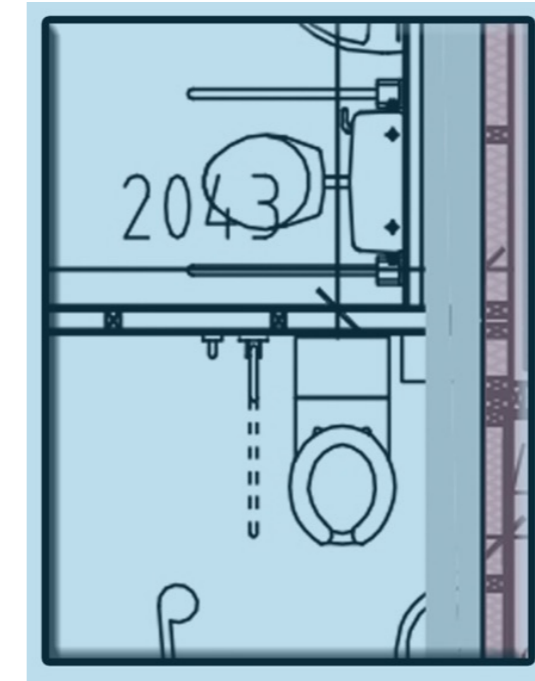
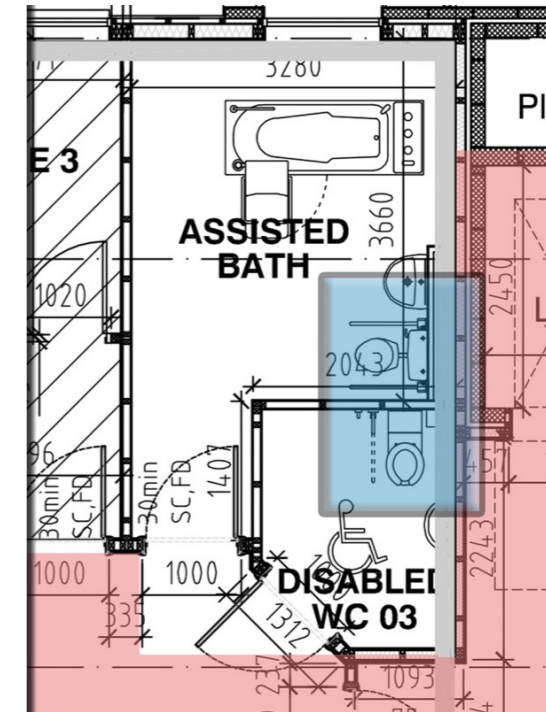


RESEARCH INSIGHT

WHAT? SPATIAL AESTHETICS

- “ Sometimes our heavier ladies need help with getting on the toilet. Yes the bathrooms are all wet-rooms and good for people in wheelchairs. But not so much if residents need two members of staff to help them onto and off the toilet. There is all sorts in our way, we have to squeeze into tiny spaces by the toilet. Everyone’s dignity is impacted. ”

(Staff insight to Toileting)



RESEARCH INSIGHT

WHAT? **SPATIAL TRAVERSIBILITY**

- “*I am just waiting for someone to take me outside for a smoke*”

(Care Home Resident)



CALL TO ARMS

HOME > SCIENCE

Inside the Dutch 'dementia village' that offers beer, bingo, and top-notch healthcare

Chris Weller Aug 2, 2017, 4:10 PM



Residents of Hogeweyk, a village located in Weesp, Netherlands, lead a normal life. They go to the grocery store, complain about the weather, and enjoy a weekly game of bingo.



Hogeweyk

But there's one thing that sets the 152 residents apart from the general public: Everyone has an advanced form of dementia.

Building Design.

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OPINION

Learning from lockdown: We need to talk about the design of care homes

By Julia Park | 11 June 2020



With care homes in the news for tragic reasons it is time to imagine a different future, says Julia Park

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Worst care homes more likely to have poorest residents, official data shows

Sixty-nine per cent of people in 'inadequate' homes in England have their bills paid for by the state

Robert Booth Social affairs correspondent

Fri 15 Oct 2021 15:53 BST



In the best homes, 'self-funders' make up almost half of residents. Photograph: Paula Solloway/Alamy

1. <https://www.businessinsider.com/inside-hogeweyk-dementia-village-2017-7?r=US&IR=T>
2. The Guardian <https://www.theguardian.com/society/2021/oct/15/worst-care-homes-more-likely-to-have-poorest-residents-official-data-shows>
3. Building Design <https://www.bdonline.co.uk/opinion/learning-from-lockdown-we-need-to-talk-about-the-design-of-care-homes/5106393.article>

Wednesday 1st December, 2021.

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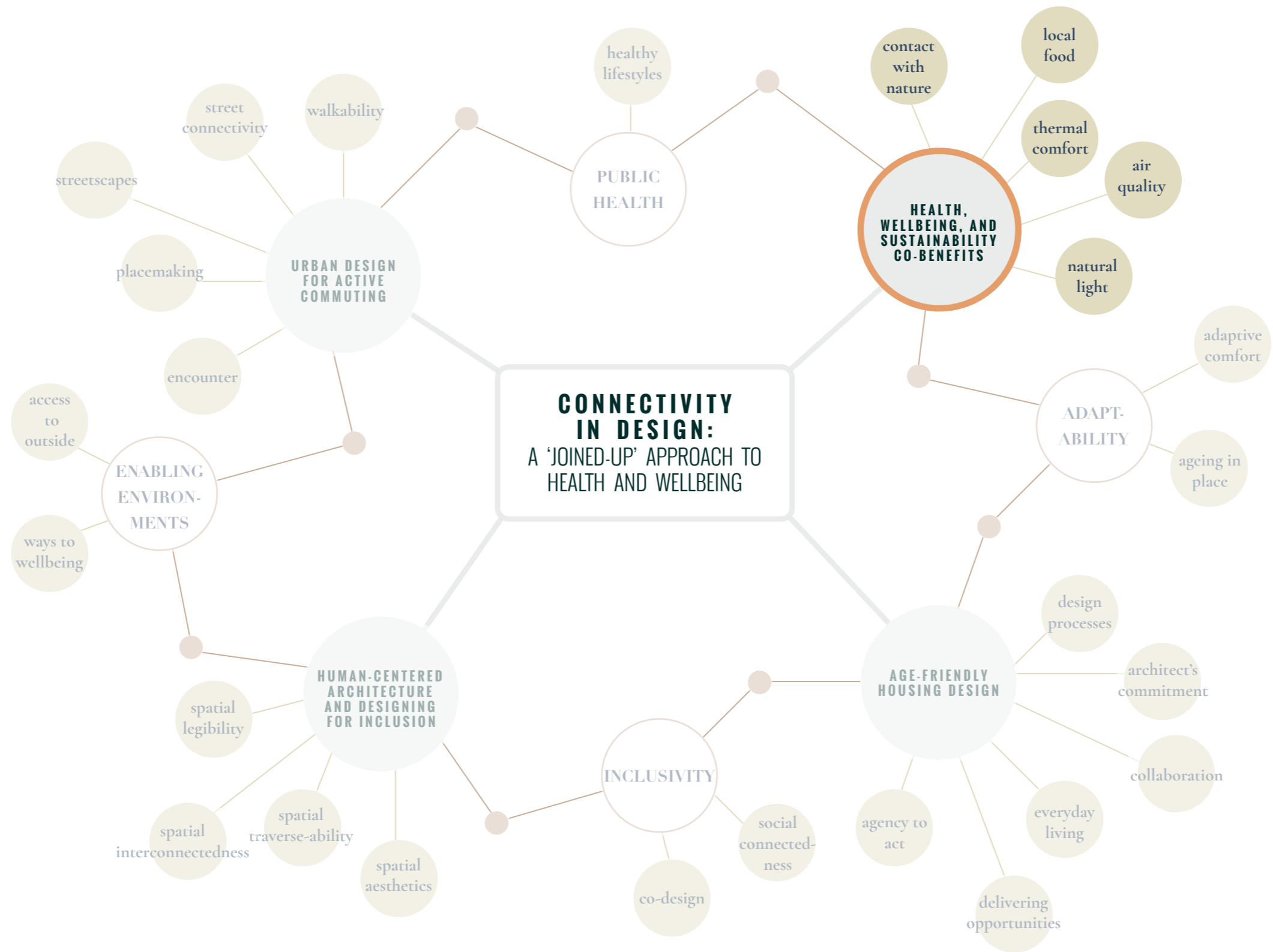
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Q.

What would you
WANT and **NEED** if you lived in a
care home?

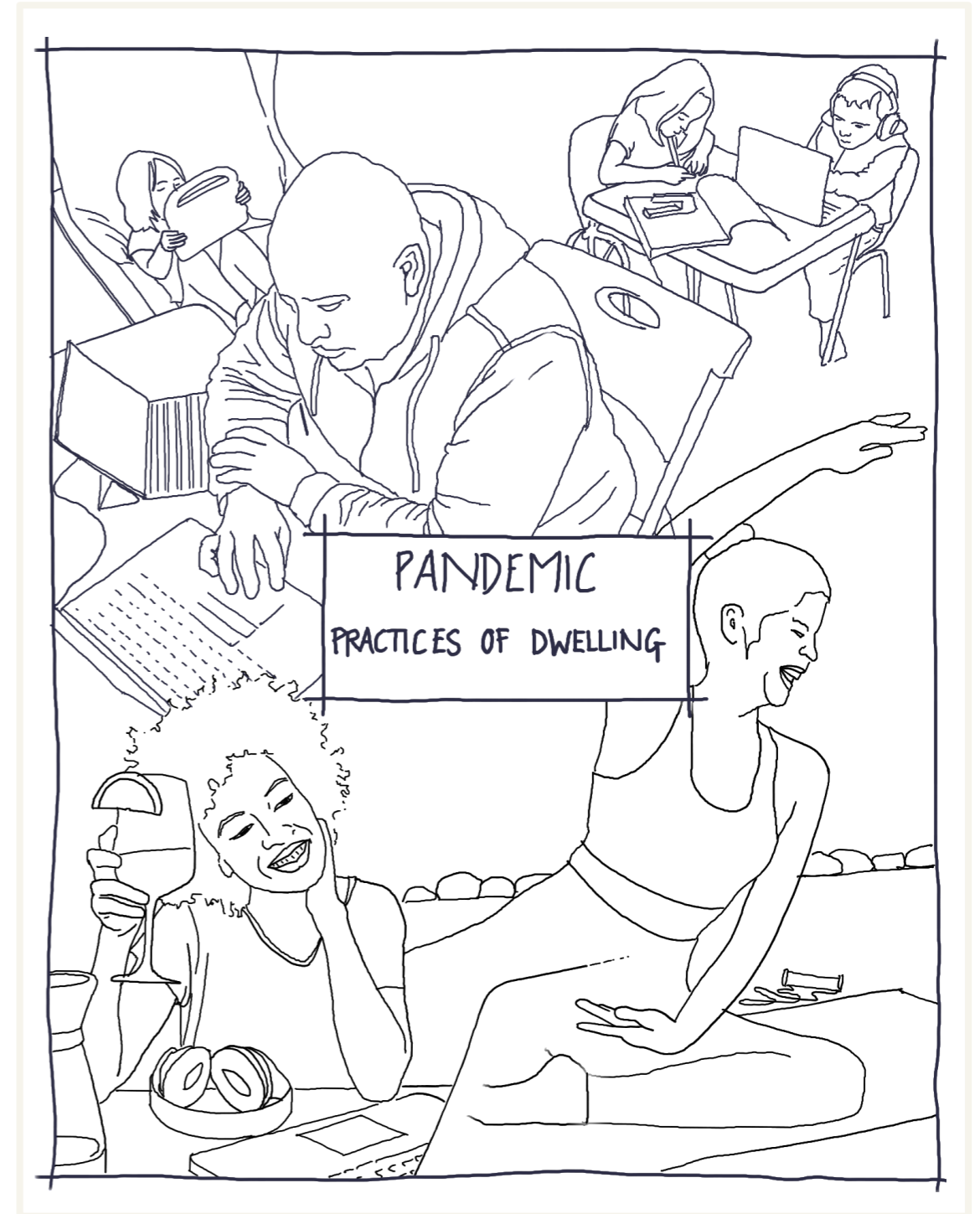




SETTING THE SCENE

WHY? THE PROBLEM

- Domestic sector accounts for 28.9% of UK energy consumption (BEIS, 2018);
- At least 80% of 2050 housing stock has already been built (Boardman, 2005);
- UK households spend more than £40 million every year on improvements and adaptations to their homes (ONS, 2021);
- Energy efficiency improvements must be incorporated into wider home adaptations and practices of dwelling.



RESEARCH PROJECT(S)

RESEARCH QUESTION(S)

2014-2018: Influences on low carbon housing retrofit.

- How do home improvements sit within a wider nexus of practices?
- What are the teleological (goal-oriented) components of practice stimulating owner-occupier home improvements?
- What are the implications of these practices for low carbon retrofit?

2021: Pandemic practices of dwelling.

- How have practices of dwelling changed due to the COVID-19 pandemic?
- How has the material fabric of the home adapted to these altered practices of dwelling?



Wednesday 1st December, 2021.

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RESEARCH TACTICS

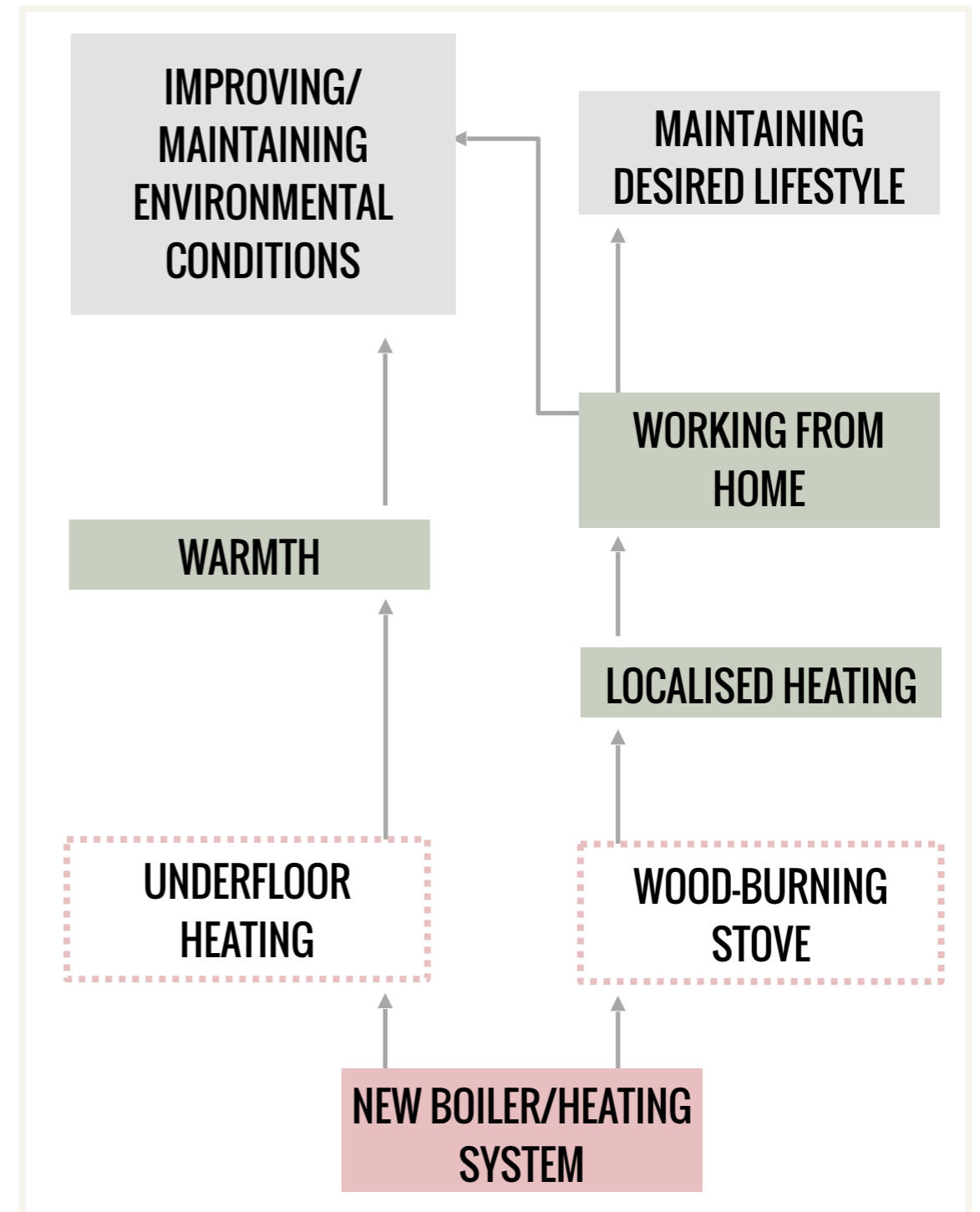
HOW? METHODOLOGY

2015-2016: Influences on low carbon housing retrofit.

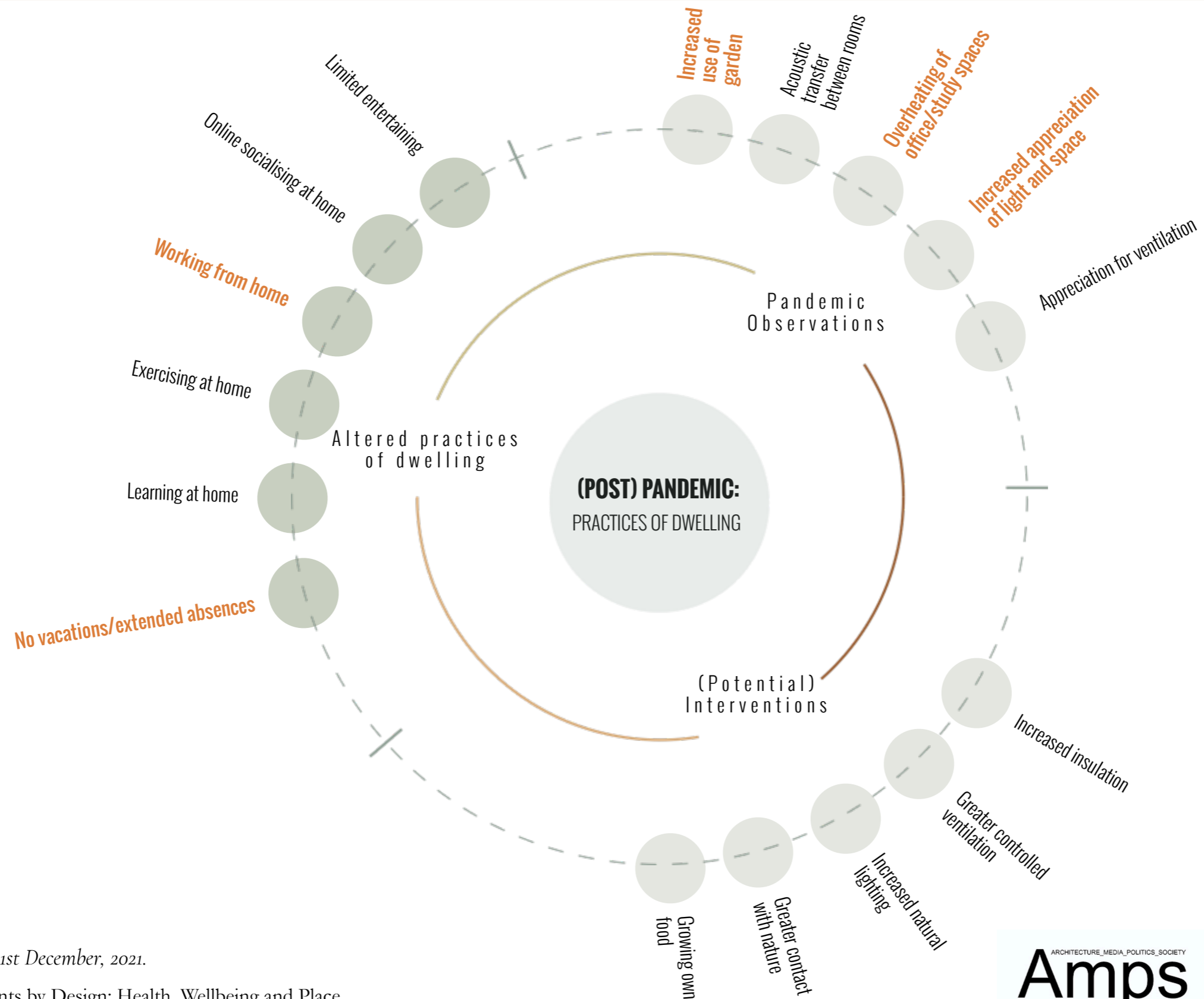
- Face-to-face in-depth 'laddering' interviews;
- Walk-through tours;
- 31 owner-occupiers in Bristol, UK.

2021: Pandemic practices of dwelling.

- Online follow-up interviews;
- 9 of these previous participants.



RESEARCH OVERVIEW: PANDEMIC PRACTICES OF DWELLING



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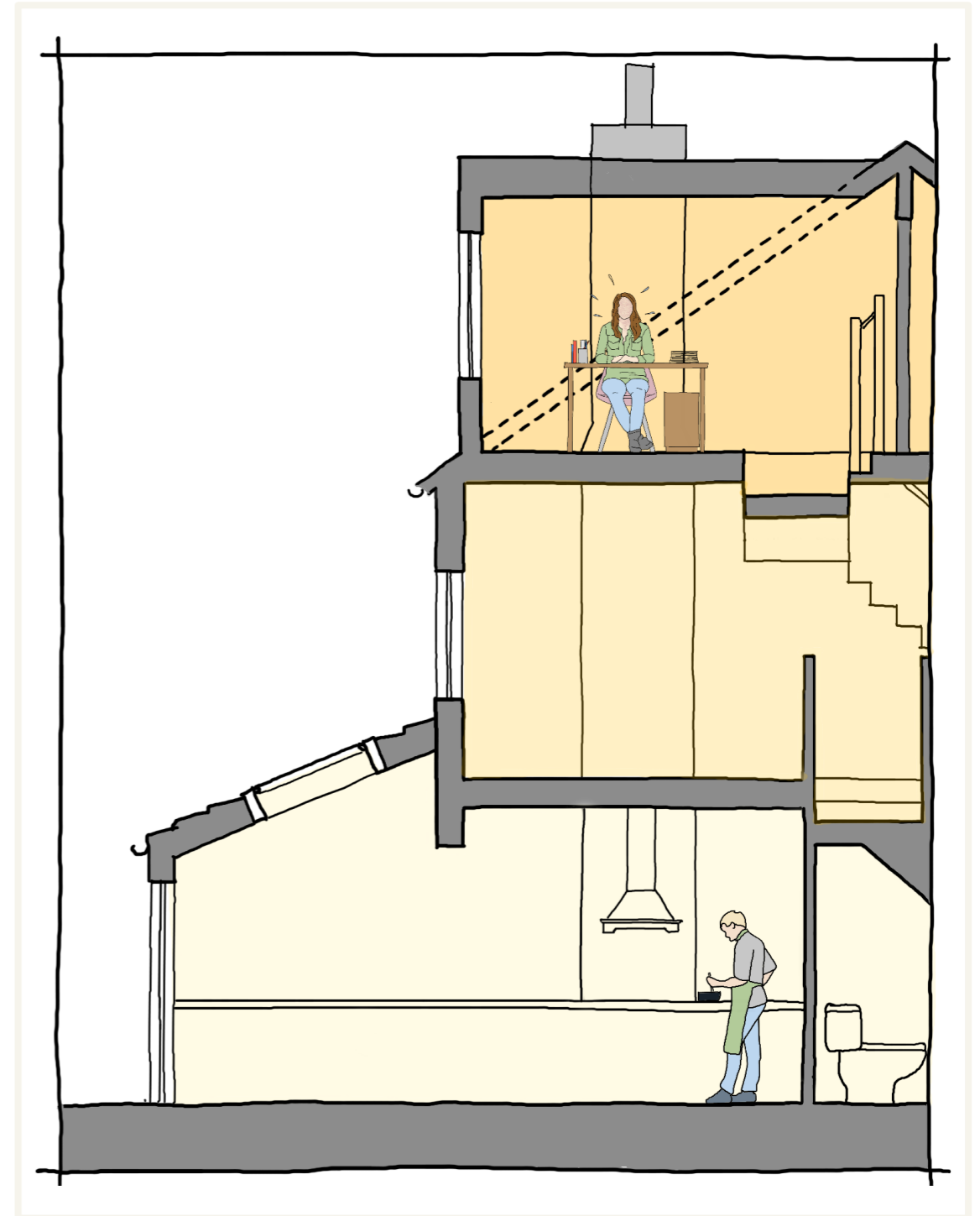
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RESEARCH INSIGHT

WHAT? WORKING FROM HOME

Increasing dissatisfaction with thermal comfort afforded by homes, most commonly the over-heating of office spaces created through loft conversions:

“It was very hot yesterday afternoon. I'd have to just pick the laptop up and go downstairs if I was working in a full-time job...”

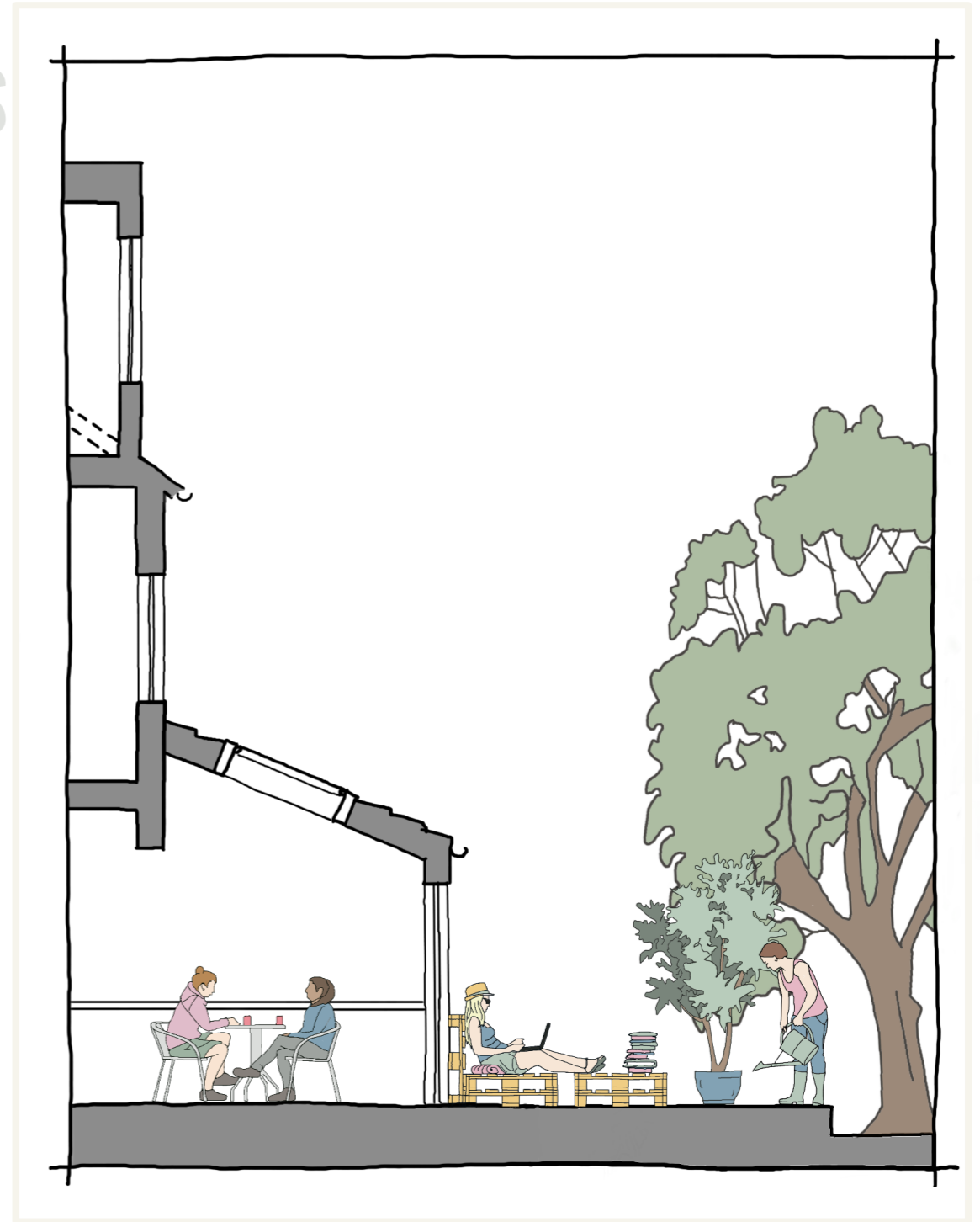


RESEARCH INSIGHT

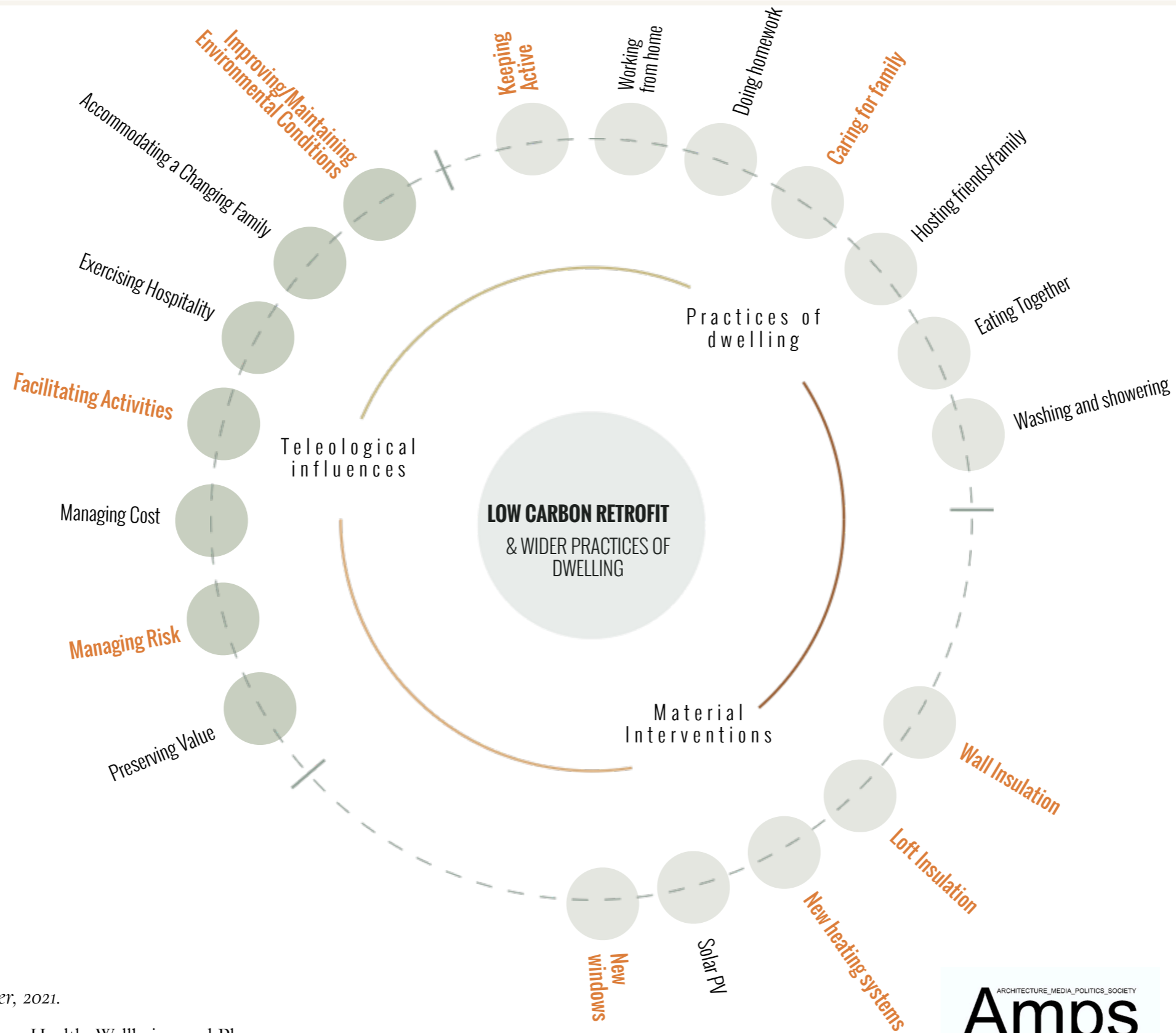
WHAT? NO VACATIONS/ABSENCES

- A subjective sense of space that made lockdown more manageable;
- Greater use and appreciation of the garden:

“Well, I I would say we’ve done a lot more gardening and growing - because we are here. You know, there's no point in planting beans if you're going to go off...”



RESEARCH OVERVIEW: LOW CARBON RETROFIT



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RESEARCH INSIGHT

WHAT? MANAGING RISK

- Improving thermal comfort;
- Reducing anxiety of costs associated with future energy use:

“ Robert likes to live in a warm comfortable house, and I don't have to worry knowing that our energy is coming from the sun and the Air Source Heat Pump. We can be comfortable all the time rather than feel that in the future we might have to worry about putting the heating for two hours a day, because we can't afford it. ”



RESEARCH INSIGHT

WHAT? FACILITATING ACTIVITIES

Increasing natural light:

George: “ *She wants light tubes everywhere, so we're going to put one more in [laughs].* ”

Winnie: “ *George sent me on an art course, and I realised I can paint and draw... that's probably what it is. I'm just obsessed by light and I look at light all the time.* ”

(retired couple)



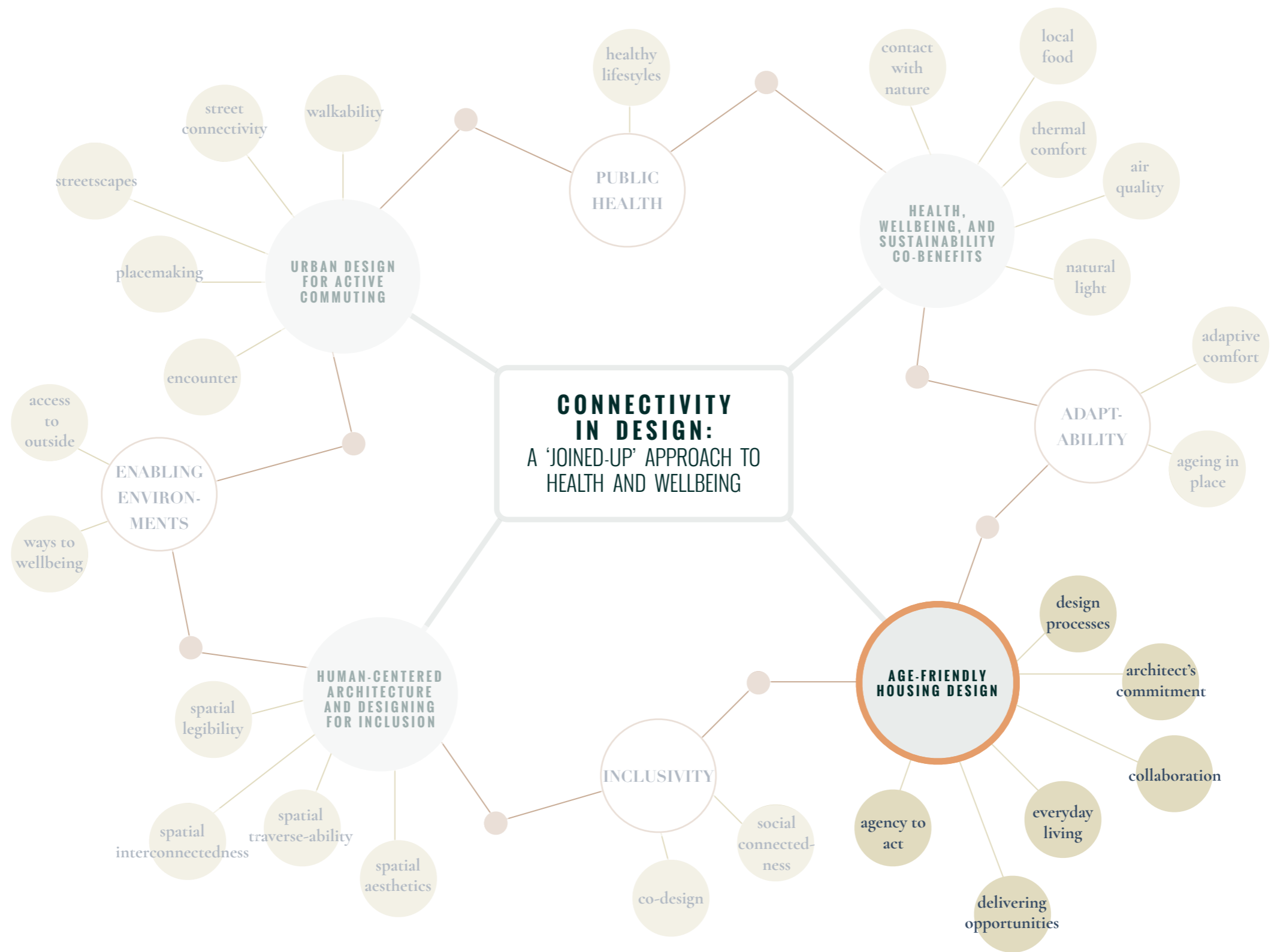
CALL TO ARMS

KEY POINTS TO CONSIDER:

- Decent Homes Programme (2001-2010): total savings to the NHS as a result of improving social sector homes were around £392 million (Garrett et al. 2014).
- Boilers on Prescription Scheme (2014-2016) by Gentoo and Sunderland Clinical Commissioning Group (CCG).

We must move towards a more integrated approach to housing and health - in the broadest sense.

**Q. How well did the fabric of
your home adapt to the
pandemic?**



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SETTING THE SCENE

WHY? THE PROBLEM

- Current **built environment barriers** for sustained or improved health and well-being (PHE, 2019);
- Chronic **housing shortage** and the homes that are being built are unsuitable to age-in-place (Nazroo, 2015; Thomson & Thomas, 2015; Adams, 2017; Dickson & Hailey, 2019);
- **Age-friendly design** has been identified to support healthy ageing. Yet, housing examples remain too few (Park & Porteus, 2018; Buffel et al., 2019; RIBA, 2019).

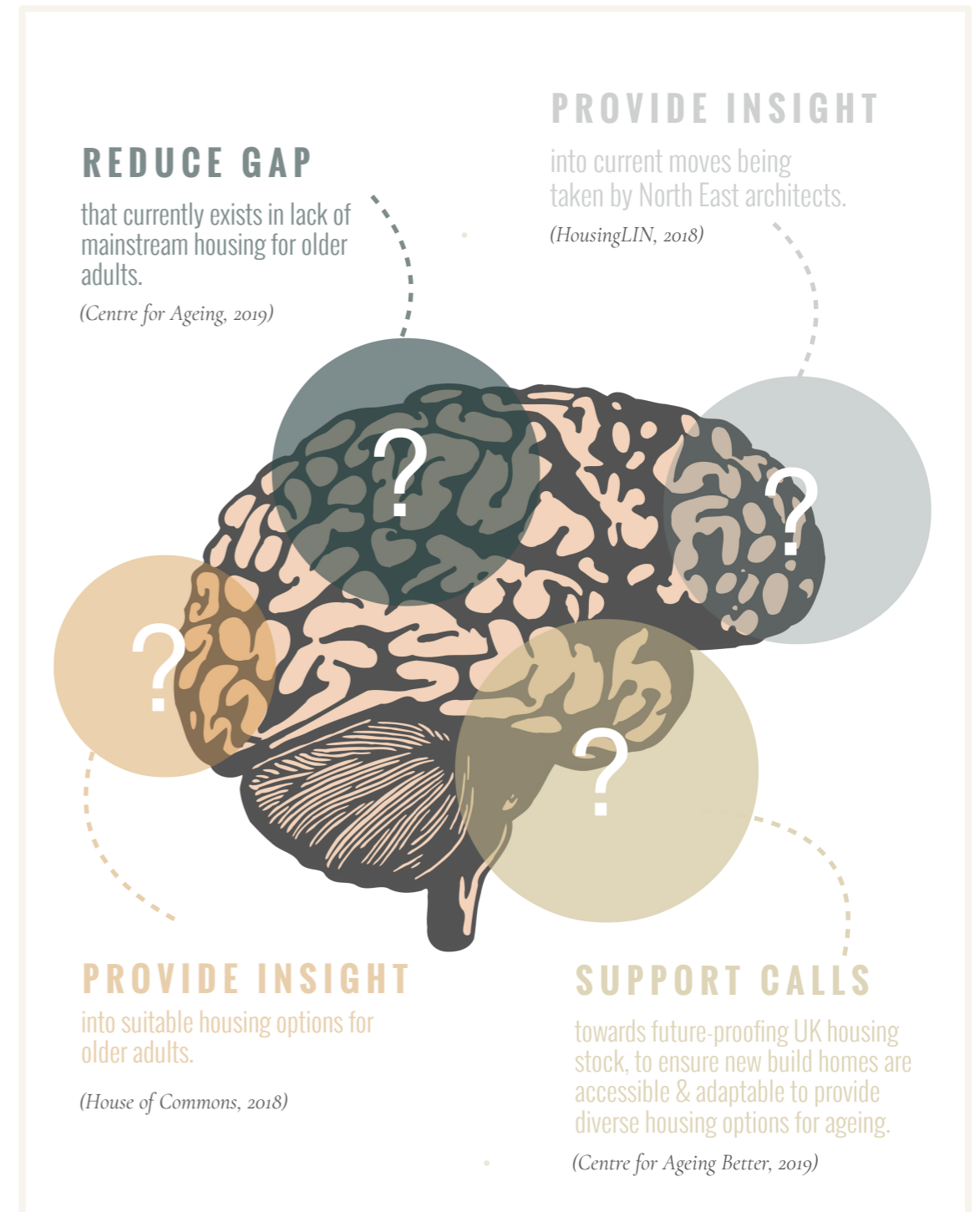


RESEARCH PROJECT

RESEARCH QUESTION

Architects, Agency and the Design Process: Creating age-friendly housing

- How does agency and process of architects influence the design of age-friendly housing?



RESEARCH TACTICS

HOW? METHODOLOGY

- Semi-structured interviews
- In-depth qualitative insight
- Architects personal experiences
- Computer-aided Qualitative Data Analysis Software (CAQDAS)
- Sketching Research Method (SRM)



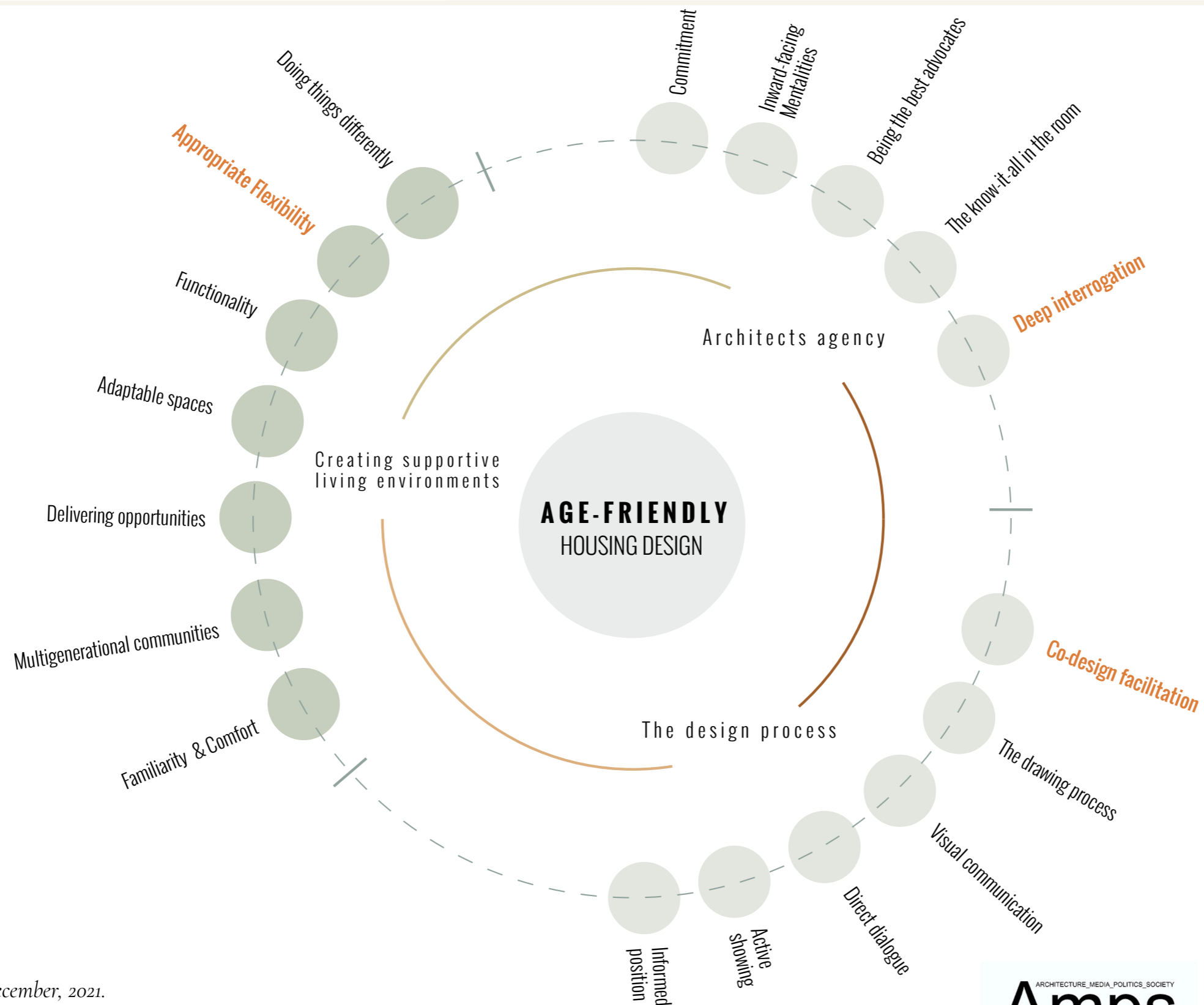
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RESEARCH OVERVIEW



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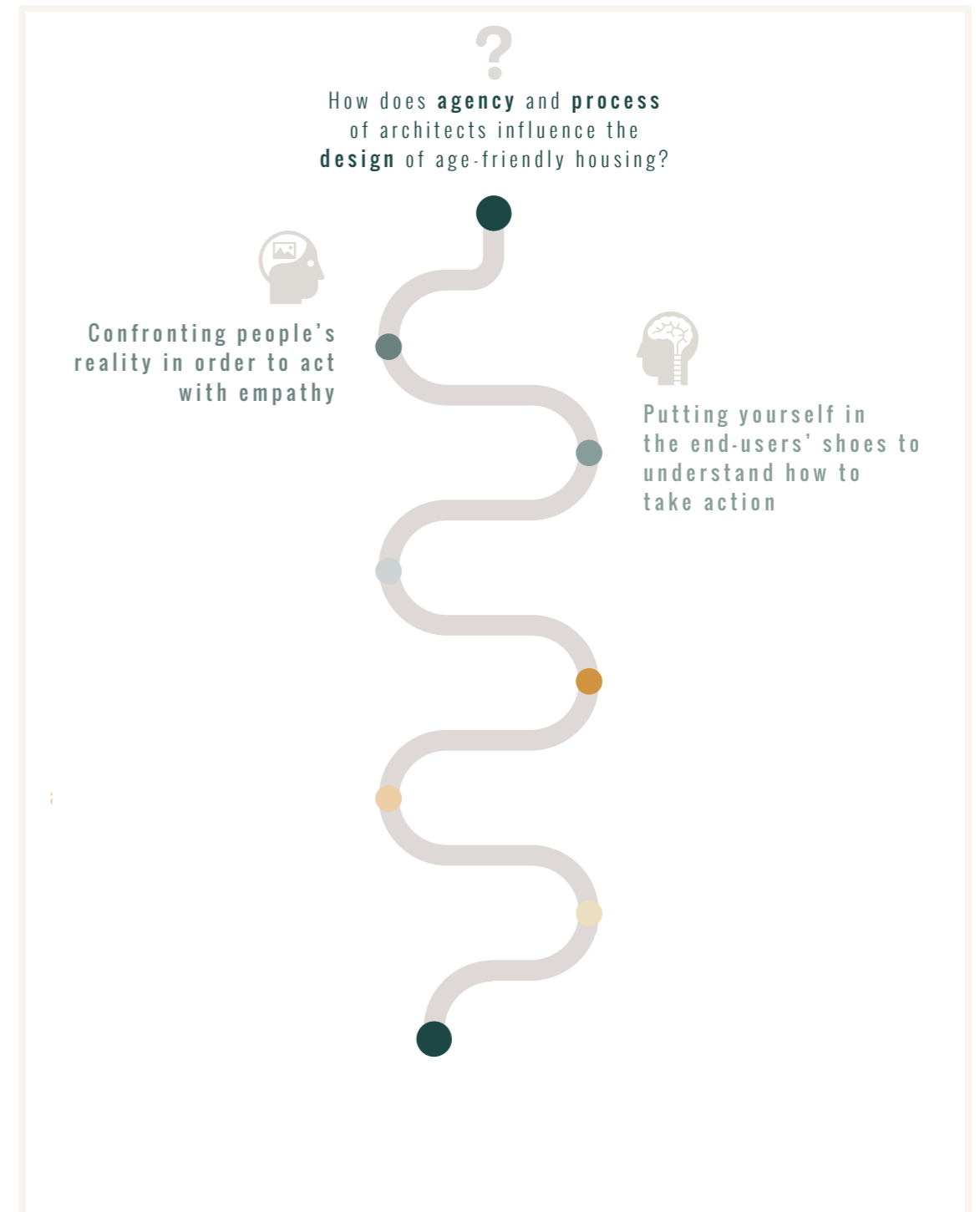
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RESEARCH INSIGHT

WHAT? DEEP INTERROGATION

- *“It requires you putting yourself in the shoes of the people who are going to be using the building and understanding how it is going to work for them...and draw on all their experiences. This will create better architecture, better building, better houses.”*

(Participant F)

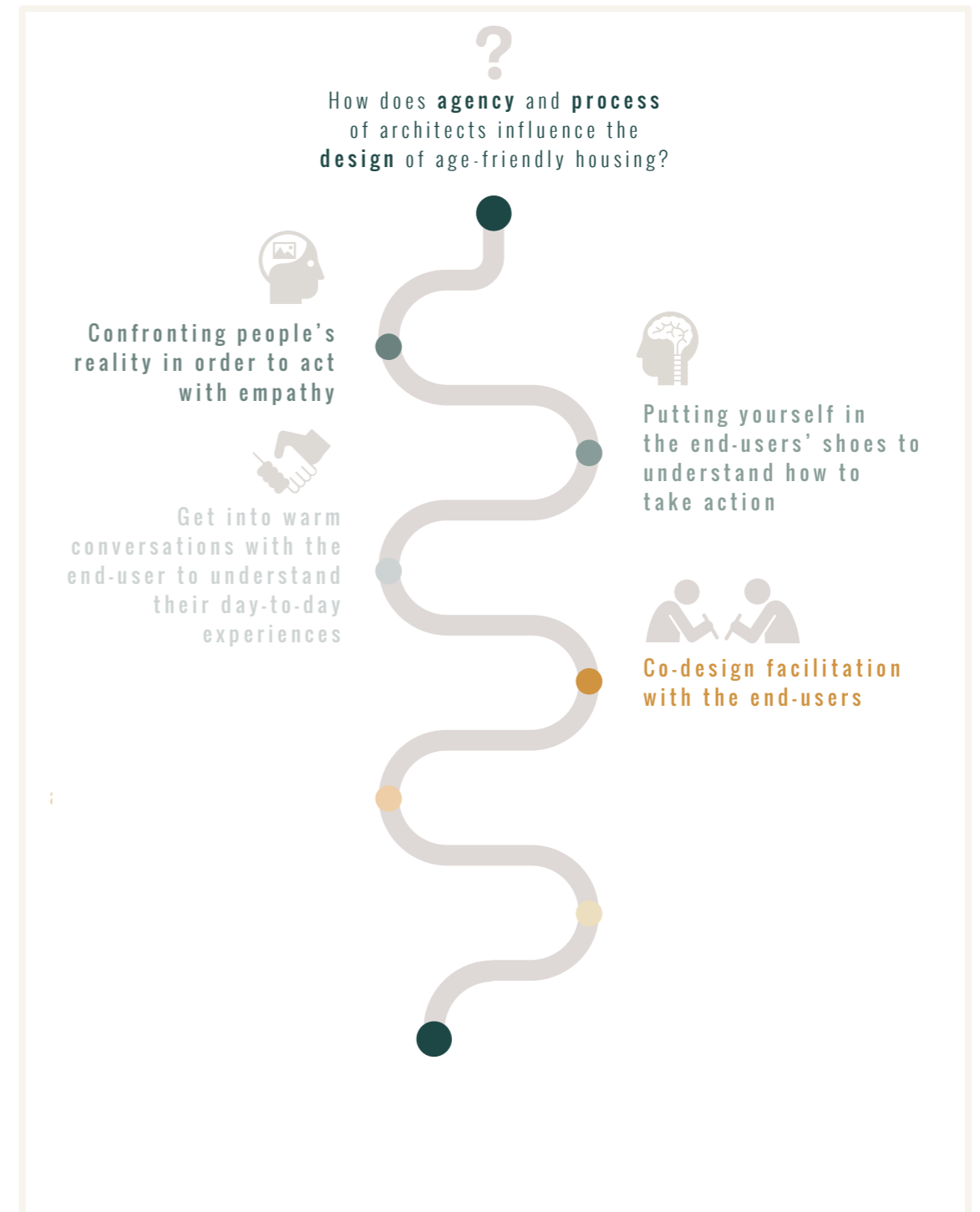


RESEARCH INSIGHT

WHAT? CO-DESIGN FACILITATION

- *“So you almost act as the facilitator. With the workshops we've done even during lockdown, we try to impart as much knowledge as possible to them. So they can almost become designers themselves. It takes a long time, but it really helps in terms of them really feeling like they're buying into the project...so they are really involved in the design process.”*

(Participant I)



RESEARCH INSIGHT

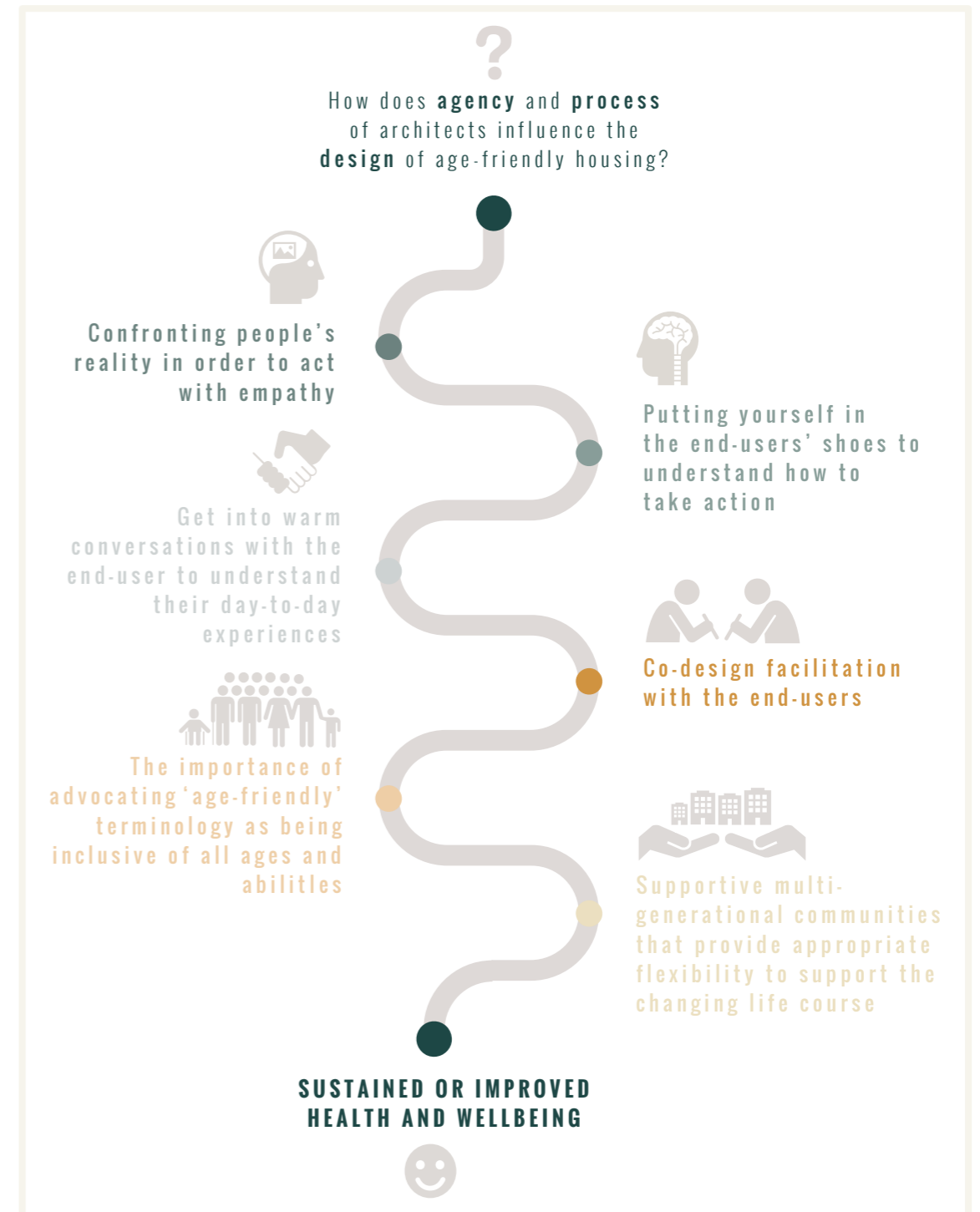
WHAT? APPROPRIATE FLEXIBILITY

- *“I think it's about tying in the flexibility because you don't know how somebody's health or mobility is going to change over time. Everybody's different and everybody's situation is going to be different. So you can't predict for absolutely every requirement and it's not perhaps the best thing to just say, well, we'll put everything to the very highest standard and make sure everything's absolutely wheelchair accessible, when only 3% of the population are in wheelchairs. So it's making sure that you've got that level of appropriate flexibility within the design and capturing that at the early stages.”*

(Participant G)

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CALL TO ARMS

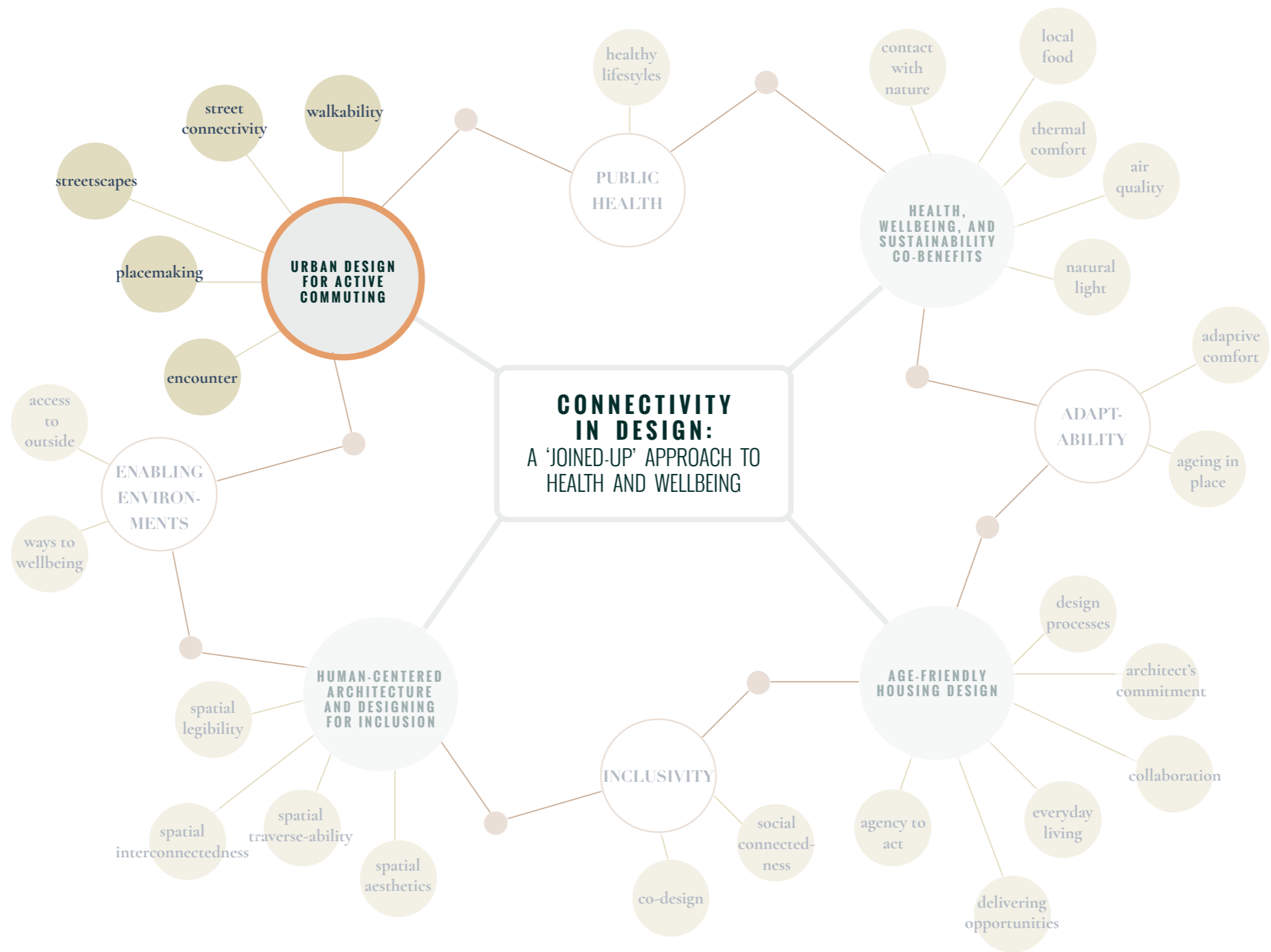
KEY POINTS TO CONSIDER:

- The ‘Good Homes For All’ report by the Centre of Ageing Better (Centre for Ageing Better, 2021)
- ‘A Home for the Ages’ report by the Royal Institute of British Architects (RIBA, 2019)



Doing nothing is no longer an option. We must ignite drastic change to create happier and healthier living environments.

Q. Imagine waking up tomorrow as your future 60+ year old self. You have the realisation that your well-loved home has or will become unsuitable for your changing needs. What path do you take?



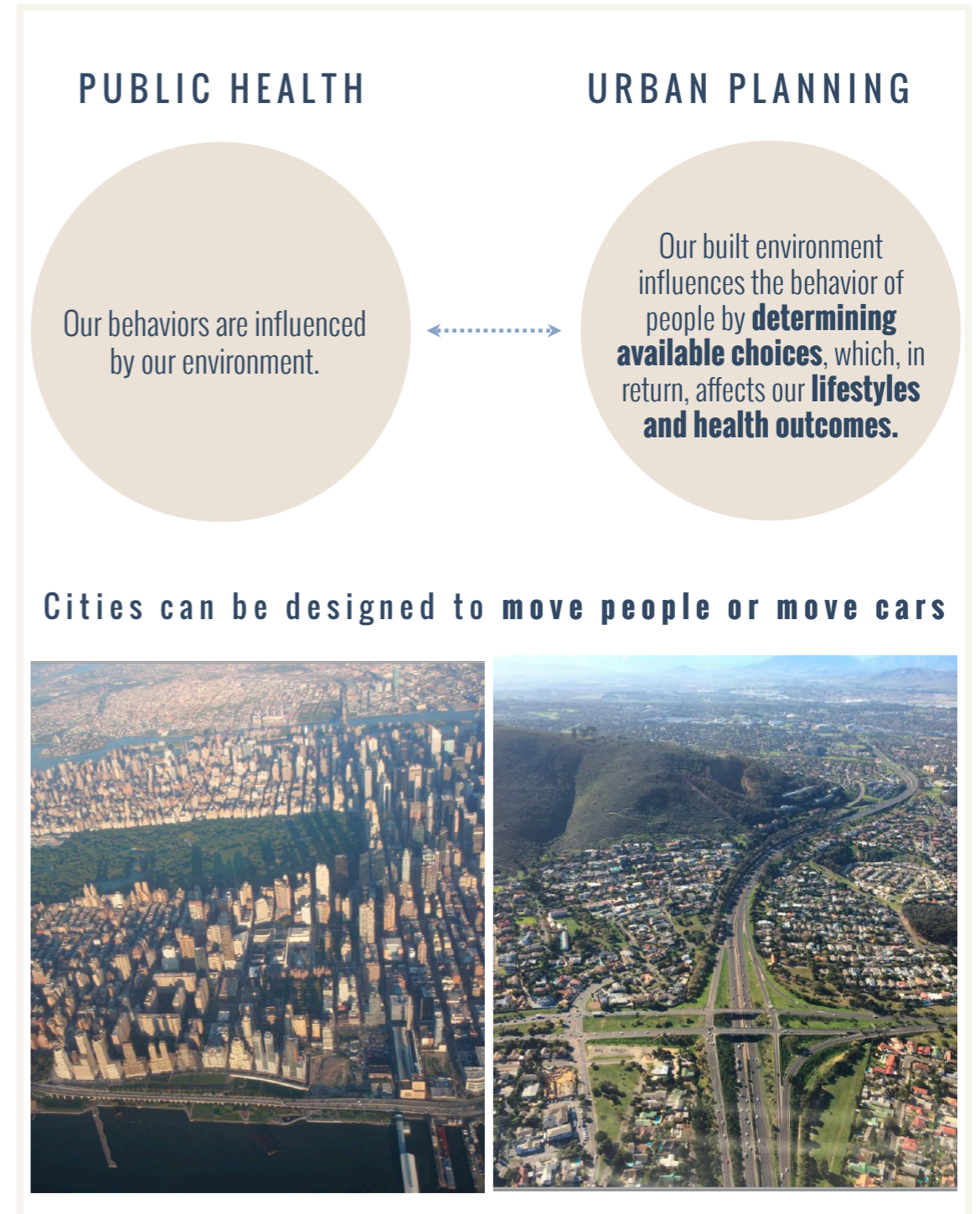
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SETTING THE SCENE

WHY? THE PROBLEM

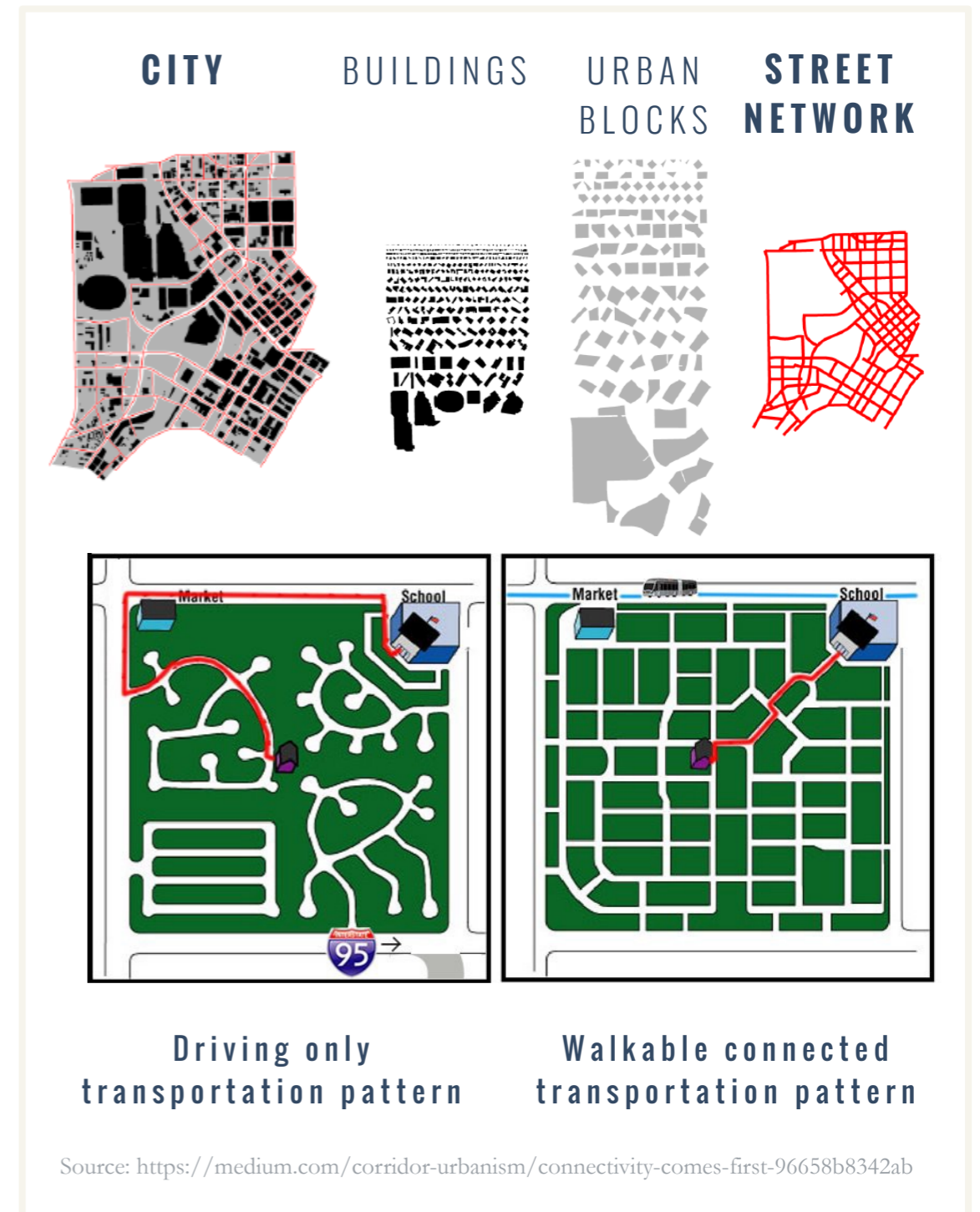
- The world is rapidly urbanizing with millions of people flocking to fast-growing cities.
- We need to utilise urban resources more efficiently, achieving more with less.
- We need to prioritise the creation of an **inclusive built environment in which human society thrives**.
- *“The Covid-19 pandemic has given us the opportunity to rethink the way we design our cities” (Arup).*



SETTING THE SCENE

WHAT? THE THEORY

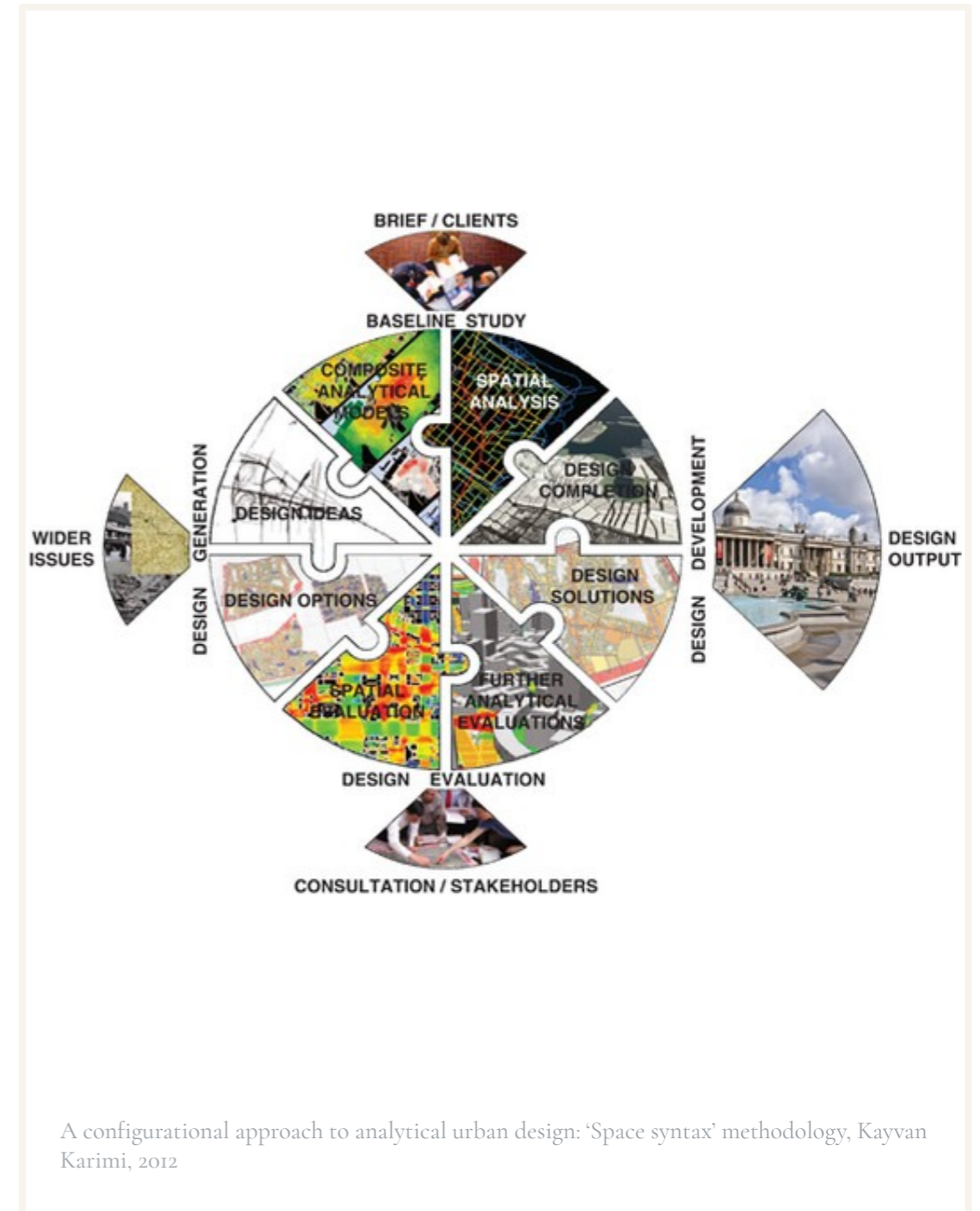
- How spaces are connected directly relates to the way people move and interact.
- Spatial organisation has the **potentiality of bringing people together or separating them** from each other.
- Street network design determines the amount of opportunities for interaction and co-presence; hence **urban liveliness is a function of street connectivity**.



RESEARCH PROJECT(S)

RESEARCH AIM(S)

- The long-term vision is to provide policy makers with **evidence-based data** to optimise street networks to encourage active travel and reduce car travel.
- Changes can be made to street networks that both reduce car movements and encourage people to walk/cycle, helping reduce carbon emissions and improving air quality, road safety and physical health.
- However, public policy makers often lack a solid evidence base on which to inform changes to street networks.

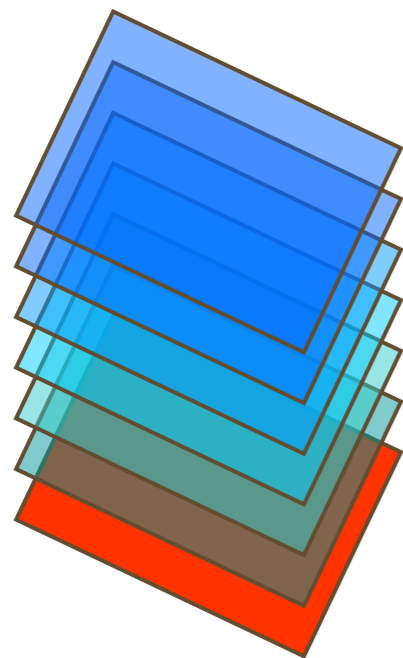


RESEARCH TACTICS

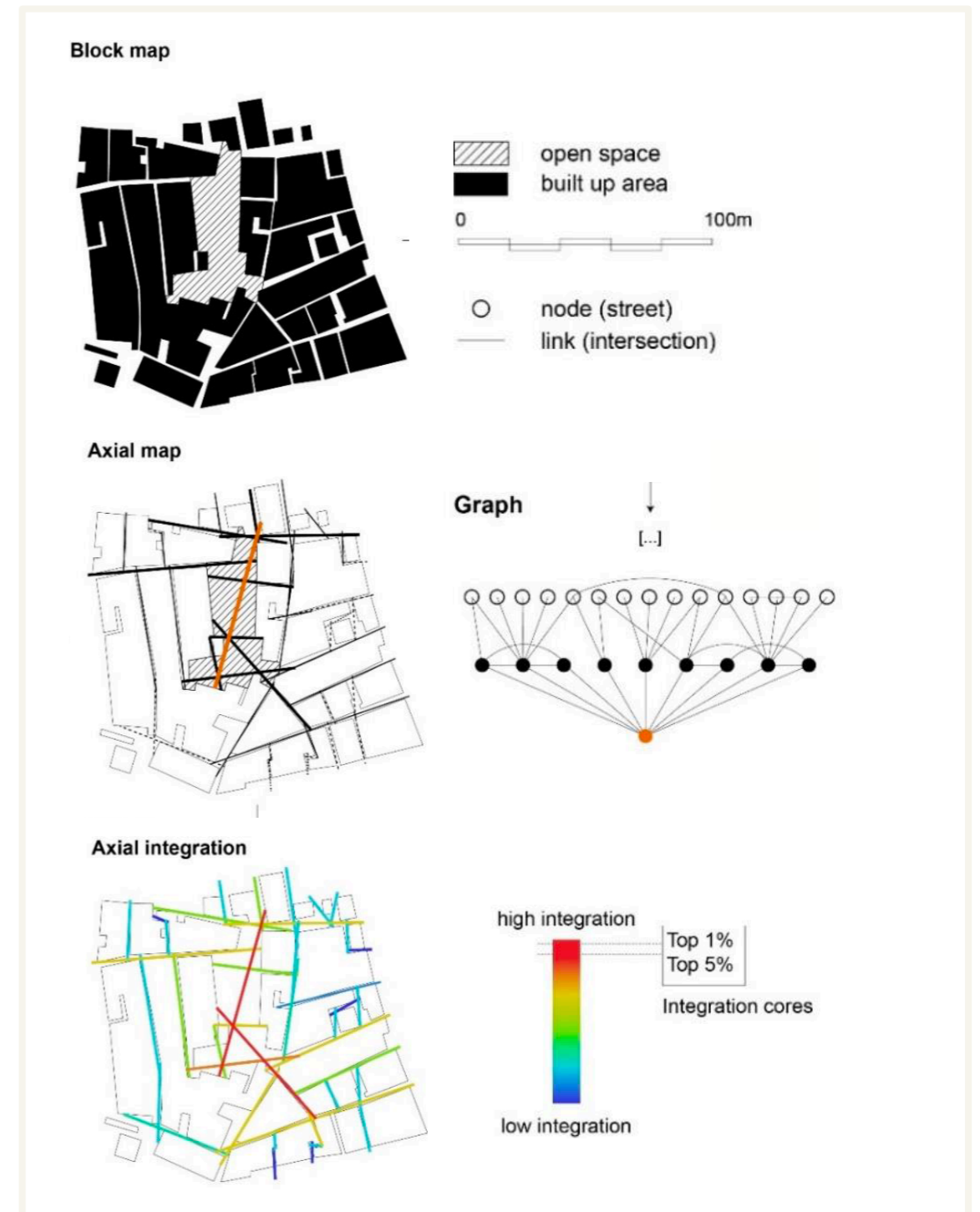
HOW? METHODOLOGY

space syntax:

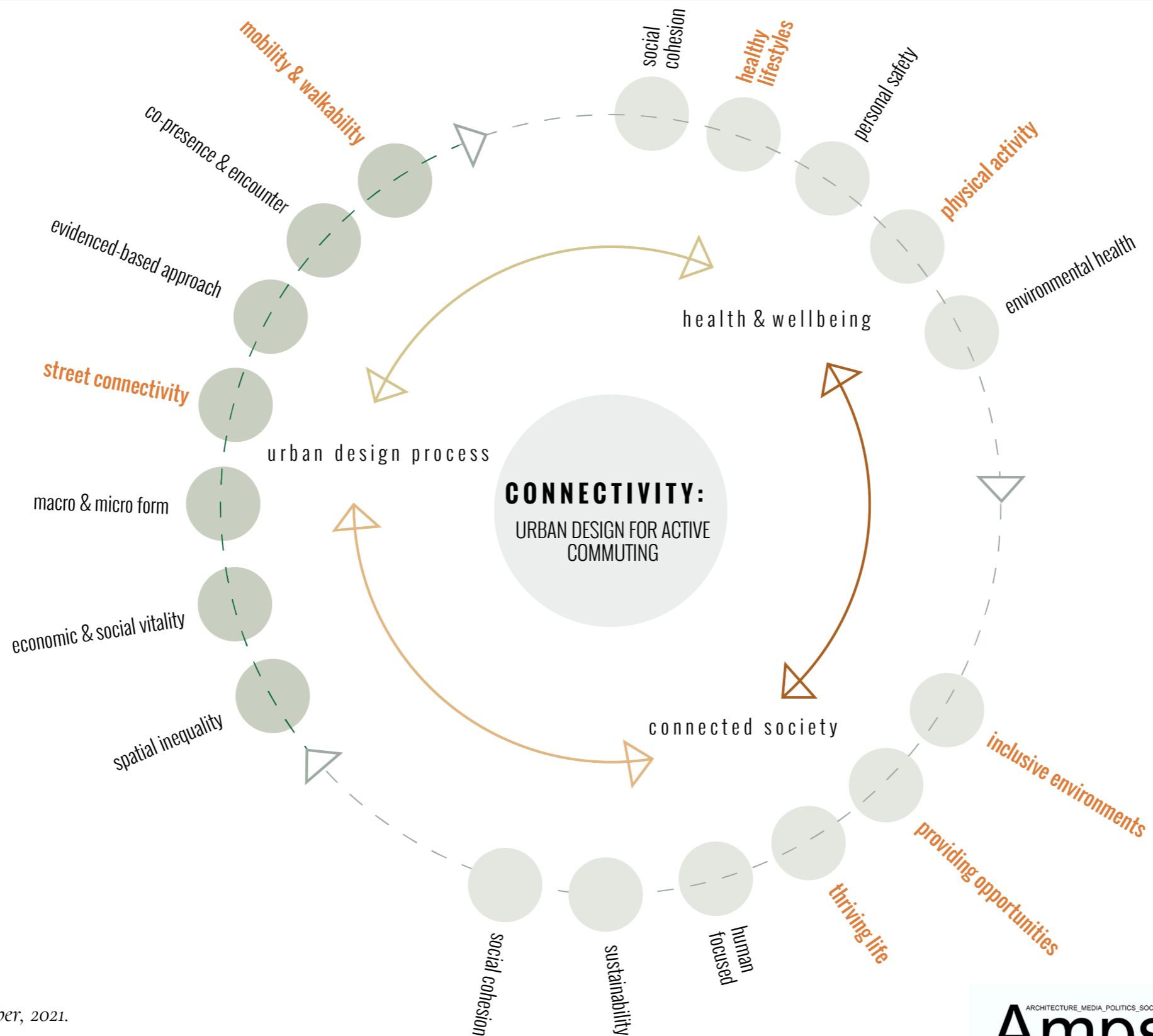
- a set of tools and techniques to understand the relationship between societies and spaces, is a promising approach for measuring the interaction between built spaces and users' behaviours (Hillier & Hanson, 1984).



1. spatial analysis
2. movement
3. land value/use
4. crime patterns
5. pollution counts
6. streetscape features
7.



RESEARCH OVERVIEW



Wednesday 1st December, 2021.

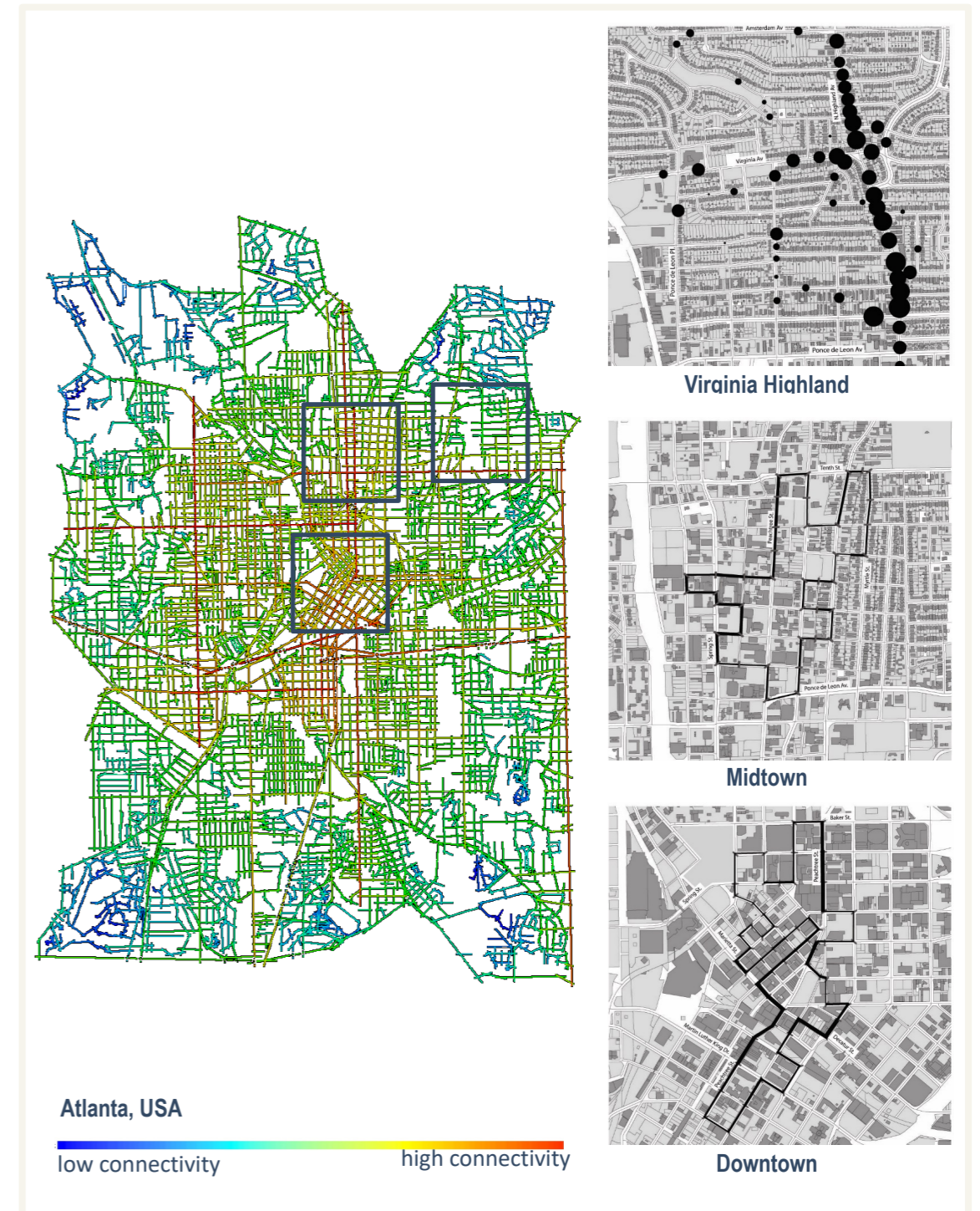
Environments by Design: Health, Wellbeing and Place

RESEARCH INSIGHT

WHAT? FINDINGS

- street connectivity is strongly associated with PA
- *distribution of pedestrian movement in cities/ neighbourhoods;*
- even when other urban form factors (e.g., land-use) and street-design features (e.g., sidewalk width) are controlled for.

A Özbil, J Peponis, B Stone 2011. "Understanding how street connectivity affects pedestrian flows", *Urban Design International* 16, 125-141



Wednesday 1st December, 2021.

Environments by Design: Health, Wellbeing and Place

RESEARCH INSIGHT

WHAT? FINDINGS

- **street connectivity** is strongly associated with PA
- *walk-mode shares* to schools;
- *average walking distances* to/from school),
- even when household socio-demographics and urban form attributes are controlled for.

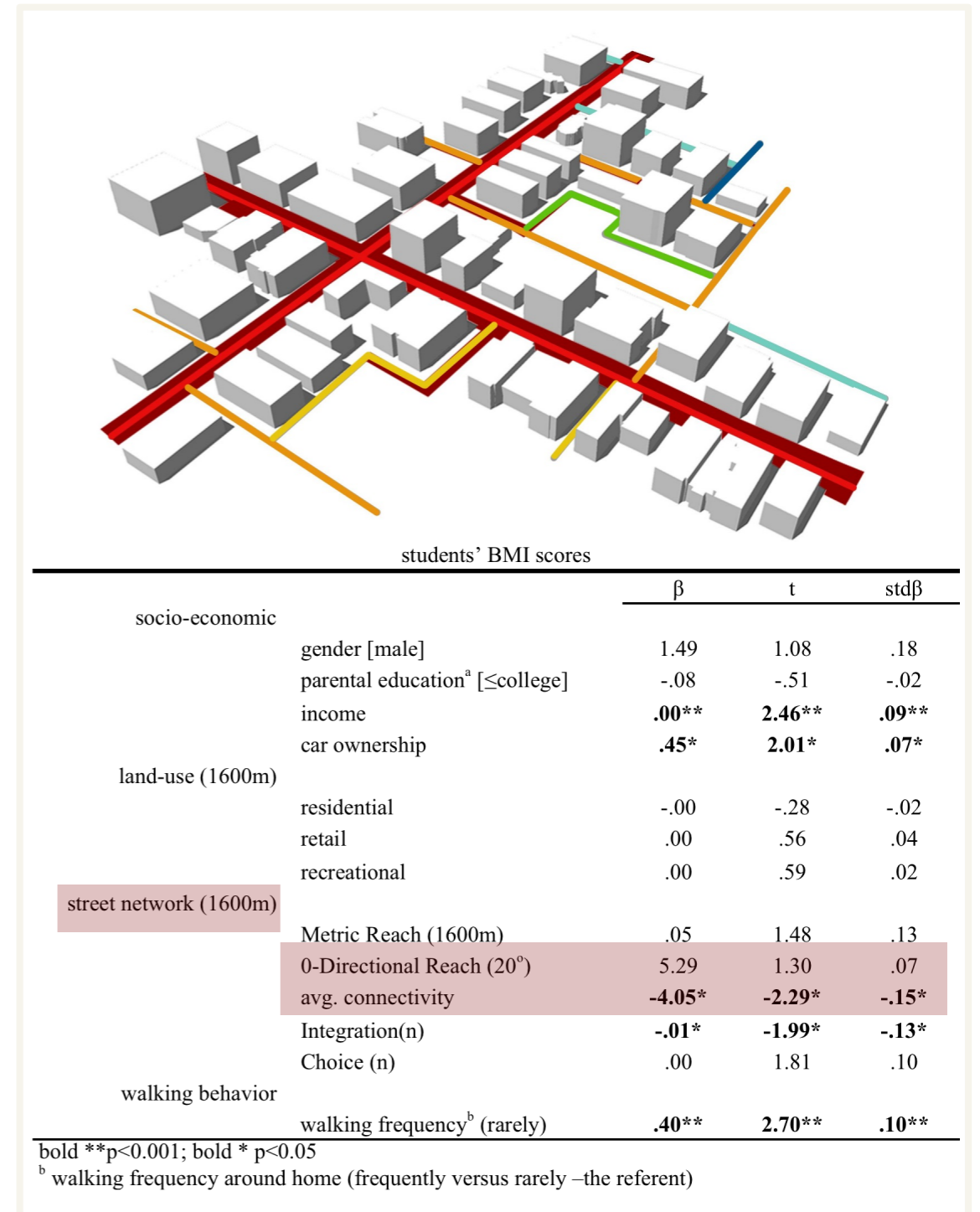
2014-2016. PI: The Scientific and Technological Research Council of Turkey, "Preventing Obesity through Walkable Environments: Walking to Elementary Schools", (Grant no. 113K796).



RESEARCH INSIGHT

WHAT? FINDINGS

- **street connectivity** is strongly associated with **Health**
- *increased street connectivity* within home- and school-environments is significantly associated with *reduced odds of being obese among children*;
- even when other urban form factors (e.g., land-use) and street-design features (e.g., sidewalk width) are controlled for.

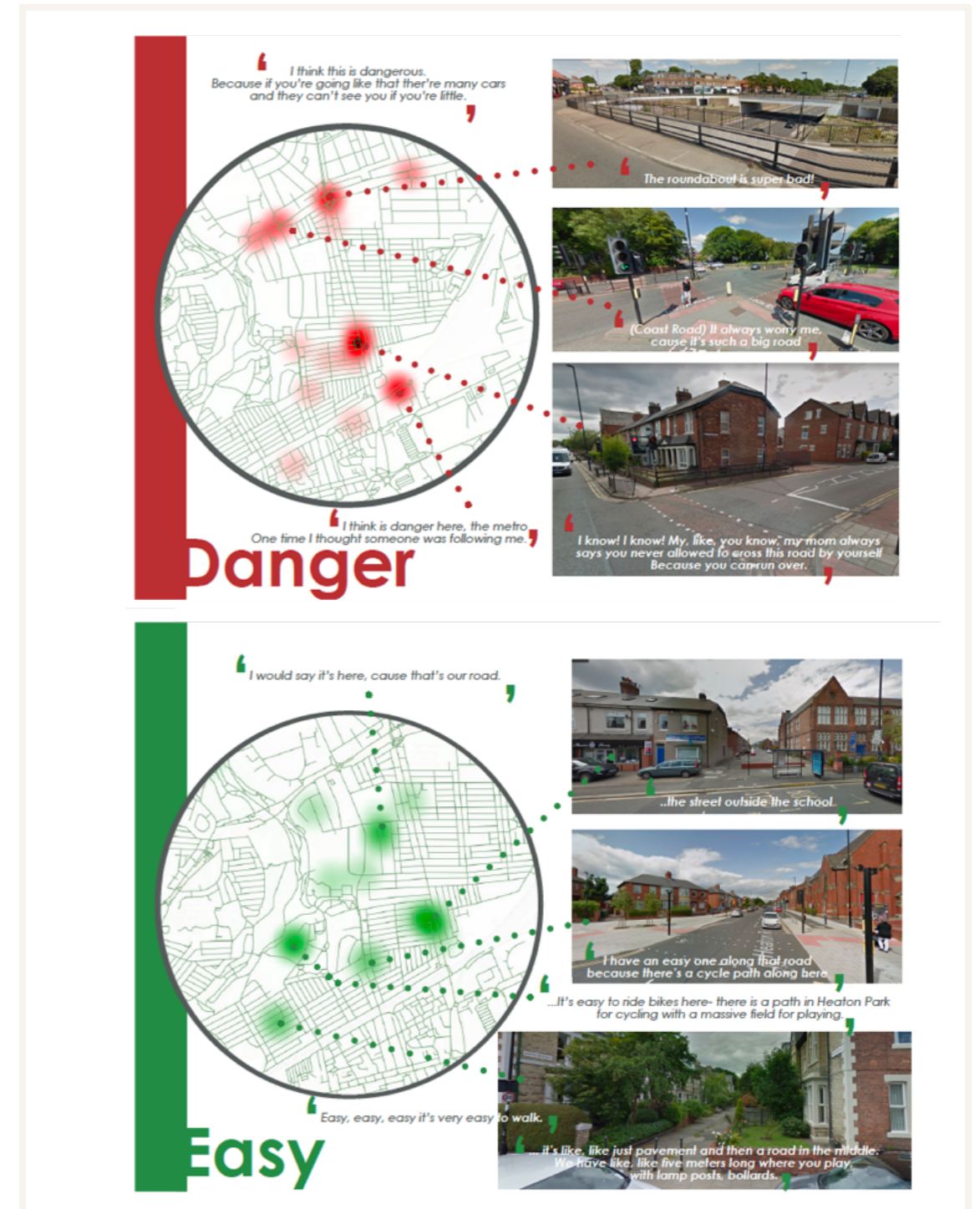


RESEARCH INSIGHT

WHAT? FINDINGS

- street connectivity is strongly associated with children's school journey
- neighbourhood and street design, including street connectivity, emerged as significant environmental features underlying children's affective experiences, in a positive way.

Michail, N., Ozbil, A., Parnell, R. and Wilkie, S. 2021. "Children's Experiences of Their Journey to School: Integrating Behaviour Change Frameworks to Inform the Role of the Built Environment in Active School Travel Promotion", *International Journal of Environmental Research and Public Health*, 18(9), p.4992.



Wednesday 1st December, 2021.

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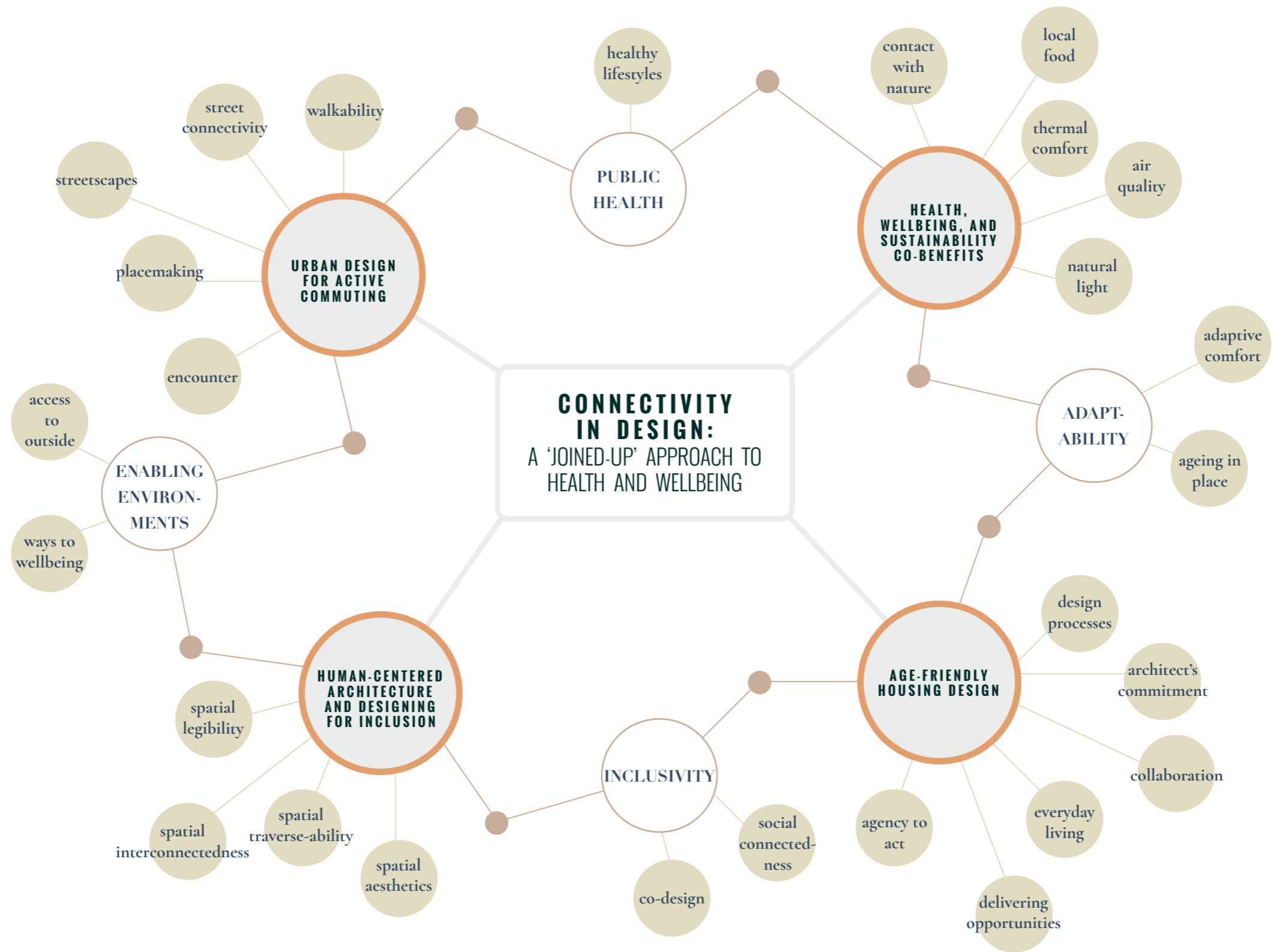
CALL TO ARMS

KEY POINTS TO CONSIDER:

- A built environment in which human **society thrives**. This requires the right balance of **connectivity, movement, encounter and exchange** at every scale of placemaking.
- multi-disciplinary approach:
 - bridge between economics, planning, architecture, transport, stakeholder engagement, and other disciplines.
 - integrate the concept of health promotion within urban policies



**Q. What 3 changes in your
neighbourhood would motivate
you to allow your child to walk
to school?**



Wednesday 1st December, 2021.

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