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Designing for Values - How the Capability Approach can help

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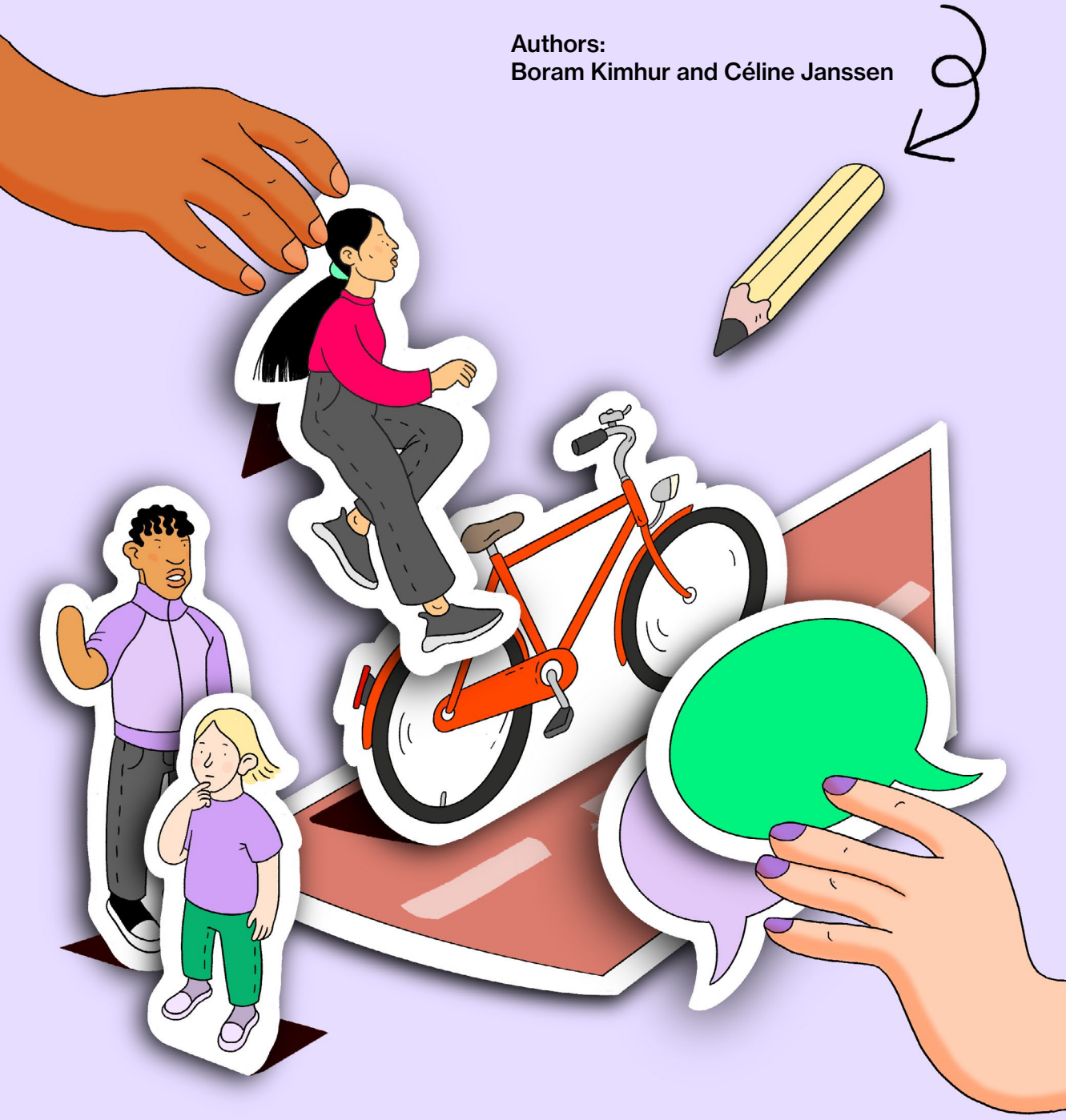
Designing for Values

How the Capability Approach can help

Authors:
Boram Kimhur and Céline Janssen



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Preface

This booklet is the outcome of the authors' multiple years of working with the Capability Approach (in short: CA) in the field of built environment management at TU Delft. It wasn't until we started communicating about our experiences of operationalizing the CA that we discovered many of the struggles we faced were common. Meanwhile, we noticed that various colleagues were exploring the approach and found it intriguing, but were also puzzled by their question: 'Where should I start to apply it in my work?' This motivated us to share our experiences with others and explore how we could develop more guidance on the operationalization of the CA in the design field. Between 2022 and 2025, we initiated and organized a series of discussions on this topic, both with interdisciplinary scholars at our university and with international capability scholars at the HDCA conference. Supported by seed funding from the Delft Design for Values Institute, we were able to address the operationalization question by hosting a two-day workshop in July 2024 with international experts who have deeply engaged with the use of the CA in the technology and design fields. We synthesized input from the various discussions into this booklet and hope to inspire you to use the Capability Approach in your work. Enjoy reading!

Boram Kimhur and Céline Janssen

This booklet aims to guide scholars, educators, and students who are new to the Capability Approach in the question: How can we use the Capability Approach in design-oriented research?

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Usage 4. Agenda

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Introduction

1

“Why do we need the Capability Approach at a technical university?”

Oosterlaken, I. (2009). Design for development: A Capability Approach. *Design Issues. (25)*4. 91-102. MIT Press Direct.

Winner, L. (2017). “Do artifacts have politics?” In *Computer ethics*, 177-192. Routledge.

Latour, B. (1992). Where are the missing masses? The sociology of a few mundane artifacts. *Shaping technology/building society: Studies in sociotechnical change*, *1*, 225-258.

Just like science, technology and design are not value-free. Although this point was made long ago (see e.g., Oosterlaken, 2009, who refers to Winner (1980) and Latour (1992)), it is not always top of mind when new robotics, fossil-free energy generators, or innovative medical devices are developed. Technology, however, is merely a means to an end. The design of new products or technologies is often purposive – it aims to provide a solution to *something*. The context of that ‘something’ is open to discussion:

> Do we truly need this new solution? What potential disadvantages might it have? Does the design involve normative choices? If so, who makes those decisions? As such, addressing societal challenges – such as sustainability – requires more than just technical solutions. Economic, social, cultural, political, and ethical considerations intertwine with those challenges and must be taken into account.

Tackling societal challenges with interdisciplinary approaches

In line with the multidimensionality of complex societal challenges, knowledge institutions increasingly operate within interdisciplinary collaborations where the natural sciences, engineering, and social sciences intersect. New theories and concepts are entering the world of technical universities, and discussions around how ethics, values, and technology intersect are becoming more prevalent (see e.g. Van der Hoven, Vermaas, and Van de Poel, 2015). This is also true for the Capability Approach (in short: CA) – a normative framework rooted in political philosophy – that has been gaining attraction in research across various Delft University of Technology faculties

Van den Hoven, J., Vermaas, P. E., & Van de Poel, I. (2015). Handbook of ethics, values and technological design. SpringerReference.

The CA was originally developed in the 1980s by economist and Nobel prize winner Amartya Sen, with further development by Martha Nussbaum. Initially, it was used primarily in development economics to evaluate poverty and development (e.g. Human Development Index by UNDP). Over time, the approach's usage has diversified and evolved across various disciplines, including education and social work. Nowadays, the approach is being increasingly introduced in applied fields ranging from urban planning and geography to energy, health, and biotechnology.

The unique contribution of the Capability Approach

More detailed discussions on how the Capability Approach specifically influences design practices and distinguishes itself from other value-driven frameworks will be explored in Part 2.

"The Capability Approach has something intuitively appealing",

people often say. Indeed, while there are unmistakable criticisms of the CA, it is hard to find anyone who is fundamentally *against* the approach.

The CA is grounded in the principle that every person has the right to live a worthy life, and therefore, should experience the real freedom to do or be the things he/she has reason to value. It articulates an ethical principle that acknowledges 'the good life' can mean different things to different people. This inherently human-centered principle, combined with the pragmatic stance that what happens in 'real life' is what matters most, sets the CA apart from other value-laden frameworks. In many studies performed over the recent years, the CA has proven itself to be effective in acquiring deep understandings of 'the world around us' caters to people's opportunities and values in real life. For both the Global South and the Global North, the CA provides an overarching framework that enables scrutiny of what is needed – be it systemic or occasional – to expand capabilities or to preserve those that were previously acquired yet are currently threatened.

How to use this booklet:

For whom?

This booklet is aimed at academics who are directly involved in design, as well as those *working in design-related contexts*: i.e., those who conduct research or teach about subjects of making changes through development, social innovation, applied science, technology, policy improvement, and more.

We address these researchers or educators who adopt a 'design-oriented approach' to science; typically found in technical universities but also policy-related research institutes, applied universities or art schools.

Next to academics, this booklet may also be relevant for policymakers or practitioners seeking a theoretical foundation for normative design decisions.

Reader guide

This booklet serves as a guide for working with the Capability Approach for a variety of academic, policy-related, or practice-oriented purposes.

Rather than prescribing strict steps to operationalize the CA, we aim to showcase a variety of options for using the CA in design-oriented research. While the CA has a set of key principles that should not be overlooked (which we will summarize), we believe it is also up to researchers, policymakers, and practitioners to creatively adapt the CA to suit their specific purposes.

Part 2 first sets the scope by explaining our interpretation of design and by introducing the key elements of the CA. Part 3 answers several Frequently Asked Questions about the CA and continues to elaborate on its specific role in design. Subsequently, Part 4 presents four different usages of the CA in design, illustrated with examples from capability scholars on topics, among others, renewable energy installations, social work evaluations, migrant's access to housing, and participatory planning practices. Part 5 closes the booklet by articulating the key message of this work and potential ways forward.

Setting the scope

2

Design

Brown, T. (2008). Design thinking. *Harvard business review, 86*(6).

Hinterleitner, J., Van der Linden, H. & Daamen, T. (2023). *Ontwerpen in gebiedsontwikkeling. Ontwerpend onderzoek als strategisch instrument*. Leerstoel Gebieds-ontwikkeling: TU Delft.

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Routledge.

What is design? While a professional in creative industries may associate design with arts, culture, or graphic design, an engineer, on the other hand, will likely associate design with artifacts or technology.

In this booklet, we hold on to a broad definition of design and consider for example policies or value chains as design objects as well. In our view:

design refers to the activity of creating – through a series of purposeful cognitive acts, reflection, and iteration – solutions to problems, or an innovation to shape the future

(based on Brown, 2008, Hinterleitner et al., 2023, Schön, 1983). From this definition, we can see that many academics and lecturers in the natural sciences, social sciences, and engineering engage in design, for example when working with policy design, transformation strategies, or system improvements.

Products of design should therefore not only be thought of as material products (e.g., self-driving vehicles, medical prosthetics), but also as services (e.g., healthcare services, social housing services), systems (e.g., public transportation systems, value chains), processes (e.g., decision-making process, participatory planning practices), policies (e.g., energy policy; housing policy), and strategies (e.g., policy implementation strategies; communication strategies).

Read more about the characteristics of design on the pages: 32-35.

The Capability Approach

The Capability Approach is:

a normative approach to evaluate states of affairs in society, such as poverty, well-being, quality of life, development, and justice.

Its core idea is that those states of affairs should be evaluated in terms of the capabilities of persons to do what they have reason to value, instead of being measured through income, wealth, satisfaction, and possession of goods. For that reason, the approach is called a human-centered approach. Having capabilities means having genuine opportunities in life to do what you have reason to value, such as being healthy and living with dignity.

The ideas of the Capability Approach are closely connected with the concepts of freedom (opposite to oppression), agency, self-determination, autonomy, opportunity, entitlements, abilities, user-centered, people-centered, and human-centered design.

To read more about the theoretical discussions and connecting concepts behind the Capability Approach, we refer to the following literature as good starting points for the vast amount of capability literature that scholars worldwide have produced:

the open-access book of Ingrid Robeyns (2017), the webpage of the Human Development Capability Association and regarding Amartya Sen's literature on the CA, we suggest starting with the books The Idea for Justice or Development as Freedom.

In this booklet, we will continue specifically on the operationalization of the Capability Approach in design research.

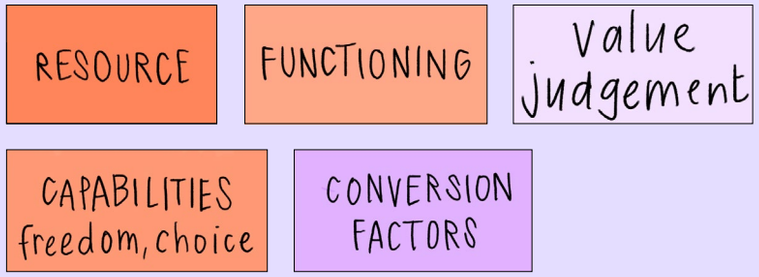
Robeyns, I. (2017). *Wellbeing, Freedom and Social Justice: The Capability Approach Re-Examined*. Cambridge, UK: Open Book Publishers.

Sen, A. (2009). *The idea of justice*. London: Penguin Books.

Sen, A. (1999). *Development as freedom*. New York: Alfred A. Knopf.

A brief overview of the CA's key elements

The Capability Approach distinguishes five analytical elements, namely:



Resources are goods, money, and any commodities provided or processed, such as food, bikes, medicines, or cash for those goods. ***Functionings*** are what a person does or is, such as eating, moving, being healthy, and being mobile. ***Value judgments*** refer to the weight that a person has reason to give to functioning. ***Capabilities*** are substantive opportunities to achieve or have those functionings. If a person has such capabilities, they can choose doings and beings that they need and value, meaning they have real freedom to lead their lives. ***Conversion factors*** influence whether a person can convert resources into capabilities.

Although the CA is often used to better understand complex societal challenges, we will use a simplified example to illustrate the function of the CA's key elements.

A simplified example: the CA and the bicycle

See infographic on the next page.

Imagine 'cycling' as a functioning that you may find important in your life. First, the Capability Approach pays attention to personal choice: do you really attach value to cycling, or not so much (value judgment)? Second, the CA concentrates on various conversion factors that condition your freedom to ride a bicycle. As the infographic on the next page illustrates, owning a bicycle (resource) does not necessarily mean that you have the actual freedom (capability). The CA questions among others:

- Are you physically able to ride a bicycle? ***(personal skills, abilities, and knowledge)***
- Has someone ever taught you how to cycle? ***(social structures)***
- Is it culturally accepted that you cycle to work? ***(cultural environment)***
- Are there safe cycle paths where you can go? ***(environmental design)***
- Are you as a cyclist protected in traffic by law? ***(legal structures).***

The Capability Approach thus departs from an individual perspective but takes wider social, cultural, environmental and legal conditions into account. It therefore allows for critical reflections on a wide range of societal aspects, ranging from social security or environmental design to power dynamics or decaying democratic institutions.

How can my design increase freedom to cycle for all?

Having a bicycle does not automatically mean a person has the freedom to cycle

RESOURCE
a bicycle

FUNCTIONING
cycling

CAPABILITIES
freedom, choice

In this weather?! No thanks!

I can't steer that

CONVERSION FACTORS

Nobody is teaching me how to ride

Where do I put the child seat?

personal

And how do I ride that bike in this outfit?

social

legal

Wait a minute... A car damages my bike and I get a fine..?

environmental

Each time I go by bike, I am risking my life!

Value judgement

cultural

Biking to work...? PFFF...of course not.

A design solution can increase equity/equality.

Design and the Capability Approach

3

FAQs about the Capability Approach

Before discussing the application of the Capability Approach in design, some common questions that researchers or policymakers often face when first introduced to the CA need to be addressed. The central idea of the CA –

> **‘expanding capabilities that are the real *freedom a person* has to do and be what they value’**

– can be too abstract to apply. This abstraction often leads to misinterpretations, resulting in critical comments and questions about the CA. In this chapter, we outline the most common questions and provide clarifications for each.

The CA is so individualistic; what about collective well-being or societal goals?

This question often arises from the Capability Approach’ emphasis on individual values that seem to contradict public policy. At first glance, the focus on the diversity of personal values may appear overly individualistic and as a disregard for collective well-being or societal goals.

However, it is not the CA’s objective that policies accommodate the unique values of every single person in a tailored way. More than that, the CA’s concern with individual values is a response to the problem of the utilitarian rule that prioritizes ‘the greatest good for the greatest number.’ Targeting public policies on majority groups can obscure the needs and voices of minorities, possibly leading to exclusion and inequality. By centering on what individuals value, the CA promotes including diverse perspectives and experiences, preventing the marginalization of those who might otherwise be overlooked in aggregate measures of well-being. This focus on diversity underscores the CA’s commitment to inclusivity and equity with the view that ‘every single person matters’ (ethical individualism), rather than promoting the prioritization of individual rights and freedoms above the interests of the collective (political individualism), viewing individuals as the key to understanding social phenomena (methodological individualism), or advocating for an overly individualistic worldview of ‘only individuals exist’ (ontological individualism).

We cannot just give everyone what they want, right?

This question arises from a misinterpretation of the concept of ‘freedom’ within the Capability Approach, which assumes that the CA suggests fulfilling everyone’s desires and granting unlimited freedoms.

The CA does not advocate for fulfilling every individual desire or preference, nor does it imply unrestrained individual freedom. Instead, it emphasizes expanding opportunities for people to pursue what people have reason to value, such as living with dignity while reducing avoidable oppression, coercion, or barriers that undermine these opportunities.

The CA is particularly concerned with addressing situations where such opportunities are unequally distributed (i.e., situations where one person has more capability than others), instead of solely focusing on maximizing opportunities and freedoms.

If we focus on personal abilities alone, we don’t solve our large world problems, right?

This doubt stems from a misinterpretation of the CA’s emphasis on capabilities, often oversimplified as merely an individual’s internal abilities, advocating for individuals to overcome challenges themselves.

While the CA does consider a person’s internal abilities – such as knowledge or skills – it goes much further by addressing structural barriers that may cause coerced choices instead of free choices to live a valuable and dignified life. Far from being indifferent to structural issues creating social inequality, the CA addresses them by advocating for actions to remove the barriers that limit people’s opportunities to lead the lives they value.

How is it different from ‘capacities’?

The word ‘capability’ is not always translated into another language easily. It is frequently confused with the term ‘capacities.’ It is important to be aware that this term has a different meaning. While ‘capacities’ refer to the internal abilities of a person or organization-such as knowledge, skills, or time available –

‘capabilities’ refer to the abilities of a person given all the contextual conditions and structures that he or she relates to.

Capabilities thus include both the internal abilities of a person and all the external conditions that affect those abilities.

While capacity refers to the current ability to perform something, capability also encompasses *the potential and possibility* that a person has to achieve or do something in the future. It includes a question of what could be realized under certain conditions.

Instead of people, shouldn’t we centralize nature as the ultimate end goal?

The Capability Approach is sometimes criticized for neglecting nature as a non-human actor, as it centralizes people as the proper ‘end’ of development. Although the CA is indeed primarily a human-centric approach that looks at issues related to human well-being, this does not necessarily mean it overlooks nature. While the CA was developed with a focus on human beings and the inequalities they face in society, its foundational ideas are closely linked to environmental factors – such as pollution, biodiversity loss, and climate change – that directly affect human lives and capabilities. These environmental issues limit people’s choices and well-being, both now and for future generations. In this way, the CA is not completely disconnected from concerns about nature.

That said, we recognize that there are various ‘non-human’ or ‘beyond-human’ approaches providing normative frameworks that can be better suited for addressing ecological and climate-related challenges. When it comes to addressing social inequalities among people we argue, however, that the Capability Approach remains one of the most relevant and effective frameworks to work with.

The Capability Approach as a design principle

Answering ‘how to’ beyond ‘what is’

In most capability literature, the Capability Approach is primarily used for evaluative purposes. Its normative principle – every person should have the real opportunity to live a worthy life – has provided a strong foundation for assessing inequalities by comparing people’s capability levels. The CA also serves analytical purposes: its key concepts – such as resources, conversion factors, and functionings – (see pages 20-23) are frequently used to unravel the structural barriers and enablers affecting people’s lives and opportunities.

However, using the Capability Approach in design-oriented research extends beyond evaluation and analysis alone. The key task of design researchers differs from that of ‘traditional’ scientists.

While traditional scientists primarily seek to understand the world by disentangling the elements of an object, process, or thought, design researchers seek to answer how the world can be improved

(Hinterleitner et al., 2023). They process diverse types of information and seek appropriate methods, steps, or approaches to create new (ideal) situations. Rather than posing questions such as ‘What are…’, ‘Which type of…’ or ‘To what extent…’, they are more interested in ‘How to’ questions – How do we get from A to B?

This perspective aligns closely with what capability scholar Sabina Alkire (2008) calls a *prospective use* of the Capability Approach – moving beyond identifying or understanding the levels of capability people have to actively explore how people’s capabilities can be expanded.

Hinterleitner, J., Van der Linden, H. & Daamen, T. (2023). *Ontwerpen in gebiedsontwikkeling. Ontwerpend onderzoek als strategisch instrument*. Leerstoel Gebiedsontwikkeling: TU Delft.

Alkire, S. (2008). Using the Capability Approach: prospective and evaluative analyses. *The Capability Approach: Concepts, measures and applications*, 26-50.

A design principle for shaping conditions that enable people

When applied in design, the CA provides a design principle for shaping or preserving conditions that enable people to do what they value in their lives. Designers do not simply evaluate situations but engage in a process of searching for solutions that improve people's lives and society. This process is iterative, requiring continuous reflection and adaptation. Through iterative cycles, they refine and develop solutions to tackle complex problems (Schön, 1983).

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Routledge.

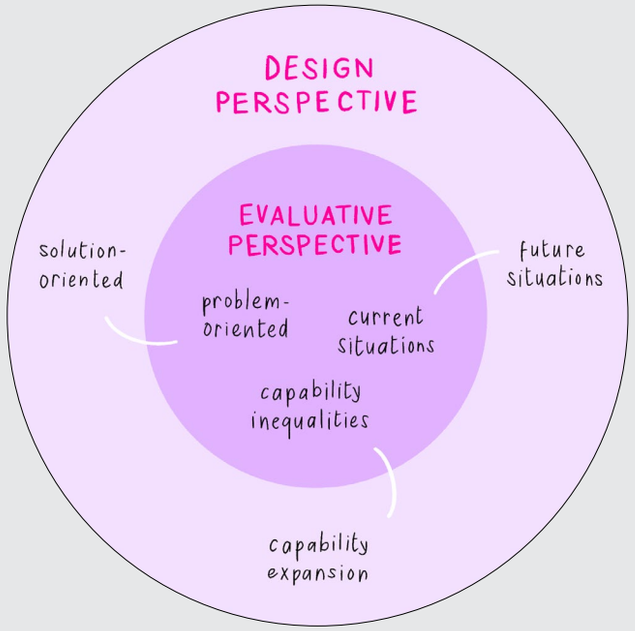
This iterative nature of design research implies that the CA's potential goes beyond being a standard for poverty and development assessment.

From a design perspective, the CA synthesizes both problem definition and solution creation, i.e., both assessments of capability inequalities and strategies for capability expansion.

In that way, the Capability Approach can inform various stages of the design process, including problem definition, idea development, solution creation, design quality evaluation, impact assess-ment, and reflection.

The broader perspective that the Capability Approach offers in design comes with specific challenges. A key challenge is that expanded capabilities cannot always be directly observed (except in cases like accurate virtual simulations) since they are envisioned as future situations. As a result, working with the 'capabilities' concept in design research often remains more conceptual than empirical. Rather than aiming to resolve this challenge first, design researchers could anticipate and shape possibilities for real-world impact using the capability concept.

How exactly the Capability Approach can be used for this, is elaborated in the following part of this booklet.

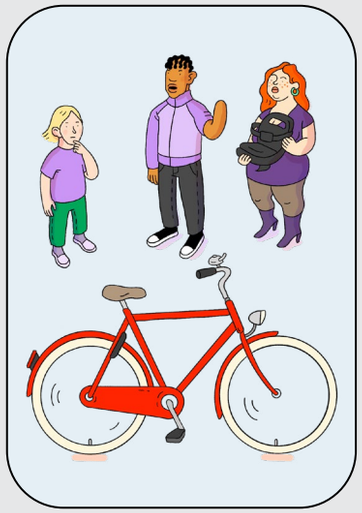


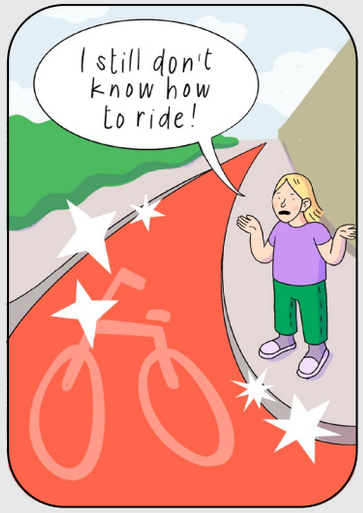
Working with the Capability Approach from a design perspective implies a broader scope than a purely evaluative perspective.

Using the Capability Approach for designing

4

Four usages





Evaluation — Usage 1.

To identify problems and assess impacts

Solutions — Usage 2.

To define design requirements

Process — Usage 3.

To rethink design processes

Agenda — Usage 4.

To facilitate interdisciplinary collaboration

Real research examples to inspire how to work with the CA in design contexts

The Capability Approach is not an explanatory theory, nor a clear-cut method, but an approach to look at various situations in life from a specific normative angle. This implies that there is not a single way of operationalizing the CA but various ways of using it for different situations. Although this open-ended approach may seem like a hassle to some, we believe it is also an opportunity to use the CA for various specific purposes.

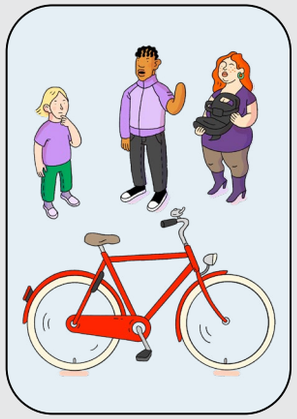
As elaborated in the previous pages, the CA contributes to design research by providing a design principle for shaping or preserving conditions that enable people. It has the potential to inform various stages of the design process, ranging from assessing design outcomes and defining design requirements to guiding the design of a design process itself.

Although the specific way of using the CA will always depend on the specific research focus and questions, we introduce four usages in this chapter that you can consider.

We recognize that, in practice, the operationalization of the CA may not always fit neatly into one usage and may instead combine two or more usages. However, we decided to distinguish these four usages to highlight their different focus points. By doing so and to support researchers in clearly articulating the purposes of engaging with the Capability Approach in their projects.

Usage 1. Evaluation

To identify problems and assess impacts



Using the Capability Approach for evaluation serves to identify problems and to critically assess the impacts of design interventions. As the CA zooms in on a person's perceptions and experiences in a detailed way, the approach is particularly helpful in diagnosing hindering structures or underlying causes of a problem a designer wants to address. It does so from a normative standpoint: by focusing on capabilities as eventual outcomes of an intervention, the framework helps to ensure that evaluations are centered on the actual impacts on people's lives and pay attention to problems aligned with ethical concerns, such as inequality and violation of human rights.

A good understanding of the underlying causes of a problem, such as inequality, is essential for effective design. The core idea of the CA is to evaluate 'capabilities' of people instead of the resources people possess. Returning to the simplified bicycle example (see illustration on pages 22-23): we evaluate whether and how much a person *is able to* cycle around, instead of how many people *own* bicycles.

In the CA, evaluation practices are sensitive to the different abilities of people to convert resources to capabilities. Using the bicycle-metaphor: if citizens explain that riding a bicycle instead of commuting in crowded buses every day would significantly increase their quality of life, yet they are not able to do so, we can speak of a lack of capability to cycle. The CA then encourages us to examine what factors limit this capability, such as different personal abilities to use bikes or perhaps an unsafe urban environment. It can also relate to the lack of regulations, or to social pressure in certain groups – "Are you really going to work by bike? That looks so poor!". Once understood what factors limit a person's conversion between resources and capabilities, this information can be translated into design requirements for a solution (see the second usage).

The Capability Approach thus enables a detailed understanding of human well-being that pays attention to the many contextual conditions under which a person lives his or her life.

When assessing capabilities, however, the question often arises: *what* capabilities should be evaluated? Defining this is a key step in understanding a problem in a specific context: perhaps the lack of a certain capability is a more urgent problem than an initial focus on another capability.

Important capabilities vary depending on the project context and target groups. They could include the capabilities to be part of a community, to be healthy, to freely move around, to enjoy the benefits of advanced technology, or all of them. Many researchers have developed methods to select capabilities in various fields. The methods range from participatory methods to philosophical reasoning and statistical modeling. These methods have similarities with those used in the design field for selecting values, needs, and priorities of target users, through participatory workshops, surveys, and theoretical research.

Finally, a design process can also be a subject of evaluation. *Was the design process itself inclusive enough? Was the process ethical?* The CA can also serve for this purpose. In designing participatory planning for the cycling system in a city, how did it reflect the different participating capabilities of people? This task is closely connected to the Usage 3 Process.

Inspiration: how capabilities and conversion factors were used in evaluations

Capability Cards as a narrative tool for value-based perspectives

Annica Brummel

Annica is a senior researcher at HAN University of Applied Sciences and specializes in social inclusion on the neighborhood level. Social infrastructure, sense of place, agency, and storytelling are central to her work.

“We developed Capability Cards, a narrative tool which can be used both in practice and research. With these cards, we wanted to reflect a value-based perspective, taking into account the interaction between personal and contextual factors, and capturing notions like agency and diversity. Created over seven years through collaboration between Bindkracht10 (a welfare organization) and HAN University of Applied Sciences, the cards went through multiple prototypes, tested by students, practitioners, and researchers. The Capability Cards are based on Martha Nussbaum’s central capabilities, presented in 20 basic cards. Users rank 6 cards to express what they value and then select environment tokens to reflect the factors supporting or hindering these values. In all steps, the conversation partner is in the lead and is invited to tell their own story, respecting agency and diversity. The Capability Cards can be used for different purposes, such as evaluation. It has been used in different research projects on themes like poverty, access to justice, social inclusion of specific groups, social housing, and public space. We noticed that the simplicity and the playful design invite all kinds of people to use the cards, also for people with low literacy.”

Selecting ethically relevant capabilities

Boram Kimhur

Boram has spent over 15 years working on social justice, inequality, and urban poverty through both practice and research. Her work focuses on improving the lives of marginalized groups through equitable urban development.

“You can consider choosing ethically important capabilities, such as one from the list of human rights universally declared. For example, the right to access information is a human right, and it is morally right to let people make an informed decision. You can evaluate a technology solution in terms of capabilities to access information. For evaluating inequality in housing, I chose financial literacy as one of the important capabilities to make an informed decision on housing finance and mortgage products, in line with the right to information. The justification was also built on existing studies on the relations between financial literacy and housing affairs. For ethically important capabilities, evaluation practice is not necessary to develop a comprehensive set of capabilities. If there is one capability that society should expand, or society needs to address urgently, it is worth choosing and evaluating it.”

Assessing real impacts of urban neighborhood interventions

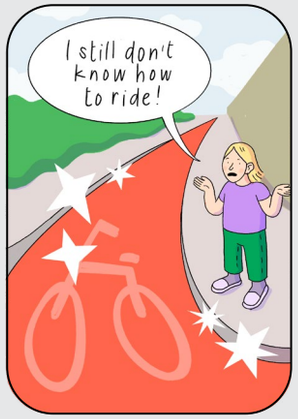
Céline Janssen

Céline is a postdoctoral researcher in Urban Development Management at TU Delft and specializes in social sustainability, participatory planning, and collaborative governance in the context of area-based urban development projects.

“When bringing the Capability Approach to the realm of urban planning, I learned that the CA is helpful for impact assessments of spatial interventions in neighborhoods. Many evaluation tools in urban planning use spatial elements, such as the presence of a collective space in a building block, as indicators to assess, for example, the ‘livability’ or ‘social quality’ of a neighborhood. Applying the CA in a qualitative case study of a neighborhood transformation helped to reveal that such impacts are often much more nuanced than assumed. While the newly constructed inner garden of the housing block (i.e. the resource) in my case study helped residents to feel safer and to strengthen a feeling of social cohesion (i.e., expanded capabilities), the closed gate of the garden excluded residents living just outside of the housing block (i.e. ignored capabilities). Their feeling of exclusion was strongly affected by historical events that had taken place in this area, which induced strong feelings of displacement. By including this story as a conversion factor in the impact assessments, the Capability Approach thus helped to provide a more complete picture of the actual impacts that spatial intervention can have in neighborhoods.”

Usage 2. Solutions

To define design requirements



Many societal challenges, such as combatting global climate change in a just way, cannot be 'solved' by a single design solution – they are wicked problems with layered and evolving dimensions. Designing in these contexts is not about finding a single, definitive solution but about continuously working towards better possibilities. The Capability Approach supports this process by critically assessing what is most needed to expand or preserve people's capabilities. The CA adopts a holistic view of how both personal abilities and social and environmental conditions shape people's opportunities. This broad view equips designers with a deeper understanding of what kinds of interventions, strategies, or developments could be most impactful in fostering meaningful change.

The development of a solution is guided by certain, either implicit or explicit, principles or rules. Such principles can focus on practical improvements, i.e., 'make things more efficient,' 'make things durable', but they can also be normative, reflecting moral values, such as 'make things inclusive'. The CA's normative focus on enlarging a person's freedoms to live a worthy life – especially those of the ones marginalized –

can be used to define a set of normative principles that set the overarching goal for a design solution to a problem.

Subsequently, the CA's key analytical components – conversion factors, capabilities, and valued functionings – can help define specific requirements for the solution, whether it concerns a new product, institutional design, or new collective agenda.

From a capability perspective, a good solution is a solution that expands people's capabilities to do what they have reason to value. This involves (i) *defining 'what values the target group finds important'*. For this, as noted in Usage 1. Evaluation, you can utilize methods explored by designers and Capability Approach researchers in various fields. Once a set of values is defined, you then (ii) *examine 'what kind of capabilities are necessary to achieve those values'*, and (iii) *identify 'relevant conversion factors between resources and the capabilities'*.

Let's go back to the simple bicycle example. Imagine that you are starting a new project to design bicycles. If you decide to adopt a capability perspective, you will analyze the different capabilities of people to use a bicycle. You will also analyze the factors that create such differences in cycling abilities, such as disabilities, cultural taboos, car-oriented town planning, unaffordability, and so on.

This analysis then leads you to specify design requirements to reflect the diversity of human beings and create inclusive and equitable solutions. Depending on what is most impactful for people, design requirements can range from 'the bike design must be adapted to people with disabilities people', to 'the road design must be accessible and safe', 'the project design must include actions to promote societal acceptance and caring culture for disabled cyclists', or 'the design of traffic regulations must entail attributes of creating a safe environment for diverse disabled cyclists'.

The CA's holistic approach thus ensures that design requirements incorporate systemic or other barriers,

preventing a narrow focus on just one aspect of a solution – such as product design alone – without considering broader societal and environmental factors. This perspective also facilitates interdisciplinary collaboration for greater impact.

Inspiration: how the CA informed design requirements in previous research projects

Designing renewable energy installations

Paola Velasco Herrejon

Paola is a postdoctoral fellow at UiO. Her research adopts an interdisciplinary perspective to examine socio-technical aspects of the global energy transition and decarbonization, focusing on well-being and social justice.

“In my research, community members chose ‘self-determination’ as an important value. In my research context, it can mean the capability of ‘being able to manage their land plots as they deem fit’, or ‘community is able to do and be as it deems fit’. I first defined the meaning of ‘self-determination’ in the project context, then defined the barriers to achieving the value. You can then reflect on those barriers when designing a solution. In other words, you first research the values/capabilities important for the project target group, use this finding as a base for the second layer question about barriers, and then set up design requirements.”

Principles for housing policy design

Boram Kimhur

“I used the Capability Approach to suggest principles for designing a housing policy. By applying the key concept of ‘capabilities’ to the housing context, I first defined an ultimate goal that policy design should aim to achieve – e.g. expanding the capabilities of people for housing and expanding life options to pursue the ways of residing that a person values. I then defined sub-goals to realize this high-level principle by translating the ‘capability expansion’ concept into the vocabulary of housing policy – e.g. reducing constraints in choosing an adequate housing option, such as lack of financial literacy, job security, entitlements to housing finance, and protection of tenants’ rights. In the same way, I defined principles for policy evaluation and judgments in the policy design process.”

Kimhur, B. (2022). Housing Justice as Expansion of People’s Capabilities for Housing. A+BE Series. No.23. https://doi: 10.7480/abe.2022.23.

Designing a tool to increase access to social welfare

Boram Kimhur

“I worked on a project aimed at improving migrants’ access to social housing and housing benefits in Seoul. Using the CA framework, I began by analyzing the factors that limit their ability to benefit from social housing policies. The key issue was that migrants lacked adequate information about the policies, which prevented them from applying even when they were eligible. To address this, the project team decided to create an informational booklet about social housing policies. I defined the design requirements to accommodate the migrants’ diverse language skills, perceptions of seeking assistance, familiarity with policy terminology, and understanding of Seoul’s housing systems. To meet these needs, the booklet was designed using everyday vocabulary at an elementary education level and included additional information that is common knowledge for Koreans but unfamiliar to migrants.”

Designing value chains

Lotte Asveld & Susan van der Veen

“Global value chains are often not equitable. Those at the beginning of a value chain often lack the capability to live a worthwhile and prosperous life. Work has been done on making value chains more inclusive, for instance by offering fairer contracts and by increasing prices for local producers. However, such an approach focuses very much on monetary resources. We applied the Capability Approach to understand what capabilities local producers valued and would like to see developed. We studied this in various contexts, such as Colombia, Jamaica, and South Africa. Very often, local producers valued the capability of taking care of their environment very highly, as well as the capability to maintain their own land, regardless of how small that often was. With a focus solely on income, these other factors would have been overlooked. Applying the CA allowed us to develop a prospective design for global (biobased) value chains that takes a wide variety of capabilities into account.”

Lotte is an associate professor of Ethics and Biotechnology, at TU Delft. Her main research interests concern responsible innovation in the field of biotechnology and synthetic biology, including topics such as cellular agriculture, synthetic cells, and inclusive biobased value chains.

Susan is a PhD Candidate in the Biotechnology and Society section at TU Delft. She is part of a multidisciplinary research team investigating inclusive value chains for marine biofuels. Her research focuses on issues of inclusion and social justice.

Usage 3. Process

To rethink design processes

In addition to diagnosing problems, specifying design requirements, or evaluating the impacts of a design solution (see usages 1 and 2), the Capability Approach can be used to design more inclusive and fair processes.

It does so by reflecting on to what extent a process is oriented towards capability expansion or to what extent it provides space for those with limited capabilities.

This is not only relevant for the design of products but also, for example, for the design of institutions, governance structures, and organizational frameworks like value chains, all of which require processes that account for diverse actors and their varying capabilities.

Many complex processes behind societal transitions include a wide array of actors such as policymakers, decision-makers, investors, operators, and citizens. Varying values, power discrepancies, actor-interdependencies, and conflicting interests may lead to unequal capability expansion as final outcomes. The CA helps to rethink or redesign those processes.

For example, by applying the Capability Approach, you can analyze differences in capabilities both opportunities and abilities of the target group members and other actors to participate in your designing process or to inform you about their values and needs the design process should reflect.

This insight helps shape a process that ensures that all voices are heard, particularly those who might otherwise be marginalized.

As a way to design more inclusive processes, additional activities may be added to compensate for capability inequalities and to include stakeholders in the process, such as organizing additional consultation sessions for those less represented or preparing easy-to-understand materials for participating citizens. When mediating varying values and interests of stakeholders, you may place the CA as a shared principle, and keep posing the question of 'whose capability we primarily aim to expand through this design solution' to the engaged stakeholders and steer them to consider the intended target group up front.

Take the example of planning a cycling-oriented town. When designing the planning process, the CA helps us judge who should be engaged by examining whose capability to cycle is more constrained, and whose capability to influence decision-making is more limited. If it turns out that it is critical to engage disabled people, additional measures need to be integrated into the design process, such as an accessible place to discuss.

Inspiration: how the CA steered design processes in previous research projects

Guiding governance process in urban development

Céline Janssen

“In my PhD research, I studied how governance processes around urban development projects affect social sustainability outcomes in urban areas. Whereas many architects, urban planners, and designers interpret urban social sustainability in terms of physical livability or availability of amenities in neighborhoods, the Capability Approach made me realize that those are merely spatial resources and thus a means to an end. So, although my main research question was concerned with the process of governance, I first had to re-interpret the ends that these processes are designed for. The CA inspired me to rethink what the broad policy goal of ‘social sustainability’ in urban development is about – not about developing better places, but about developing people’s capabilities. This thinking had some implications that I could use to empirically study governance processes. For example, steering towards ‘capabilities’ instead of spatial interventions implies much more uncertainty, dynamics, and diversity about what urban development projects should deliver. It implies that a rather reflexive style of governance is needed compared to what is common in most projects, which are mostly guided by rather linear implementation processes. In short, the Capability Approach inspired me to rethink the design of a process that is needed to arrive at a desired end situation.”

Janssen, C. (2024). Developing places for human capabilities: Understanding how social sustainability goals are governed into urban development projects. A+BE Series. No.01. https://doi.org/10.7480/abe.2024.01.7362

Designing a participatory planning methodology

Alexandre Apsan Frediani

Alexandre specializes in issues around human development in cities of the global South. His work explores the role of housing policy and practice in advancing sustainable and equitable development pathways.

“The Capability Approach has served as the foundational theoretical framework for developing a participatory design and planning methodology called Change by Design by Architecture Sans Frontières UK (ASF-UK). Change by Design consists of both a program of activities and a methodology aimed at expanding the capabilities of marginalized groups and their supporting organizations to shape processes of city-making. The methodology includes four stages: diagnosing, dreaming, developing, and defining. Diagnosing and dreaming focus on various scales of city-making, while developing and defining address trade-offs and actionable solutions. Participants navigate these stages to explore planning issues and available choices. Grounded in principles of justice, Change by Design promotes democratic mechanisms for the co-production of spatial and development plans, ensuring an equitable distribution of capabilities in city governance. In this sense, Change by Design applies participatory spatial methods to enable conversations about the intersection between the ‘good city’ and the ‘good life’.”

Boram Kimhur

Designing a process of participatory planning in informal settlements

> As part of an NGO initiative in Seoul, I designed a participatory planning process for an informal settlement community in Busan to address tenure insecurity and plan for adequate housing. Applying the Capability Approach, the process went beyond technical planning to examine the real opportunities and constraints shaping residents' ability to act on their plans. In addition to settlement and housing design workshops, I facilitated activities to assess barriers – such as financial limitations, legal constraints, and stakeholder dynamics – and identify ways to overcome them. A 1:1 scale mapping exercise helped residents make informed decisions on housing layouts, while a financial planning workshop translated aspirations into feasible savings and material choices. A role-playing session deepened their understanding of power dynamics, strengthening their negotiation strategies. Legal workshops equipped them with the knowledge to navigate land tenure and cooperative housing models. By addressing both design and agency, the process expanded residents' capabilities to take effective action toward securing housing rights.

Planning additional activities to avoid biased selection of capabilities

When selecting capabilities through participatory methods, it is often challenging to judge if the selection becomes too biased and subjective. There are some tips to minimize such risks:

Paola Velasco Herrejon & Annica Brummel

> Pay attention to the possibility of different meanings and nuances of words. It is vital to check other possible interpretations of the same words and phrases.

Boram Kimhur

> Researchers can provide inputs to the target group's discussion to broaden their thoughts, and facilitate the deliberation process. For this, my project team organized a workshop of role-playing with the community members to let them discuss their situation from other stakeholders' stances. We also organized peer-learnings between communities that have similar issues but different experiences to handle them.

Lotte Asveld

> Be aware that communities cannot always articulate that very well what is best for them. You can consider cross-checking with perspectives and opinions from third parties such as grassroots, NGOs, and others who have closely worked with the target community.

Boram Kimhur

> Be aware that some members in the target group and related stakeholders may be underrepresented when you consult with them because they lack the time or other resources to participate. Also, be aware of future generations that cannot be consulted.

Usage 4. Agenda

To facilitate interdisciplinary collaboration and to set a relatable agenda on justice

Finally, the Capability Approach can be used for shaping research topics and guiding research agendas in design by placing the expansion of human capabilities at the center of inquiry.

This perspective compels researchers to examine the multi-dimensional conditions that influence human capabilities, revealing the complexity of real-world problems. As illustrated on pages 22-23 increasing people's mobility by bike is not just about providing bicycles – it requires coordinated efforts in road design, traffic laws, bicycle innovations, public awareness campaigns, and education.

Where a single design intervention is rarely sufficient to address systemic issues, the CA serves as an overarching framework that brings together researchers from various disciplines, fostering interdisciplinary collaboration for comprehensive design solutions.

Moreover, design for justice, ethics, and human rights is an agenda that is often difficult to materialize and risks remaining rhetoric.

The Capability Approach offers a language to set a tangible and relatable agenda for justice and ethics.

Imagine you have set 'just mobility' as an agenda because you observed the inequality in cycling in your town, even though all residents have bicycles. According to the CA, this inequality originates from the fact that some people do not have real opportunities to cycle in their daily lives due to the barriers that other people do not have – imagine again the example of disabled people.

Applying the CA language, 'justice in cycling' could be transformed into a more tangible agenda of 'removing constraints to cycle for all' – or, expanding opportunities for all to cycle. Such constraints can derive from the bicycle design itself, town planning, regulations, and policies.

Linking the CA languages to normative values helps define what needs to be done to realize those abstract ideas. This usage can be applied also to designing policy rhetoric and visions to reach out to a broader audience and facilitate public debates.

Inspiration: how the CA helped to set agendas in debate and education

Raising the importance of the human-centered approach in the built environment

Boram Kimhur &
Céline Janssen

“We organized a seminar ‘Cities for Human Development’ at our faculty. The faculty includes disciplines of architecture, engineering, urbanism, planning, urban area development, and management in the built environment. The CA’s language of ‘human development’ was intuitive for researchers across disciplines and easily associated with their varied topics. We designed this seminar to raise the importance of a human-centered approach – i.e., focusing on how humans live in the built environment instead of the built environment itself. Although this can be studied by many different concepts and from different viewpoints, the key concept of the CA appeared to be a relevant tool to steer a central debate on humans and human values.”

Designing an education agenda on ethics and technologies

Margoth Gonzalez Woge

“I have used the Capability Approach alongside Mediation Theory (a framework in the philosophy of technology) to teach engineering ethics in interdisciplinary design projects within a bachelor’s honors program. My goal is for students to understand: (1) that technologies serve not just as functional tools but also as active facilitators of human experiences and practices; (2) that designers and engineers should define technology’s specifications based on both functionality and ethical evaluation of their potential roles; (3) that the CA is a suitable framework for assessing the ethical desirability of technological impacts on well-being. The Capability Approach served as an ethical compass in an iterative design process within Challenge-Based Learning. I developed and tested various pedagogical tools for each phase, with students creating design briefs that included stakeholder analysis, capability-based requirements, solution sketches, and a prototype to address the design challenge.”

Closure

5

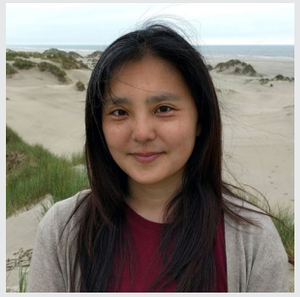
Final reflections and ways forward

At its core, the Capability Approach provides a vision for designing for values centered around the idea of justice. This vision pursues reducing inequality in capabilities to create a fairer world and expanding capabilities to increase human flourishing. The normatively strong principle of the CA – expanding people's real opportunities to lead the lives they value – is intuitive to many. It is also adaptable to a wide range of problems affecting human flourishing and social inequality in the context of design research. Rather than providing fixed answers, the CA encourages researchers and practitioners to critically assess and refine their design choices, ensuring that technological advancements and innovations truly serve human well-being.

Although we have discussed the CA at the center of this booklet as a design principle for designing for values, it's important to note that this is not presented as the only 'right' theoretical approach for addressing challenges and values in our society. Many valid theories and concepts exist, each serving their own unique purposes. We intend to introduce scholars, educators, and students to the CA, and highlight its relevance in design-oriented research. We hope that this booklet has provided an entry point for exploring the Capability Approach and has inspired fresh perspectives on the design of technologies, design products, systems, and processes.

We invite scholars and educators to continue exploring how the Capability Approach can improve evaluations, solutions, processes, and agenda-setting in design research. By applying the CA, we can better define our normative positions on justice and societal progress with tangible ideas. Only when we articulate these positions clearly can technologies and designs truly fulfill their role in shaping a better future.

Project team



Boram Kimhur
Boram has spent over 15 years working on social justice, inequality, and urban poverty through both practice and research. Her work focuses on improving the lives of marginalized groups through equitable urban development. She holds a PhD from TU Delft and an MA from the University of Manchester and is the Director of the Institute for Inclusive Urban Development. She also lectures at the University of Seoul and has worked with NGOs and international agencies across East and Southeast Asia.

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Lotte is an associate professor of Ethics and Biotechnology, at TU Delft. Her main research interests concern responsible innovation in the field of biotechnology and synthetic biology, including topics such as cellular agriculture, synthetic cells, and inclusive biobased value chains.

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Susan is a PhD Candidate in the Biotechnology and Society section at TU Delft. She is part of a multidisciplinary research team investigating inclusive value chains for marine biofuels. Her research focuses on issues of inclusion and social justice. With her background in cultural anthropology and sustainable development, she uses qualitative and participatory methods to include all stakeholders' needs, perspectives, and capabilities in designing and developing novel biofuel value chains.

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