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Public value in the making of automated and datafied welfare futures

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Abstract: Across Europe, the public sector is expanding its efforts to introduce data-driven decision-support and intelligent systems in the administration of welfare. The growing body of research that highlights the impact and harms these systems have on citizens' lives, raises questions about the guiding ideas, values, and norms that are at the heart of current transformations in welfare. Research in critical data studies contends a silent marketisation of social protection and governance. It implies an intricate entanglement between the procedures and output of service provision on the one hand and the normative outcomes in terms of the well-being and flourishing of society as a whole on the other hand. Thinking with the capabilities approach and *buen vivir* as well as with the concept of data justice, our paper asks how to conceptualise this relation. It discusses how (in)justice may become a sociomaterial component in automated welfare and emphasises that welfare outcomes and welfare practices, including their procedural aspects, are rather co-produced than just interdependent. We conclude that whether future infrastructures of welfare will create public value or not, depends on the institutional arrangements, policies, and norms built to distribute the emerging benefits and risks equally in society.

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1. Emergent infrastructures of welfare

A recent ruling of the Austrian Supreme Court of Administration (VWGH, 2023) on the introduction of a profiling system that categorises and grants different levels of support to job seekers in the care of the national Public Employment Service assesses the lawfulness of using data for an automated prediction of future employment chances of job seekers – an endeavour pursued in many European countries and oftentimes heavily criticised by researchers, media, and data rights organisations alike. In the case at hand some legal questions remain open and subject to further judicial investigation. However, the Court has no concerns that the agency may use the personal data in question since its legally assigned purpose of ensuring an orderly and well-functioning labour market is undoubtedly one of considerable public interest (VWGH, 2023, pp. 39-44). This statement suggests some critical considerations on the notions of public interest and public value. It raises the question of whether all kinds of data use by a public institution within its mandate are in the public interest. Using (semi-)automated decision-making to segment access to a public service also indicates the need to assess the system in terms of the public value it creates and the potential risks it carries for (different groups of) citizens. In a wider perspective, this illustrative case speaks to the urgent need to have an open and transparent debate on the guiding ideas, values, and norms that should be at the heart of current transformations in welfare. For this purpose, we take inspiration from Amartya Sen's *capability approach* and from indigenous thinkings about *buen vivir*. Both approaches provide normative guidance to think

through some tenets of using data to serve citizens in vulnerable life situations and to contribute to the flourishing of society as a whole.

Across Europe, the public sector is expanding its efforts to introduce data-driven decision-support and intelligent systems in the administration of welfare. Resource efficiency, faster procedures, and fairer service delivery that eliminates human flaws are the key challenges evoked to promote the implementation of automated decision-making. As such, these efforts tie in with the long-term project of modernising and rationalising public administration (Pasquale, 2019). Data-driven procedures promise a more targeted approach in the provision of welfare services leading to both alleviation of the workload of street-level bureaucrats and for social protection to arrive where it is needed. While civil servants involved in data projects generally speaking “have a mindset for thinking about value” (Siffels et al., 2023, p. 259) and (in contrast to private actors) “tend to focus on the public good” (Siffels et al., 2023, p. 258), algorithmic systems in the public sector are oftentimes designed and implemented in a way that ignores the context of and the impact on the lives of citizens. As critical research suggests (Dencik & Kaun, 2020; Newman-Griffis et al., 2023; Reutter, 2022; Zakharova et al. 2024), the outcomes of automated and data-driven welfare provision may distribute benefits and harms unequally in society, with profound implications for issues of governance, social cohesion, and equality. Empirical studies and theoretical accounts point to the ways in which emerging infrastructures of welfare are transforming citizen-state relations by individualising social problems (e.g., Allhutter et al., 2020, p. 9) and by a silent marketisation of social protection (Dencik, 2022; Penz & Sauer, 2019). Dencik (2022, p. 161) emphasises that the “ideology of dataism and the political economy of technology posit values and operational logics that are markedly different from how the welfare state has previously been understood”. The relationship between the “public” and the “private” is being renegotiated, which affects institutions and their agendas, interests, and practices as well as the public value(s) at stake in the making of welfare futures.

Overall, this research implies an intricate entanglement between the procedures and output of service provision on the one hand and the normative outcomes in terms of the well-being and flourishing of individuals, protected groups, and society as a whole on the other hand. Our paper therefore aims to elaborate on how the procedural aspect of welfare provision and the normative dimension of society’s well-being are entangled. It asks how to conceptualise this relation between output and outcome of automated and datafied welfare. What are viable concepts that can help us to evaluate their entanglement? And, considering the operational

logics and inherent values of data-driven and algorithmic systems, what governance mechanisms are required to ensure that their use in welfare creates public value in terms of just procedures and outcomes? To elaborate on these questions, the following section introduces the concepts of public interest and public value and gives some background on how the relation between the state, the economy, and society is organised in European welfare systems. We then go on discussing just conditions for people's welfare and well-being on the one hand and just and valuable data use on the other hand. For this purpose, we bring different justice perspectives together: thinking with the capabilities approach and *buen vivir* informs our engagement with justice in welfare practice in Section 3. In Section 4, we use data justice to zoom-in on the data relations which are being established in current welfare transformations. The last section summarises our argument and draws conclusions on the preconditions for creating public value and welfare futures that contribute to the flourishing of society as a whole.

2. The "public" and the "private" in the (datafied) welfare state

Given the industry-driven development of data-based technologies, a growing research on the use of such technologies in the public domain or for "the social good" elaborates on criteria for their deployment and governance to be in the "public interest" or to create "public value". These approaches negotiate how to govern the relation between the public and private sector and the values that are aligned with these actors. However, debates on how the welfare state navigates the relation between "the public" and "the private" are more fundamental and concern the very foundations welfare is built on. This section first presents different approaches to public interest and public value creation and then gives a brief outline of how attempts of characterising welfare systems pivot around the relationship between the state, the economy, and the family.

2.1 Public interest and public value

Investigating the requirements for artificial intelligence (AI) to serve the public interest, Züger and Asghari (2023, p. 815) suggest that for AI to meet "the common good needs a political and democratic governance process with the public interest principles at its core". The public sector and public funding, they suggest, are safe options for developing "public interest AI". However, they add that a lack of transparency and validation has also led to adverse impacts of decision-making systems in public administration. The authors define five principles for the development of "public interest AI" that appear to be mostly directed at the private sector but are

relevant for the public sector as well: (1) The need of a normative democratic justification pertains to two aspects: the public institution needs to argue “how the system will tackle and improve the given issue and why it’s the best solution in consideration of the alternatives” (Züger & Asghari, 2023, p. 819). Even though the full impact of planned procedural changes cannot possibly be assessed *ex ante*, a “best-effort answer” shall ensure that the AI and respective resource spending are justified. (2) The requirement to serve equality and human rights includes questions of bias, fairness, compliance with legal standards, possible unwanted shifts in power relations, and environmental harms of systems. Adequate remedies centre on technical design (e.g. inclusive design principles), openness to the public, free and open source development, active participation of citizens, and raising civic tech literacy. (3) Direct users, the data subjects whose data train the system, and everybody affected by decisions derived from the system need to be included in a deliberative process (Züger & Asghari, 2023, p. 820). This suggestion is particularly interesting since citizens are very rarely consulted in the design of administrative procedures. While the first three principles “adhere to democratic governance requirements” (Züger & Asghari, 2023, p. 821), the remaining two principles aim to bridge technical requirements and public interest principles and refer to (4) technical safeguards and (5) validation.

In a different vein, the concept of public value is meant to capture the strategy of a public sector organisation that is aimed at “creating something substantively valuable”, “be legitimate and politically sustainable”, and “be operationally and administratively feasible” (Alford & O’Flynn, 2009, p. 173). In this conception, public value comes to encompass more than public goods like social institutions in the form of rule of law, enforcement of contracts, or the maintenance of order. Public value means outcomes and not only outputs, i.e. they go beyond services generated by a state organisation so as to include the effects of these outputs on those enjoying them. Public value is meaningful to those enjoying it not just for the public-sector administration trying to deliver it. In sum, public value “connotes an active sense of adding value, rather than a passive sense of safeguarding interests” (Alford & O’Flynn, 2009, p. 176). Twizeyimana and Andersson (2019, p. 168) start from Moore’s (1995) notion of public value as “citizens’ collective expectations in respect to government and public services” and identify three indications of public value: improved public services, improved administration and improved social value which includes improved trust, and confidence in government and improved social well-being. Siffels and colleagues (2022, p. 244) analyse how data practices of government organisations “are influenced by their resources, their experience and knowledge about data practices and their thinking about public values”. The strat-

egy of creating public value relies on operational capacities and the authorising environment.

When studying datafication in welfare, Prainsack and colleagues' (2022, p. 6) solidarity-based data governance framework helps us avoid dichotomous thinking along the lines of economic/individual interest versus collective good. As they point out, we cannot straightforwardly determine data use that creates or does not create public value based on a distinction between public and private data processors. However, "the most important distinction is between data use that generates significant public value without posing unacceptable risks to anyone and data use that does the opposite" (Prainsack et al., 2022, p. 7). Data use is in the public interest "if it will plausibly have clear benefits for many [people], society as a whole, or future generations, and no person or group will experience significant harm", Prainsack & Buyx (2016, p. 497) explain. But data use that creates public value still carries risks and the fairer and more sustainable the distribution of risks and benefits in society, the more pronounced the public value. All stages of data use, i.e. input, processing, outputs, outcomes need to be assessed in terms of this distribution.

2.2 The public and the private spheres in welfare

In order to be able to reflect on desired outcomes of welfare practices, we first need to consider some of the foundations that welfare is built on. Characterisations of welfare systems centre on principles of redistribution and on how the relation between the state, the economy, and society is organised. Welfare rests on an obligation of the state to support those who endure the social effects and risks of capitalism (Esping-Andersen, 1999) and relies on principles of an "appropriate distribution of the benefits and burdens of social cooperation" (Rawls, 1971, p. 4). Three principles of redistribution are central in European welfare states (Reeskens & van Oorschot, 2013, pp. 1175-6): the principle of equity states that those who contribute more should receive more in case a social risk occurs to them and is mostly connected to the continental/conservative welfare state model; the principle of need states that primarily (or only) those in need should receive welfare to avoid the accumulation of social risks and is connected to the liberal welfare state model; and the principle of equality (mostly) grants universal benefits and services of the same type and degree for citizens, irrespective of the level of need or contribution to the system, and is connected to the universal welfare state model.

In his categorisation of European welfare state regimes, Esping-Andersen (1990, p. 21) considered different ways of "how state activities are interlocked with the mar-

ket's and the family's role in social provision". Three dimensions speak to how this tension has been navigated in European welfare regimes (Esping-Andersen, 1999): *decommodification* refers to the relative independence of people's social security from the constraints and risks of capitalist markets. The higher the level of decommodification, the lower a person's dependence on selling their labour force to ensure survival. *Economic and social stratification* of a society describe social equality and inequality in terms of income and social status. The welfare state comprises policies that can be conceptualised and used as instruments of redistribution. Redistribution intervenes into the structural inequalities and generates specific forms of social stratification. *Residualism* refers to the interplay between the market, the state, and the family and concerns the extent to which the state intervenes in the relationship between private provision (referring to the market and the family) and public provision. Feminist critiques of Esping-Andersen's concept of welfare capitalism focus on the institutional arrangements of welfare state regulation and elaborate on its embeddedness in country-specific gender regimes (Sauer, 2001, p. 127). Langan and Osten (1991) associate different institutionalisations of gender relations, in the family or in paid labour, with different models of western welfare states, i.e. weak, modified, and strong breadwinner models and universalist models. In breadwinner-centred models social security is strongly tied to gainful employment granting protection in the event of unemployment, illness, accidents, and retirement. (Female) reproductive labour only grants social rights that are derived from (male) employment. Breadwinner-centred models are thus based on the family and not on the individual. Their foundation was formed by a strict division of the public and the private spheres and reproductive and family work were initially largely excluded from social policy regulations (Sauer, 2001, p. 129). In contrast, universalist models have been based on individual citizenship. However, also these social arrangements tend to erode in times of economic crises (Sauer, 2001, p. 128). Thus, concepts of the caring state call for a de-familialisation of reproductive and care work (Bagni, 2015).

This brief overview of some of the normative foundations of welfare and the deep impact that welfare automation and datafication entail (e.g. Delpierre et al., 2024; O'Connor & Bența, 2021), clearly shows the need for transparency of the normative decisions taken in these infrastructural transformations. For this purpose, in the following section, we take inspiration from the capability approach and *buen vivir*.

3. Evaluating conditions for well-being

3.1 Thinking with the capability approach

The capability approach has practical relevance for the evaluation and assessment of individual well-being and social arrangements, the design of policies, and proposals about social change ranging from welfare state design to development policies (Robeyns, 2006). It has been pioneered by the economist and philosopher Amartya Sen, who argues that our evaluations and policies should focus on what people are able to do and be, on the quality of their lives, and on removing obstacles in their lives so that they have more freedom to live the kind of life that they have reason to value. In this sense, the capability approach evaluates policies according to their impact on people's capabilities. It asks whether the conditions for the capabilities are being met, and, from this broader perspective, well-being, justice, and equality are links between social, economic, political, and cultural dimensions of life. The approach analytically distinguishes between the *ends* that have intrinsic values and the *means* which are instrumental to reaching the goal of increased well-being, justice, and equality in society. However, in concrete situations, this distinction is often intertwined and overlapping, since some ends are simultaneously also means to other ends (for example the capability of being in good health is an end in itself, but also a means to the capability to work).

The capability approach rejects merely monetary evaluations of social policies that rely exclusively on utility and thus exclude non-utility information from our moral judgements. Rather, it offers a mode of thinking about normative issues and focuses on the information that we need in order to make judgments about social policies (Sen, 1999). Bonvin and colleagues (2023) explain that capability-oriented policies should address three interdependent dimensions: the receiver, the doer, and the judge dimension. Using the example of a “capability-informed policy for unemployed persons”, the authors explain that the receiver dimension of unemployed people means that they “need enough income to lead a valuable and dignified life” (Bonvin et al., 2023, p. 4). But, policies should also support their doer dimension and help them to find a job that they value. The receiver dimension is “an essential precondition for a genuine doer dimension to develop”, since the goal is not to force unemployed people to take any job, but to allow them “to find a job (or activity) that they value – and receiving decent benefits represents an enabling condition for achieving this objective” (Bonvin et al., 2023, p. 5). A capability perspective also considers the economy and Bonvin and colleagues (2023, p. 5) stress that “enhancing the doer dimension of unemployed people also requires macro-economic, demand-side policies to make sure that there are enough valuable jobs

(or other meaningful activities) in a society so that people have a real opportunity to develop their doer dimension". Finally, unemployed people are also considered as judges, "who hold views and knowledge about the world (and especially about their personal situation) and as citizens who have values and opinions on [what] a good society should look like" (Bonvin et al., 2023, p. 5). This refers to the freedom to co-develop one's "inclusion in the world of work" considering that "policies should nourish people's aspirations for better futures and support and sustain them in trying to realize those aspirations" (Bonvin et al., 2023, p. 5). And it links to the judge dimension and its collective-political aspects: "unemployed people should have the real opportunity to co-develop unemployment policy at the local, regional, national and international level, contributing to establish priorities and modalities of intervention" (Bonvin et al., 2023, p. 5).

In Sen's terms (1999), the capability approach concentrates our attention on the substantive freedom that people have to live their lives. This means that the concept of "capability is thus a kind of freedom: the substantive freedom to achieve alternative functioning combinations (or, less formally put, the freedom to achieve various lifestyles)" (Sen, 1999, p. 75). The concept of functionings which are beings and doings, such as, for example, being well-fed or literate (that has Aristotelian roots) is central to the analysis of poverty and deprivation, and of the ability to take part in the social, political and economic life of the community. A person's "capability set" is the different combinations of functionings that are feasible to achieve. The capabilities and functionings are equally important but imply different capability sets or substantive freedoms (see also Robeyns, 2005). As the above example suggests, judgments about justice, equality, and policies focus on what people are able to do, their realised functioning, or their real opportunities, the capability sets of alternatives available to them, the substantive freedom "to choose a life one has reason to value" (Sen, 1999, p. 285). Sen is a liberal thinker who considers the expansion of freedom as the primary end and means of development. He argues that development "requires the removal of major sources of unfreedom: poverty as well as tyranny, poor economic opportunities as well as systematic social deprivation, neglect of public facilities as well as intolerance or overactivity of repressive states" (Sen, 1999, p. 3). The significance that Sen (1993, p. 31) attributes to freedom explains his approach to evaluation and policy since, in various contexts, we should pay much more attention to people's capabilities and not merely their functionings: "quality of life is to be assessed in terms of the capability to achieve valuable functionings".

Another major point of debate in the capability literature focuses on the selection

of relevant capabilities and who should decide what is relevant. Within ideal theories of justice, Vallentyne (2005) argues that each and every capability is relevant, while others, following Nussbaum (2003) argue that considerations of justice require a distinction between morally relevant and morally irrelevant capabilities. She recommends a well-defined list¹ of capabilities that remains open for revision though. However, Sen (2005, p. 158) consistently and explicitly refuses to defend “one predetermined canonical list of capabilities, chosen by theorists without any general social discussion or public reasoning”. To this end, the capability approach does not refer to “universalist, predetermined understandings of what a good life is, and instead addresses human flourishing by assessing in empirical, concrete contexts the resources and choices” available to diverse individuals and communities (Kaun et al., 2023, p. 181).

3.2 Thinking with *buen vivir*

The capability approach dialogues with other practices, narratives, and/or scholarship dedicated to thinking about life beyond hegemonic Western points of view. This is the case for the concept of *buen vivir*, which – similar to the capability approach – “aims to dismantle the idea of a universal goal for all societies” (Acosta & Abarca, 2018, p. 132). *Buen vivir* proposes an alternative perspective to development, a “way of living” foregrounding community-centredness and non-anthropocentric ways of thinking and being. In order to avoid inaccurate simplifications of the concept, we acknowledge that *buen vivir* may refer to a group of concepts that aims to synthesise and “translate” different traditions of indigenous thinking (Altmann, 2019).² Thinking with *buen vivir* in this paper must start with recognising the limitations of bringing such a concept to an analysis focused on European welfare schemes.³ The perspective drawn here intends to look at some common ideas among expressions of *buen vivir* as tools to think about life beyond Euro-centric viewpoints. Thus, when the expression *buen vivir* is deployed in this paper, it does not correspond strictly nor specifically to *sumak kawsay* in Ecuador or *suma qamaña* in Bolivia, for instance. We refer to the concept more as a pathway rather

1. Life; Bodily health; Bodily integrity; Senses, imaginaries and thought; Emotions; Practical reason; Affiliation; Other species; Play; Control over one's environment.
2. Altmann emphasises that there is no such a thing as “indigenous thinking” in the singular and that the lack of recognition of such a plurality leads to a risk of essentializing *buen vivir* through a colonial attitude (2019, p. 5).
3. Alluding to the idea of situated and partial knowledges (Haraway, 1988), it is essential to stress that we focus on ideas that result from translations of *buen vivir* into scholarship that has been subjected to widespread publication, e.g. the debates around the concept within the Ecuadorian constitutional process. In this context, we acknowledge that constitutional processes and their ability to concretize a *buen vivir* agenda is also subject to discussion and political negotiations.

than a destination, or a “recipe” for guiding change (Abarca & Acosta, 2018, p. 132). The idea is to understand how it can inform welfare beyond the traditional definitions of the latter.

Contrasting *buen vivir* and welfare, Vila Viñas (2014, p. 58) argues that *buen vivir* strives for the achievement of economic, social, and cultural rights by pulling away from a life centred on productiveness. Sectors seen as unproductive, such as (female) household and care work, need to be integrated into welfare schemes despite the dichotomy of productive versus reproductive labour. In this sense, Acosta (2015, p. 325) affirms that *buen vivir* meets a feminist care ethics based on cooperation, complementarity, reciprocity, and solidarity. This supports calls for the de-familialisation of social security, as discussed in section 2.2.

As an alternative to development, *buen vivir* moves towards a solidarity economy and, when it comes to welfare, *buen vivir's* agenda suggests forms of community-based property such as cooperatives for “production, consumption, housing and services” (Acosta & Abarca, 2018, pp. 137-138). Questioning the widespread notion of the individual is one key aspect to observe here. *Buen vivir* considers that individuals should be in harmony with themselves and with society, and that there should be harmony between society and the planet with all its beings (Acosta, 2016, p. 15). This offers a holistic approach including nature (Gudynas, 2011). It demands overcoming perspectives that separate not only the individual from the community but also human beings from the environment. Acosta and Abarca (2018, p. 137) state that the “goal is to build an economic system based on solidarity and communitarian and reciprocal values while being subordinate to the limits of Nature”. Thus, challenging an anthropocentric vision that centres on productivity and efficiency despite their impacts, *buen vivir* offers the sufficiency logic. Sufficiency means producing enough to meet actual necessities (Acosta & Abarca, 2018, p. 136), in line with a logic in which economic growth and material consumption are not indicators of wellbeing (Gudynas, 2011). Sufficiency is thus linked to an alternative economic logic that refuses the subordination of life to the market (Acosta & Abarca, 2018; Gudynas & Acosta, 2011). This relates to the question of de-commodification as mentioned in section 2.2, but goes beyond it.

The holistic perspective on life and nature recalls that *buen vivir* cannot be achieved within a country's sovereign territory of a European welfare state in case global inequalities remain in place. Bearing in mind the extractivist relations and the status of these states in the international division of labour, a *buen vivir* scenario cannot be achieved if only Europeans receive its benefits to the detriment of peripheral countries' communities and their rights. The way of living advocated by

buen vivir requires a different economic paradigm (Acosta & Abarca, 2018) and an understanding of transnational welfare based on global socioeconomic justice.⁴

3.3 Foregrounding data relations

Buen vivir as an agenda offers a holistic and far-reaching change of perspectives on European conceptions of welfare. However, it may as well inspire smaller changes in data relations. In this vein, mentioning Milan and Treré's (2021) reading of *buen vivir* and data is relevant. Gaining inspiration from *buen vivir* as a set of principles that permit to visualise the limits of current development models, Milan and Treré point out the environmental impact of data and suggest that the concept "entails deconstructing the notion that a datafied society is inherently the green alternative to the fossil fuel era" (2021, p. 108). The automation and datafication of welfare need to consider its corresponding human and non-human costs - which encompasses, for instance, extractivism of raw materials through (neo)colonial relations and the energy impact of digital and data infrastructures (see Couldry & Mejias, 2019; Gago & Mezzadra, 2017; Peña, 2023). Even though public data practices might differ in terms of their energy impact, the growing public use of AI fuels the circulation of ever bigger amounts of data.⁵

Milan and Treré (2021, p. 108) further argue that *buen vivir* ideas lead to the necessity of thinking about datafied futures through a community-based approach in which decisions in this regard should be made in a dialogic and participatory manner. Thus, bringing affected and interested groups to the discussion around welfare datafication could be made a requirement. These debates, of course, should be well-informed and respect the autonomy of individuals and communities, which connects those interpretations of *buen vivir* to the capabilities approach, since a sense of self-determination emerges as relevant to both perspectives as well as to different indigenous thinkings brought to the international public arena (Bockstael et al., 2016). Thinking with *buen vivir* in this manner foregrounds the data relations established in infrastructural transformations of welfare in terms of procedural aspects that are intimately entangled with global inequalities, anthropocentrism, and tropes of growth and development.

As previously mentioned, the capability approach suggests a crucial distinction be-

4. See, for example, the project "Transnational social security law in the digital age: Towards a grassroots politics of redistribution" and related workshop. Details under University of Warwick, 2023.

5. For instance, Nevada's Department of Employment, Training, and Rehabilitation entered a contract with a Google cloud service called Vertex AI Studio to use AI to speed up its decision-making process when ruling on appeals that impact people's unemployment benefits (Belanger, 2024).

tween the means (such as goods and services) and the ends of well-being, justice, and equality, which are conceptualised as functionings (the realised dimensions of well-being, justice, and equality) and capabilities (those dimensions of well-being, justice, and equality that are potentially available to a person). Goods and services or commodities have certain characteristics that make them of interest to people because they enable or contribute to a functioning. Hypothetically speaking, we can suppose that a technical infrastructure can enable the functioning of digital immediate accessibility to a welfare service, and a person can be able to move more rapidly through bureaucratic procedures. However, we also could look at this from a different angle and analyse how the digitalisation of service encounters is a way of responsabilising citizens into “carrying their own case” through administrative processes, leaving them in charge of tasks that used to be in the caseworker’s area of responsibility (Bengtsson et al., 2024, p. 140). The relation between a good and the achievement of certain beings and doings is influenced by conversion factors. Robeyns’ (2005, p. 99) categorisation of conversion factors discussed in Sen’s writings defines three sources of factors, all of which influence how a person can be or is free to convert the characteristics of the good or service into a functioning: 1) Personal conversion factors such as metabolism, physical condition, sex, reading skills, or intelligence influence how a person can convert the characteristic of a commodity into a functioning. 2) Social conversion factors are factors such as public policies, social norms, practices that unfairly discriminate, societal hierarchies, or power relations related to class, gender, race, ability and so forth. 3) Environmental conversion factors emerge from the physical or built environment in which a person lives. Among aspects of one’s geographical location are climate, pollution, susceptibility to earthquakes, and the presence or absence of seas and oceans. Among aspects of the built environment are the stability of buildings, roads, bridges, means of transportation, communication, and we can add technical infrastructures.

Sen uses “capability” not to refer exclusively to a person’s abilities or other internal powers but to refer to an opportunity made feasible and constrained by both personal and socio-environmental conversion factors (Crocker, 2008, pp. 171–2; Robeyns, 2005, p. 99). The capability approach thus takes account of human diversity in at least two ways: (i) by its focus on the plurality of functionings and capabilities as an important evaluative space, and (ii) by the explicit focus on personal and socio-environmental factors that make possible the conversion of commodities into functionings, and on the whole social, institutional, and environmental contexts that affect the conversion factors and the capability set directly. As Sen (2004, pp. 336–337) has pointed out, the capability approach can only account for

the opportunity aspect of freedom and justice and not for the procedural aspect. However, with the introduction of automated systems in welfare administration the procedural aspect of welfare design and policy implementation acquire importance and require institutions, structures, and governance processes to be procedurally just and equal, apart from the outcomes they generate.

On this background, technical infrastructures might be considered as means that function as “inputs” in the generation or expansion of capabilities such as new social institutions broadly defined. However, technical infrastructures not only generate but they also contribute to transformative properties (Haenssger & Ariana, 2018) of material and nonmaterial circumstances that shape people’s opportunity sets, and the circumstances that influence choices that people make from the capability set. Therefore, they should receive a central place in the capability evaluation, scrutinising the context in which economic production and social interactions take place, and whether the circumstances in which people choose from their opportunity sets provide equal access, are enabling, and just.

4. Just data practices in welfare

The capability approach and *buen vivir* have shed light on the normative dimension of society’s well-being and, thus, (mostly) on the outcome of welfare practices. But how can we consider justice and equality in automated and data-driven welfare in particular? How can we account for changes in public value creation that arise from data practices? Approaches that elaborate on the sociotechnical entanglements of justice in datafication have been published under the notion of data justice. Linnet Taylor’s (2017, p. 1) rights-based approach defines data justice in terms of legal frameworks that warrant “fairness in the way people are made visible, represented, and treated as a result of their production of digital data”. For our purpose of elaborating on how (in)justice may become a sociomaterial component in automated welfare, we start from Heeks’ and Renken’s (2018) analytical framework which breaks down data justice from a procedural perspective, a rights-based perspective, an instrumental perspective, and a structural perspective (see also Prainsack et al. 2022, pp. 13-14). In this manner, we can connect the normative dimensions of welfare, as discussed in section 3, with the need for just data practices.

The *procedural data justice perspective* refers to the means by which data is extracted and processed and for our purpose may refer to institutionalised practices of gathering and using social data from citizens based on assumptions of how this data supports decision-making in public agencies. As Dencik (2022, p. 149) ex-

plains, historically technology has “significantly shaped public administration and the way social welfare is organized through the establishment of bureaucracies and different forms of population management”. Snell, Tarkkala and Tupasela (2021) conceptualise welfare state data collection as “welfare state data regime” and describe how data gathering practices, registers, and different kinds of infrastructures coincide with the constitution of welfare state institutions and social policies. Elaborating on Nordic welfare states, they point out that the social contract that the welfare state data regime has been based on “relies on values such as reciprocity, universality, equality and solidarity” (Snell et al., 2021, p. 667). Their research exemplifies how current transformations of the ways in which data are used to generate knowledge about a population and to allocate resources and services affects the social contract by transforming mundane practices that enact these values. These shifts can hardly be planned for and simply be made transparent. Siffels and colleagues (2022, p. 262) point out that due to a lack of expertise, public agencies oftentimes need to rely on external partners which affects their ability to be transparent about their data projects. Their research on how, for instance, municipalities grapple with data ethics shows that data projects in welfare are situated in politically charged environments (Siffels, 2022, p. 256): “Because data projects often seem straightforward and ‘value-free’, civil servants can overlook the politically sensitive aspects of the project and make decisions that should be discussed in the political sphere”. Not recognising that the choices they have to make are ethical or political, they can make decisions that go beyond their mandate. The reliance of governments on external partners moreover raises questions on how public-private partnerships affect the former’s values. According to Siffels and colleagues (2022, p. 262) this “highlights the tension between the (lack of) operational capacity and the expression of public values”. Connecting procedural data justice with the capability approach and *buen vivir* raises the question of who makes decisions that (silently) affect the procedures and parameters for individual and collective flourishing within a welfare state.

The *rights-based data justice perspective* centres on how citizens are (differentially) made visible to the state through what types of data and on how they can make themselves seen. For instance, what does it mean to be seen through profiling techniques that are based on risk frameworks? And how do profiling and prediction challenge universal access to social security? Who has the ability to challenge how data is collected about them? In a broader view, Dencik (2022, p. 157) criticises “rather than the state being accountable to its citizens, the datafied welfare state is premised on the reverse, making citizens’ lives increasingly transparent to those who are able to collect and analyse data, at the same time as knowing in-

creasingly little about how or for what purpose that data is collected”. The rights-based justice perspective thus implies that decisions made by intelligent systems and state actors need to be understandable in order to be accountable to data subjects (see also Dalmer et al. 2023).

The *instrumental data justice perspective* is concerned with the outcomes produced in terms of social justice and equality. Kaun et al. (2023, p. 882) argue that in capability terms the data welfare state should provide support that differentiates between different needs and presuppositions for human flourishing. However, currently data-driven automation “is strongly based and focused on streamlining and standardization” (Kaun et al., 2023) and sidelines case-worker discretion based on the engagement with the actual needs of concrete citizens. According to Wells (2012), it is essential to consider that information on individuals within a society would have to be assessed, categorised, and monitored by the state to gain insight into an individual’s living condition and distribute resources accordingly. Given the widespread practice of data-driven decision making to refer to person characteristics such as gender, race, ethnicity, class, age, health status, and area of living, either explicitly or in terms of proxy variables, research overall describes problematic (and oftentimes legally relevant) tendencies towards an individualisation of social problems, a responsabilisation of citizens, and biased and discriminatory outcomes. In this regard, referring to capabilities and *buen vivir* inspires to ask how data governance can consider individuals and communities in a diverse and inclusive society, while aiming for self-determination. Bonvin and colleagues (2023, p. 8) place the emphasis on the “capability for voice” that they see “at the core of the judge dimension”. This capability stresses that people need to have the real possibility to influence policies by voicing their aspirations, views, and values. “Enhancing people’s capability to aspire requires institutions and services that encourage individuals (both as individuals and as organised collectives) to speak for themselves, rather than having their needs defined by others (politicians, administrators, ‘experts’)” (Bonvin, 2023, p. 8). *Buen vivir* inspires us to fathom a focus on communities and their role in empowering and enforcing certain capabilities.

Last but not least, the *structural data justice perspective* attends to the power relations that data governance is embedded in and, in the case of public data uses, to the political and economic forces that shape the data-driven infrastructures of welfare (which increasingly rely on practices of profiling and prediction). Analyses of data policy documents on national and supranational levels as well as studies based in different welfare areas emphasise the intimate entanglement of governments’ notion of public value and for-profit business development. Reutter and Åm

(2024) found that a plethora of policy documents suggest that data availability will prompt other social actors to use this data for society's benefit. Gross and Geiger (2023) use the metaphor of “techno tangoes” for describing how the Covid-19 pandemic acted as an accelerator for public-private partnerships that gave private companies a mandate to move further into the public health sphere, thus opening doors to widened political influence. According to Dencik (2022, p. 160) datafication establishes “a set of relations that ultimately seeks to overturn public institutions as we commonly understand them. That is, by turning to data-driven systems, the welfare state reconfigures social welfare into a problem that necessarily has to be optimised computationally rather than engaged with through human experience and expertise, and embeds social welfare within an ecosystem that endlessly perpetuates this reconfiguration”. One of the core issues in Dencik's view is that (private) computational infrastructure threatens to displace public infrastructure which might ultimately favour an avoidance of democratic governance. Heeks and Renken (2018, p. 100) also regard data systems themselves as institutions of social structure. However, referring to Sen's concept of justice-in-practice they emphasise the power of agency (“power to”) and move towards an “agency-oriented view of data justice based on what individuals value being and doing, what they choose to be and do, and what they are able to be and do” (Heeks & Renken, 2018, p. 96). Thus, a structural data justice perspective on welfare has to consider the power of sociomaterial structures as well as human agency.

5. Conclusions

Our paper has elaborated on the relation between the procedural and normative components of automated and datafied welfare. Whereas European welfare systems are based on principles of either equity, need or equality and on considerations of (de-)commodification, social structuration, and residualism, thinking with the capability approach and *buen vivir* has foregrounded justice and equality in terms of freedoms, the capability of voice, collective-political agency, and non-anthropocentric perspectives. The capability approach's emphasis on empirical, contextual assessment of social policies “informs the notion of welfare by stressing the complexity of lived experience and the diverse values that human actors may orient and attune to in seeking to lead their life. [...] Welfare and the values underpinning it must be understood and studied in concrete relation to the people and organizations it implicates in respect and care for diversity, equity and justice” (Kaun et al., 2023, p. 881). As Sen (2004) stresses, institutions and structures need to be procedurally just, apart from the outcomes they generate. However, the capability approach gives little guidance on how to reach this goal. In this respect,

buen vivir emphasises the importance of community-empowerment and participation. Together, these claims raise the question of datafication's impact on people's capabilities and are linked to the conditions of possibility of acting with welfare data (e.g. pertaining to citizens' access, digital literacy, and digital rights; or to how citizens are differentially implicated in asymmetric power relations).

Our discussion of data justice in welfare has pointed out how (in)justice may become a sociomaterial component in automated welfare and thus emphasises that welfare outcomes and welfare practices, including their procedural aspects, are rather co-produced than just interdependent. This means that data-driven welfare infrastructures do not merely provide the means to access welfare but shape the social relations they aim to measure and promote new methods of knowing the citizen. Dencik notes that "while the need to gather information to assess needs and risk is seen as essential in providing public services, the growing reliance on automated processing as the arbiter of social knowledge introduces some particular, and contested, epistemological and ontological assumptions for making such assessments" (2022, pp. 154-155). Considering ongoing transformations of welfare in relation to global inequalities, anthropocentrism, and a prioritisation of the individual and of productiveness over sufficiency sheds light on the broader inclusions and exclusions in concepts and systems of welfare. In this respect, thinking with *buen vivir* questions the boundaries and borders set for assessing the public value of welfare automation and datafication.

As Prainsack and colleagues' (2022) solidarity-based data governance framework suggests, the creation of public value critically rests on the distribution of risks and benefits of all stages of data use, including input, processing, outputs, and outcomes. Our intertwined exploration of data relations from the perspective of capabilities and *buen vivir* and data justice, hints to the complexity of considering public value in automated welfare in these terms. Whether emerging infrastructures of welfare create public value or not, depends on the "institutional arrangements, policies and norms" and how they enshrine this solidarity (Prainsack et al, 2022, p. 6). In conclusion, we propose that public value also depends on the understandability of decision-making processes that involve intelligent systems and institutional actors and the transparency of governance mechanisms that these processes are embedded in. Ultimately, public value has to be assessed against the agency citizens can gain in their receiver, doer, and judge dimensions.

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