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Looking backward to the future: On past-facing approaches to futuring

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ABSTRACT

While the past is present in all futuring activities it tends to remain implicit and has not received adequate attention by futures scholars and practitioners. In response, this conceptual paper offers a novel framework with which the past can be brought into futures studies in a structured and comprehensive way. We begin by providing a brief account of how the past already figures in futures studies as part of efforts to understand the lingering effects of the past on the future; as part of a drive for ontological pluralization; and as a way to augment more mainstream futuring exercises. We then introduce two past-facing approaches to futuring, *recasting* and *pastcasting*, and illustrate their symmetry with the more familiar future-facing approaches, *forecasting* and *backcasting*. The symmetry, we argue, is based on shared aims and a shared style of inquiry. We then compare the different approaches and illustrate the landscape of futuring as an interplay of two dimensions: the focus of the activity on outcomes or pathways, and the stakes involved in it.

The past, like the future, is indefinite and exists only as a spectrum of possibilities.
– Stephen Hawking

1. Introduction

To argue that the past is integral to futures studies is paradoxically both counterintuitive and cliché. It is counterintuitive because the very ethos of futures studies demands that we set our analytical gaze and intellectual creativity on an unknown future not a known past, as opposed to the historian to whom "the past is always visible and the future is always unknowable" (Gallagher, 2018, p. 39). Surely the objects of futures studies and those of history studies are not the same.[1] But it is also cliché because the very data of the future – the building blocks from which the future is made – originate in the past. As the old, well-worn adage goes, without the past there is no future; try as hard as you can and you will not be able to imagine a future without involuntarily invoking past occurrences. But while the past is implicitly part of all futuring processes, only few such processes engage with it explicitly. It is in this sense that Roberto Poli (2018), as part of a recent classification of foresight methods, reflects on the lack of foresight methods that focus on the

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[1] But see Staley (2007) and Green (2012) on the affinities between historical and future studies (the scenario method in particular), and Liedl (2015) for an argument on the similarity of science fiction and historical texts.

past. "This is as it should be", he writes. "Indeed, no foresight method able to intercept the future by focusing on the past has been developed so far" (Poli, 2018, p. 6).

Poli has a point. Foresight that relies exclusively on past precedence is notoriously erroneous.[2] But we should be careful not to throw the proverbial baby out with the bath water. While Poli is correct in pointing to the relative futility of past-facing approaches to futuring as a means of prediction, we are less convinced by the implications of his assertion. First, while "intercepting the future" may indeed be the key motivation for some foresight activities, when it comes to the larger field of futures studies *explanation* is no less important than *prediction* (Aligica, 2003; Bergman, Karlsson, & Axelsson, 2011). Second, Poli seems to discount existing past-facing futuring activities. Such activities, much like other futuring exercises, employ counterfactual thinking and analysis,[3] and while they may be more or less useful for "intercepting the future", they certainly help to explain and expand the space of possibility for futures to emerge. From this perspective we argue that *the past, much like the future, can be approached as a plurality and a repository of potentiality, and as such, engaging with it can help extend both the purview and the methods used by futurists.*

We illustrate our argument first by providing a brief overview of the three major ways in which considering the past is already part of futures studies. We then describe four prototypical approaches to futuring – two future-facing (forecasting and backcasting) and two past-facing (recasting and pastcasting). We argue that these four prototypical approaches to futuring manifest a symmetry in the way they relate the past, present and the future, and by the way they make use of "what if?" questions which, we believe, capture the essential style of inquiry enacted by futuring. We conclude by offering a comparative framework by which past-facing approaches to futuring can be seen as an integral part of futures studies. Our overall goal is to demonstrate how past-facing approaches to futuring are valuable for futures researchers and practitioners as a way to expand the imagination (and with it the realm of the possible), and as a means to reflect on past decisions and thus probe the relations between the 'thinkable' and the 'doable' (Prendergast, 2019, p. 15).

2. Why look backwards?

A brief survey reveals that futures scholars and practitioners have a meaningful, even if underdeveloped fascination with the past. It is often expressed in one of three modes: (1) as a way to illuminate the relations between the past and the future, often by focusing on sweeping historical accounts that demonstrate the past's influence on the way futures are created and shaped; (2) as a means to challenge deterministic or teleological perceptions of the past as a single, linear, inevitable set of events; (3) and as a way to enrich more mainstream futuring processes by extending their timeframe.

2.1. Learning from the past

While the past may be a poor basis for predicting the future, for an emerging field with an interest in "the study of images of the future themselves, their content, causes, and consequences" (Bell, 2003, p. 86), there is much value in understanding the social, cultural and political weight carried by different (past) images of the future. Fred Polak's comprehensive *The Image of the Future* (1973 in English translation) is perhaps the best example of this impetus. Seeking to provide a scientific basis to what he would later term the social science of "prognostics", Polak's historical analysis[4] suggests that the future is made through a "pull-push process in which a society is at once pulled forward by its own magnetic images of an idealized future and pushed from behind by its realized past" (1973, p. 1). What Polak illustrates as a dynamic, dialectical relation between past and future – what he describes elsewhere as "broken love-affairs between the past and the future" (Polak, 1971, p. 40) – is precisely what drives social change: "Out of the reverberations of the clash of past and future in the present, the image of the future emerges" (Polak, 1973, p. 20).

A similar curiosity about the nature of social change motivated Sohail Inayatullah (alone, and with Johan Galtung) to develop macrohistorical analysis: "Macrohistory is the study of the histories of social systems, along separate trajectories, through space and time, in search of patterns, even laws of social change. Macrohistory is thus nomothetic and diachronic…. Macrohistorians use the detailed data of historians for their grand theories of individual, social and civilizational change" (Inayatullah, 1998, p. 381). In a similar vein, Joseph Voros (2019) suggests that futurists have much to learn from Cosmic Evolution scenarios or Big History accounts that aim to capture the entire evolutionary trajectory of humankind in a single, unifying stroke. "Because Big History takes such a vast 'big picture' view of human history – after all, it places Earth and human history within a *cosmological* context – it is very well suited and ideally conceived as a framing perspective for looking at global-scale changes and very long-term processes" (Voros, 2019, p. 427). Some historical patterns may either extend into the future or provide us with valuable hints about the coming and going of socio-cultural paradigms. Piecing together and drawing inferences from such hints is the task of "historians of the future" (Staley, 2007); the outcomes may allow futurists to better understand the causes, successes and failures of futures-in-the-making (see also Green, 2012; Sandford, 2019; Zeitlyn, 2015).

Lastly, Poli (2018, 2019a) relates pasts and futures by suggesting that some past-futures continue to exact influence on the present

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[2] But see Orrell (2007) for a persuasive counterpoint in his discussion of the accuracy and reliability of farmer almanacs.

[3] The term "counterfactual" has a storied genealogy in such diverse fields as philosophy, history, literature, geography, linguistics, economics, political science, cognitive science and psychology. While its meaning and application vary – from describing a particular mode of thinking to a literary genre or a type of (allo)historical narrative – we use it here to refer to a particular type of non-factual thinking about the past. This is in contradistinction from using the term to refer to the cognitive capacity to speculate about not-yet-factual futures.

[4] While the accuracy of Polak's historical analysis has been criticized (see for instance, Morgan, 2002; van der Helm, 2005), the aim and thrust of his work remains valuable.

and, by extension, the future:

> Presents have their futures, both as components of the presents themselves and as subsequent generated presents. When presents fall into pasts, the futures intertwined with them fall into the past as well. Memories of the futures locked into past presents can still ring out in subsequent presents. Past presents include sold off futures, mute futures, and futures that still have a voice. (Poli, 2019a, p. 114). Elsewhere, echoing Polak's differentiation of "completed" and "noncompleted" time,[5] or Italo Calvino's (1977, p. 24) observation that "Futures not achieved are only branches of the past: dead branches", Poli's (2018) differentiation of "dead" from "living" past-futures allows him to assert "the ontological aliveness and openness of the inquired past" (p.6), thus bringing together history and philosophy.

2.2. Pluralizing reality

Although one may be hard pressed to find a single, consensual articulation of the essence and aims of futures studies – in his foundational work Wendell Bell (2003, p. 111) notes no less than nine such aims – the common thread that runs through many such definitional attempts is a fervent belief that engaging with the future may counteract culturally prevalent notions of determinism and thus expand the horizon of possibility for human action. While this belief may take shape as a logical, practical addition and examination of possible future paths of action and their implications, it rests on a more philosophical assumption that pure possibility may indeed be subjected to methodical enlargement. Ilkka Tuomi (2019) terms this movement "ontological expansion", as premised in the Bergsonian assertion that "not only new ideas and inventions pop up in our world but also reality itself is in the process of becoming" (p. 38). The agentic possibilities implied in the view that reality is essentially malleable can be seen in the social constructivist notion of "worldmaking" (Bendor, 2018; Goodman, 1978; Vervoort, Bendor, Kelliher, Strik, & Helfgott, 2015).

If the overarching goal of futures studies is to reject determinism by multiplying and pluralizing possibility, it only stands to reason that the past (and the present) should be 'rescued' from what David Lewis (1979) terms, the "asymmetry of openness", that is, "the obscure contrast we draw between the 'open future' and the 'fixed past'" (p. 459). Temporal branching, Green (2012, p. 175) reiterates, is not a property exclusive to future events. Neville Morley (2019) makes an analogous claim when he describes the aim of past-facing counterfactual analysis:

> The aim of past-focused counterfactuals is not so much to develop alternative histories as an end in themselves – that is a task primarily for the writers of speculative fiction – but rather to explore alternative pasts and above all to evaluate the conditions under which these alternatives could reasonably be considered to have been possible or, even likely, *as a means of alerting ourselves to contingency and possibility and to our habit of assuming that the present is the only possible world and hence is the measure of the past.* (p. 607; emphasis added).

Extending Morley's point to all past-facing approaches to futuring clarifies that what matters most in the latter is not their fidelity to what we otherwise take as historical 'facts', nor the degree to which they demonstrate that the past can teach us something about how the future may unfold, but their advancing of the ontological claim that the past *as such* is open and multiple. In Christopher Prendergast's (2019, pp. 17–18) eloquent words, counterfactual narratives "do not supply answers other than provisionally; they play with possibility to show that, whatever the historical world is made of, it isn't reinforced concrete". Past-facing approaches to futuring, from this perspective, demonstrate that there are as many pasts (and presents) as there are futures. The question is not what qualifies them as more or less plausible or authentic (which is, to some extent the task of historians) but how they open up to different questions about how we see the world and what matters most to us (Zeitlyn, 2015). This insight is captured in how Clark, Booth, Rowlinson, Procter, and Delahaye, 2007, p. 83) describe counterfactual historical narratives as "modal" narratives: "analytically structured accounts which are driven by concerns about possibility, necessity, contingency, determinism, and so on". In a later paper they expand the description as follows: "In such [modal] narratives, causes, logics, plot-lines, outcomes, punch-lines, hingepoints and analytical schemata depend upon the interplay of agency-in-context within a modal world…. Any literary, historical and scientific narratives that engage with causation, in particular, are saturated with modality" (Booth, Rowlinson, Clark, Delahaye, & Procter, 2009, p. 88). The pluralizing capacity of past-facing approaches to futuring, we can conclude, is directly related to the degree to which they may intentionally address possibility, causality and necessity.

2.3. Enriching future-facing approaches

When futuring processes contemplate and illustrate the mutability of the past they carry forth a strong commitment to undermining historical determinism. But this also provides futurists with the means to expand the temporal frame and scope of their work. An early example of using the past to improve what may be otherwise perceived as a mainstream futuring exercise is described by Dennis List (2004), who establishes the need to account for multiple pasts by pointing to the problematic assumption "inherent in most scenario planning … that 'we' have a shared present, which arises from 'our' shared past" while, he continues, "the growth of globalization over the last few decades has meant that the assumptions of the shared present and the shared past may be no longer valid" (p. 24). List (2004) uses counterfactual historical narratives in combination with other techniques (future wheel, backcasting, middlecasting) when building a "scenario network" with participants in Indonesia. Despite the fact that his justification for pluralizing the past rests on a

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[5] The "future lies concealed in today's images of the future", wrote Polak (1973, p. 8).

psychological (or biographical) observation and not on an ontological argument, his conclusion is insightful: assumptions of a singular past will impoverish the futures generated in the exercise.[6]

Since no futuring activity takes place *tabula rasa*, interpretations of the past play a key role in forming assumptions about the future. Hindsight and foresight are tightly connected (Ingvar, 1985). But no interpretation is free from biases, and so hindsight, when integrated into futuring activities, poses interesting dilemmas (Nathan, 2004). In response, MacKay and McKiernan (2004) suggest that past-faced counterfactual thinking may help counteract some of the hidden biases implicit in scenario analysis – biases created, among other factors, by religious and ideological dispositions and cultural mythologies: "Being conscious of the use of 'if then' reasoning, reasoning by analogy, stereotypes, assumptions and presumptions, for instance, can be an effective way of improving the quality of hindsight, and by extension foresight" (MacKay & McKiernan, 2004, p. 175).[7] Whereas counterfactual narratives may help "refine strategic reasoning" by shaking our unjustifiable confidence in the accuracy and fidelity of our own past experiences as MacKay and McKiernan (2004) propose, when applied to model-based scenarios they work toward the exact opposite, that is, to increase the confidence of planners in the validity of their models (Dortmans & Eiffe, 2004). In this mode, counterfactual narratives provide an historical analogy against which the accuracy of the model can be evaluated.

Lastly, considering the past can be used to augment and improve other futuring techniques by simply adding new possibilities to the scenario development process. Atherton (2005) uses counterfactual narratives to add "polarised", unpredictable possibilities to future scenarios that explore policy for small businesses, as does Todorova (2015), but in the context of global geopolitical events. For Gordon and Todorova (2019), counterfactual narratives provide additional inputs into a Real Time Delphi exercise – "not so much to forecast what may come to pass, but to stimulate imaginations by framing an unlimited set of what if questions that can test and expand our assumptions about reality" (p. 161).

In these examples of enlisting the past into more mainstream futuring processes we can already sense the practical value of integrating multiple pasts into thinking about multiple futures. What these attempts are lacking, however, is a more structured way to make sense of the relations between future-facing and past-facing approaches to futuring, without which thinking about the past remains fragmented or anecdotal. In the remainder of this paper we suggest a framework that can accomplish this task. It is premised in what we see as a deep symmetry between past-facing and future-facing approaches to futuring.

3. Symmetries

As mentioned above, we would be hard pressed to suggest a single definition of futures studies. But while the field as a whole may elude a single, consensual definition, futuring, as a set of cognate activities, features a common characteristic. Regardless of the aim of the activity, the methods used, or the identity of participants, *all futuring activities are speculative and are therefore logically premised in "what if?" questions*. These may be answered with quantitative or qualitative data and help unfold more or less plausible outcomes, but they always include a speculative proposition about an unknown and perhaps a "radically unknowable future", in Kim Stanley Robinson's (2018, Mar. 20) words. In mainstream futuring activities such "what if?" questions aim to open up new ways for thinking about and acting on the future. As we argue below, the same can be said about past-facing approaches to futuring, with the difference being that the "what if?" questions are directed toward the past. This is, of course, a crucial difference but as we argue here, it does not preclude the inclusion of past-facing approaches into the larger family of foresight activities. While future-facing and past-facing approaches to futuring do not cover the same domain and, as we discuss below, have different consequences, they still exhibit similar characteristics. In fact, as we illustrate next, they perform two symmetries:[8] one between forecasting and recasting, and the other between backcasting and pastcasting.[9]

Importantly, we use forecasting, backcasting, recasting and pastcasting not to refer to specific methods but as archetypes of foresight approaches that relate the past or present with the future and that together comprise the landscape of futuring (see Fig. 5, below). In this sense, *forecasting* looks to the past and present in order to better understand the future, while *recasting* looks to the past in order to imagine how the present (and by extension the future) could have been different. *Backcasting* makes use of future possibilities to better understand paths from the present to a preferred future, while *pastcasting* takes a preferable present as its starting point to consider how past possibilities could have formed paths from the past to a preferable present (and by extension, to a different future).

3.1. First symmetry

3.1.1. Forecasting

As briefly mentioned above, we use the term forecasting in this paper as an archetype standing for all futuring techniques that seek a "systematic exploration of the possibilities that lie ahead" (Whiston, 1979, p. 1). With that said, we acknowledge the term's strong association with prediction (Poli, 2019b) and concomitant identification with a technocratic mindset (Schultz, 2016) and a drive for controlling the future (Andersson, 2018; Whiston, 1979). Such associations are not without merit, reflecting the history of forecasting

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[6] Carr (2001) reaches the same conclusion when considering the gap between the historian's perspective and that of an historical actor.

[7] However, research in psychology also shows that counterfactual thinking itself may evoke affective biases (see for instance, McMullen & Markman, 2002).

[8] We use 'symmetry' not in the geometric sense as a measure of exactitude, but as a general indicator of similitude or correspondence.

[9] We borrow the terms recasting and pastcasting from Deal et al. (2017) but use them in a more generic manner.

as a practice and its role in the rationalization and professionalization of futures research as a field (Andersson, 2018; Orrell, 2007; Son, 2015).

With the development of scientific modeling and computation in the wake of the Second World War, forecasting functioned as a "social technology" designed "to establish images, scenarios, and expert statements *of possible outcomes, and consequences*, so that these could be systematically compared and integrated at the point of decision, hence making the decision rational" (Andersson, 2018, p. 114; emphasis added). As an essential planning tool, forecasting seeks to pluralize the single trajectory of an assumed or predicted future into a set of alternative, more or less rigorously calculated plausible futures. This is why in Fig. 1[10] (below) the right-hand side of the cone (facing the future) is expanding.[11] Following its popularization in the period that followed the Second World War, forecasting's promise of scientific objectivity waned and was replaced by a growing recognition that forecasting (again, as a stand-in for all foresight methods) is susceptible to a wide range of ideological, organizational, methodological, and personal biases (Cole, 1979; Whiston, 1979).[12] Furthermore, there is growing recognition that forecasting performatively shapes both the present and the very futures it seeks to unfold (Mallard & Lakoff, 2011; van Lente, 2012). Nonetheless, forecasting has not lost its usefulness as a framework for asking thought-provoking questions about the future. This is evident in the way Whiston (1979) describes the diversity of forecasting methods, but also in the popularity of forecasting in the corporate world (Rohrbeck, Battistella, & Huizingh, 2015). As Wilkinson and Kupers (2013) observe about scenario development in Shell,

> a sustained scenario practice can make leaders comfortable with the ambiguity of an open future. It can counter hubris, expose assumptions that would otherwise remain implicit, contribute to shared and systemic sense-making, and foster quick adaptation in times of crisis. Scenarios can build social capital within and beyond the organization. They can aid in navigating complexity and conflict – managing disagreement while avoiding the extremes of groupthink and fragmentation.

We may conclude that the articulation of forecasting as an invitation to see the future as an expanding array of possibilities to be surveyed, understood and navigated, explains its value for helping to guide technology and policy innovation. Forecasting's ability to challenge prevalent ways of thinking about the future is premised in the kind of questions it raises, which, we suggest, follow the generic format, *What if this would happen? Then what would be the consequences?* Included in the "what if" conditional are all human and nonhuman phenomena (under and beyond human control), and in the "then" clause are included all possible, plausible or probable outcomes of human and nonhuman action under said conditions. As we discuss next, a very similar question is used in forecasting's past-facing equivalent, recasting.

3.1.2. Recasting

Recasting is a process in which non-factual past events are posited as historical bifurcation points that open up to alternative presents and, by extension, alternative futures. Whereas forecasting explores future possibilities mainly from the perspective of the present, recasting explores future possibilities from the perspective of the past – identifying "roads not taken" that could have transformed the present. In this sense, recasting manifests a double movement in time: "back to a point in time where a hypothetical 'if'-governed change is introduced to the fabric of reality, and then forward to the putative consequences of the switched or modified antecedent" (Prendergast, 2019, p. 12).

The term recasting is sometimes used to describe a process of validating simulation models by feeding them with past datasets (essentially forecasting from the past), and then comparing the result with what actually took place. We hint at such uses above when discussing the use of the past to enrich futuring activities (in the work of Dortmans and Eiffe (2004) for instance). It is in this mode that Deal, Pan, Timm, and Pallathucheril (2017) describe their use of recasting to support a planning process: "This type of analysis is useful for calibration purposes and understanding a previously unforeseen condition that emerges in the present state…. we can compare the actual and hypothesized effects of drivers of change that were included in the simulation. Were all relevant drivers included? Were any omitted?" (pp. 92; 93). Our own use of the term, however, is more general and retrieves a long history of counterfactual thinking in literature, history, and political science, where the notions of alternate history, counterfactual history or allohistory served to articulate the creative positing of non-factual events and the speculative tracing of their possible outcomes.[13] Instead of validating existing models, recasting in this use is meant to alert the imagination to the existence of alternatives, to spark "a stimulant of unadulterated curiosity and the desire to wander far and wide" as Prendergast (2019, p. 23) writes.

We can see this provocative element at play in perhaps the two most popular counterfactual history narratives: "what would have happened had the confederate South won the American Civil War?", and "what would have happened had the Nazis won the second world war?" (Booth et al., 2009; Gallagher, 2018). As whimsical as such narratives may seem, they can help challenge existing ways of thinking about historical contingency, foreground latent political undercurrents or amplify the voices of historically marginalized groups. What differentiates such counterfactual accounts from revisionist histories or conspiracy theories is that they do not challenge the historical record but provide an intentional speculation about historical possibilities. Insofar as counterfactual histories are "hinged

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[10] In this and the following diagrams (2-5) we follow conventions about the directionality of time as reflected, for instance, in the futures cone (Voros, 2019). With that said, and consistent with our argument here, we urge the reader to envision time as a much more complex phenomenon than can be encoded in a single diagram (Rovelli, 2018).

[11] For a detailed discussion of the history and the variations of the "futures cone" see Voros (2019).

[12] Cole (1979, p. 341) captures this in his matter-of-fact observation that "the intention of the forecasters is not always simply to produce forecasts".

[13] Notable examples include Ferguson (1997), Fogel (1964), Gallagher (2018), Gilbert and Lambert (2010), Prendergast (2019) and Tetlock and Belkin (1996).
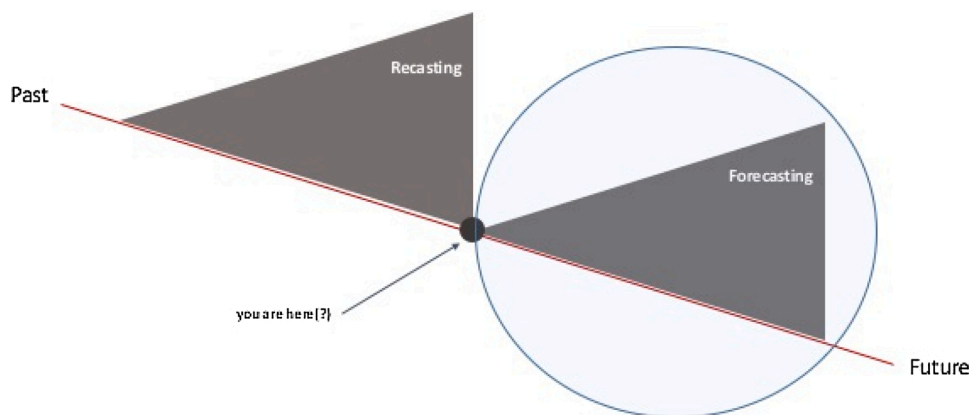
Fig. 1. First symmetry: forecasting (highlighted) and recasting.

onto the actual historical record, usually at a juncture that is widely recognized to have been both crucial and underdetermined" (Gallagher, 2018, p. 2), recasting is occupied with the conditions for alternative presents and futures to emerge.

As we briefly discuss above, some form of recasting has already been used by futurists to enrich existing future-facing exercises, but it has also served to model and reduce risk (Woo, Maynard, & Seria, 2017; Woo, 2019), and to explore the effects of peak oil as if it had already occurred in the 1970s (Pargman et al., 2017). Perhaps the application closest to what we have in mind here is Ann Light's experimentation with the Counterfactual Worlds Generator, where the creative potential of recasting as a participatory futuring activity is clearly on display. The exercise invites participants to explicate and describe alternative, preferred presents that have emerged from pre-given non-factual bifurcation points – each placed within miniature globes delivered by the Generator. Participants are then asked to explore, articulate, manifest and reflect on the alternative presents they created, while paying attention to "how values affect the design", "how this relates to our world(s)", and "what the process of imagining another world has revealed" (Light, 2019, p. 7). Although the goal of the exercise is to reveal the malleability of the world by exploring and fleshing out alternative presents, the outcomes may inspire and anchor considerations of the future (Hillgren, Light, & Strange, 2020).

Whether we consider literature, history, geology or planning exercises, all recasting activities follow the same logical structure: *What if this had happened? Then what could have been the consequences?* Just as forecasting seeks to pluralize the future, its symmetrical counterpart seeks to pluralize the past and, as consequence, the present and future. This is why the right-hand (future-facing) side of the cone in Fig. 2 (below) is expanding. Recasting, we can conclude, allows futuring activities to explore unrealized histories that (did not but) could have occurred as a way of evoking the imagination.

3.2. Second symmetry

3.2.1. Backcasting

While still very much future-facing, backcasting – "backwards-looking analysis" (Lovins, cited in Robinson, 1982, p. 337), "forecasting backwards" (Cornish, 2004, p. 100) or "deductive forecasting" (Dator, 2019, p. 52) – reverses the direction of time used in forecasting. Whereas in forecasting the goal is to identify a range of possible, plausible or probable futures, in backcasting the goal is to get a better grasp of possible developmental paths toward a desirable future – "Generating a desirable future and then looking backwards from that future to the present in order to strategize and to plan how it could be achieved" (Vergragt & Quist, 2011, p. 747). Where forecasting looks to pluralize the future, in backcasting it is paths towards the future that are pluralized. Because of this, where forecasting appears to be divergent, backcasting seems convergent, giving the cone representing it (see Fig. 3 below) its specific shape and orientation.

Because of its convergent nature – orienting toward a preferable future – backcasting is often characterized by its suitability for addressing normative issues (Quist, 2016). As John Robinson (1982, p. 337) writes,

> The major distinguishing characteristic of backcasting analyses is the concern, not with likely energy [or other] futures, but with how desirable futures can be attained. It is thus explicitly normative, involving 'working backwards' from a particular future end-point to the present to determine what policy measures would be required to reach that future.

To forecasting's emphasis on plausibility (otherwise it remains mere fantasy or fanciful speculation) backcasting adds a focus on desirability. Concerns over likelihood are redirected from the future toward "the degree of freedom of action" (Robinson, 1982, p. 338), understood as the interplay of structural conditions and agentic possibilities. The strength of backcasting, it follows, lies in its capacity to open up and pluralize decision-making on complex, multifaceted issues – "long-term complex issues, involving many aspects of society as well as technological innovations and change" (Dreborg, 1996, p. 814). Quite often, such issues pertain to sustainability policymaking (Quist, 2016), where the need to include the public in decision-making processes has long been recognized and advocated (Robinson, Burch, Talwar, O'Shea, & Walsh, 2011; Stirling, 2006).

Whereas backcasting may be exercised with more or less adherence to what Sheppard (2001) calls "scientific defensibility", it
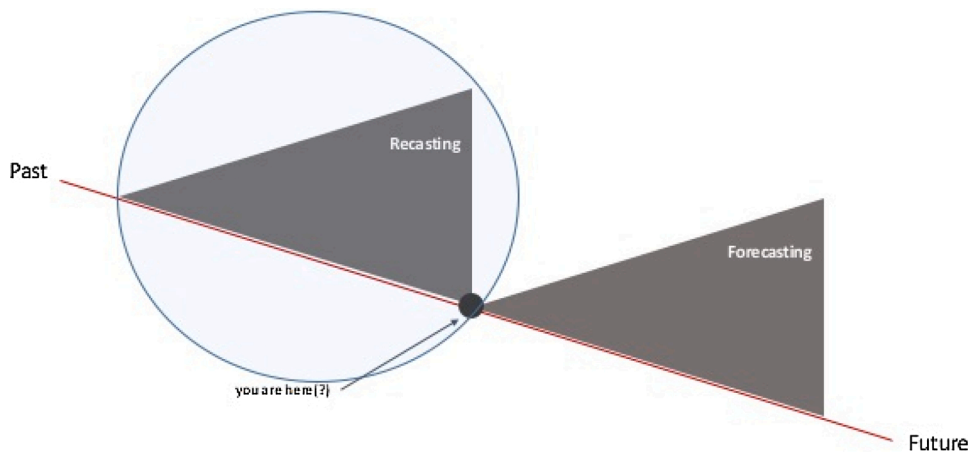
Fig. 2. First symmetry: forecasting and recasting (highlighted).
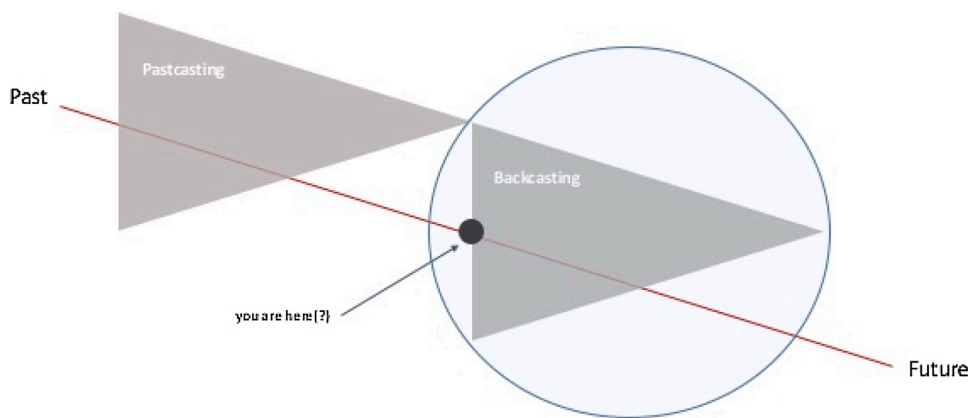
Fig. 3. Second symmetry: backcasting (highlighted) and pastcasting.

refuses to operate "under a spurious cloak of objectivity" (Robinson, 1982, p. 338). Backcasting, in other words, is political through and through. Its normative and comparative nature is precisely what makes it valuable as a means to reveal and problematize existing positions and assumptions about the present as a repository of possible actions. This is evident in the generic form of the kind of questions that frame backcasting: *What if we want these consequences? Then what needs to happen?*

The normativity of backcasting, clearly on display in the decisive presence of the linguistic operators "want" and "needs", discloses its participatory potential – a capacity that has been put to use since the 1990s (Quist, 2016, p. 126). By iteratively clarifying both the problem- and the solution-space while providing participants with a clearer view of their potential to act, backcasting can be seen as a useful approach for democratizing planning and policymaking processes. Dreborg (1996, p. 816) describes the empowering effects of backcasting as follows:

> In the long term, the potential for man to influence development in a desired direction is relatively large. However, our perceptions of what is possible or reasonable may be a major obstacle for real change. The scenarios of a backcasting project may broaden the scope of solutions being considered by describing new options. The convergent nature of backcasting, we may conclude, lends itself to a divergent sense of possibility, endowing participants with a heightened sense of agency.

3.2.2. Pastcasting

Pastcasting represents the speculative positing of possible pathways that may have yielded an alternative, preferred, non-factual present. Each such pathway represents a possible historical (non-factual) bifurcation point from which the present may have materialized differently. Whereas forecasting and recasting are divergent, that is, project a range of potential outcomes from a single event (or decision) in the present or past, pastcasting follows the convergent structure of its symmetrical cousin, backcasting, working backwards from a preferred alternative present to a range of possible bifurcation points and consequent pathways. This is why the cone representing pastcasting in Fig. 4 (below) is shaped in the same way as its future-facing equivalent.

In their introduction of the term, Deal et al. (2017) point out that much like recasting, pastcasting allows planners to evaluate the gaps between the desired and actual outcomes of spatial planning exercises. But while recasting provides planners with a way to

Fig. 4. Second symmetry: backcasting and pastcasting (highlighted).
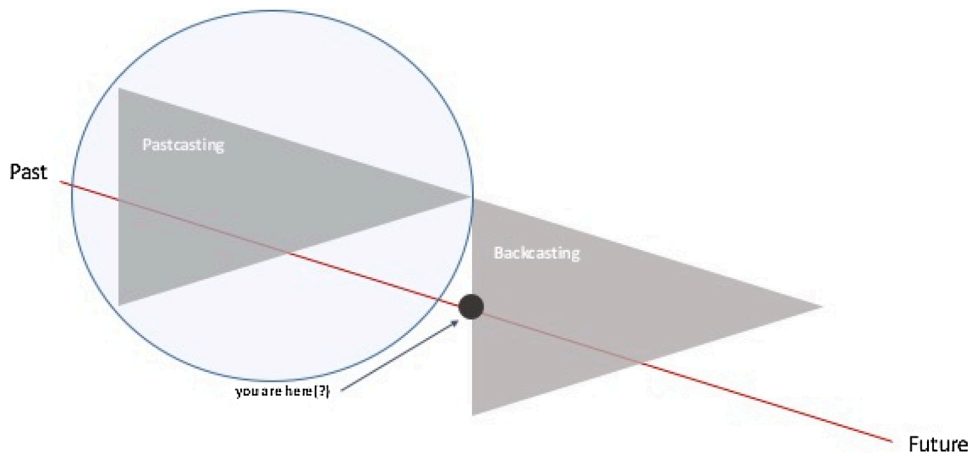
evaluate the quality of their models – comparing predicted with actual outcomes – pastcasting allows planners to evaluate the quality of implementation: "We move from what planners had envisioned for a current situation to past time points to find out where the developmental pattern deviated from the planned path" (Deal et al., 2017, p. 93). This may help planners "unravel the evolution of plans" by pointing to missing or erroneous assumptions about conditions and parameters, and "explain alternative paths that may have produced more effective results" (Deal et al., 2017, p. 93).

While Deal et al. (2017) indicate that they have applied pastcasting in the planning process they describe, they do not explain how that was done. And when they describe the results of their process they couple the application and outcomes of pastcasting with those of recasting. This is made evident in their conclusion:

> pastcasting *and* recasting can help planners and communities learn from past experiences and help avoid repeat mistakes. They can also help re-evaluate past goals in terms of performance outcomes in order to prioritize new potential strategies. Second, recasting *and* pastcasting reveal potential drivers that PSS [planning support system] models might fail to recognize for specific regions, enabling the construction of more nuanced localized models that will increase local model validity. (Deal et al., 2017, p.101; emphasis added).

Inversely, Light (2019), whose work was described above in the context of recasting, does not describe her work as an instance of pastcasting but her work seems to be compatible with it. One may imagine that those engaging with the Counterfactual Worlds Generator may be given a single preferable, alternative present and then asked which of the different histories described by the Generator may have best yielded that present, and why. And so while we may have yet to encounter a complete application of pastcasting (within or outside futures research), we are able to outline a schematic application of pastcasting as a means to first identify the conditions that could have enabled a preferred present to materialize, and then to identify the biases, dispositions, challenges and struggles that precluded that present from becoming a reality. When applied in this manner pastcasting relies on the following logical proposition: *What if we wanted these consequences? Then what should have had to happen (but didn't)?* There is, of course, no single answer to this speculative question and so pastcasting may reveal an infinite number of possible historical conditions and corresponding pathways from a non-factual past to an alternative, non-factual present. Nonetheless, each such proposition may help us discover the conditions that authorize or undermine the unfolding of pathways to the preferred future, and is this sense, pastcasting reveals itself as symmetrical to backcasting.

When the two symmetries are combined in a single diagram we can get a sense of the entire conceptual landscape of futuring approaches (see Fig. 5).[14]

3.3. Beyond the symmetries

To sharpen the differences between the four approaches and to provide a more concrete sense of how they may be applied in practice, we outline a key question that reflects each of the four archetypes in the context of electric vehicles (EVs). We chose EVs not only because of their potential for "disrupting" future mobility patterns and habits but because they demonstrate the contingency of sociotechnical innovation.[15] In this context, it is well recognized today that the dominant position of internal combustion engines in the automotive industry was neither coincidental nor inevitable, and that EVs could have gone mainstream multiple times in the past

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[14] The earliest, and to our knowledge only attempt to include both the past and the future in a single diagram is Taylor (1990). Taylor's diagram, however, looks to the past (what he calls "plausible pasts") as a way to identify the origin of trends that may continue into the future, and can therefore be seen as part of what we discuss above as the enriching function of the past in futures research.

[15] As has been persuasively demonstrated, for instance, by social constructivist accounts of science and technology (Bijker et al., 1987).
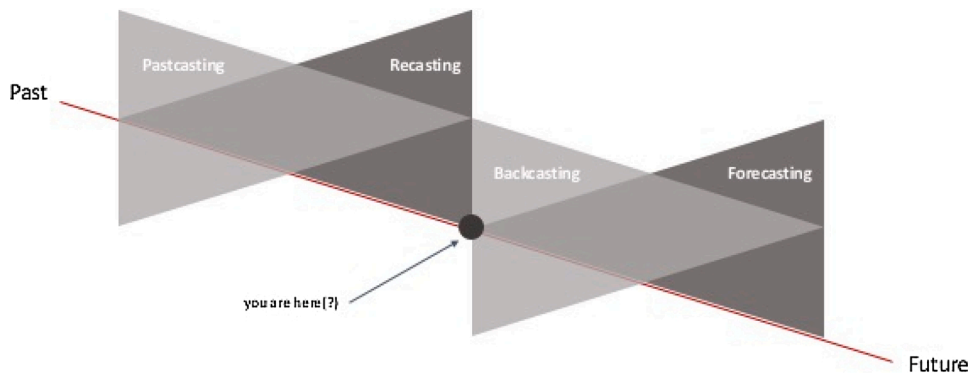
Fig. 5. A schematic representation of the conceptual landscape of futuring approaches.

(Black, 2006; Callon, 1987; Geels, 2005; Høyer, 2008; Ivory & Genus, 2010). As such, EVs provide an apt example of how recasting and pastcasting in particular could be useful for interrogating and learning from missed opportunities to catalyze more sustainable futures.

Forecasting EVs futures is reflected in the question, "*What if EVs become more abundant, then what would be the consequences?*" It invites futurists to consider how developments in EVs manufacturing and increased uptake may bring about societal changes, therefore allowing relevant actors to identify opportunities for growth and expansion, and perceive future risks, opportunities and unintended consequences – whether these pertain to relevant policies, infrastructure development, manufacturing capacity, manufacturing costs, or consumer behaviour.

Approaching EVs from the perspective of backcasting, on the other hand, emphasizes pathways towards a preferred future and thus proceeds by asking, "*What if we want EVs to be the dominant mode of transportation, then what needs to happen?*" Answers allow futurists to identify the multiple technical, financial, cultural, environmental and political barriers, incentives and levers that could impact the wider social penetration of EVs, while the process itself may surface the values, beliefs and interests of various expert and nonexpert stakeholders. The main thrust of backcasting EVs futures, it follows, is the opening up and democratizing of concrete future pathways.

Aided by recasting, the histories and futures of EVs can be better understood by exploring a range of alternative presents and subsequent future possibilities that could have materialized had the past unfolded differently. Asking "*What if EVs had become the dominant transportation mode, then what could have been the consequences?*" would allow futurists to imagine what an electrified society may have looked like (and perhaps still could) in terms of vehicle size, power and design, lifestyle preferences, city planning, mobility infrastructure, environmental effects and protections, and so forth. Questions may be even more specific: given their shorter driving range at the time, would the postwar urban sprawl still happen if electric vehicles had become the dominant transportation mode? Would the automotive industry consolidate as it did, or would it have been more open to new players? Would the world still perceive the use of fossil fuels as a necessary stage in the modernization of industry and life, or would the earlier opening of the futurological imagination to alternatives seed possibilities for a whole range of renewables? These questions cannot be answered with scientific accuracy, but raising them within the boundaries of what we know about the past could help expand the futurological imagination.

Lastly, pastcasting EVs futures would allow futurists to reveal and assess the kind of conditions, biases and assumptions that precluded EVs from already becoming the dominant transportation mode. Accordingly, the question that would guide pastcasting EVs futures is, "*What if we wanted a present where EVs were the norm, then what should have had to happen (but didn't)?*" Suggesting answers to this question could open up new ways to identify and understand which future pathways were available in the past and why they were not pursued. Pointing to past barriers, motivations, predispositions and reigning assumptions could provide futures researchers and practitioners with a clearer view of the complex array of actors that influenced, and perhaps still influence, the future of EVs. In this sense, asking why EVs did not gather more momentum in the 1920s, 1970s or at any other point in time, would raise additional questions about the kind of future images and cultural tropes that dominated the car industry, the influence certain industry and consumer lobby groups have had on the formulation of relevant decisions, and so forth. In comparison to backcasting, a pastcasting study would not democratize, but rather, with knowledge about the past and its materiality, reveal who was included and who was not included, what voices were dominant and who was not heard at all. Such lines of inquiry would be highly useful to futurists in pursuit of an electrified future.

Building on these examples we can compare the different lines of inquiry that emerge from the four futuring approaches and further illustrate the landscape of futuring as an interplay of two dimensions: the *focus* of the activity on outcomes or pathways, and the *stakes* involved in it (see Fig. 6 below).

In regards to focus, we see a similarity between forecasting and recasting, as well as between backcasting and pastcasting. The diverging nature of both forecasting and recasting underlies their usefulness for evoking the imagination – alerting futurists to the presence of alternative possibilities and, in the process, destabilizing any single assumption about the unfolding of the future. As such, they are both oriented toward possible *outcomes* as a framework for guiding action. On the same token, both backcasting and pastcasting appear convergent in nature and thus suitable for exploring multiple alternative *pathways* toward a preferable future or present. With a focus on pathways, they also pluralize, but rather than pluralize possibilities they pluralize (and possibly) amplify the voices of past and present stakeholders.

Outcomes

Fig. 6. The four approaches compared based on their focus (y-axis) and the stakes involved in their application (x-axis).

In terms of the stakes involved in the exercise, there are clear differences between past-facing and future-facing approaches. Although forecasting and recasting are focused on outcomes, the stakes involved in forecasting seem higher than those involved in recasting. This is not because the past may not be changed in any fundamental way while the future remains essentially open, but because our perception of the materiality of the past seems much less malleable, and so opportunities to reshape it seem scarcer. Pasts can be made just like futures, albeit not in the same manner. At the same time, the certainty we have regarding our knowledge of the past suggests that the form of agency offered by recasting is more playful and less risky – a kind of "sandbox" in which questions about causality and consequences may be critically raised but appear less threatening precisely because they already happened in the past (Eriksson & Pargman, 2018). This point is repeated by Hillgren et al. (2020), who explain that their approach (which we have identified above as a form of recasting) "has been found an effective way to discuss substantially different futures *without having to project forward in time*. Working toward and describing an alternative present by starting from a different fork in the past liberates the imagination while embedding the idea that the world is not inevitably as it seems" (p. 5; emphasis added). Recasting, it follows, may allow for a deeper appreciation of the stakes involved in pursuing one outcome over others even if it projects a lesser sense of material agency over the future.

Similarly, backcasting and pastcasting evoke a different sense of agency. Backcasting has proven to be valuable for engaging different stakeholders on policy alternatives implementable in the 'real world'. Pastcasting, on the other hand, in and of itself cannot chart future pathways as clearly as backcasting. What it can do, however, is help futurists discover the kind of policy (and other) measures that could have been used but were not, therefore surfacing the assumptions and biases that were prevalent at the time (and that may have persisted into the present). So, while backcasting may help futures researchers and practitioners get a better grasp of future levers for change, pastcasting may help them discover the conditions, assumptions, barriers and potentials that affected the (i) realization of past-futures, inspiring, informing and preparing future-facing actions.

4. Conclusion

The consolidation of futures studies as a field of research and practice featured vigorous debates on the field's aims, approaches and methods (Andersson, 2018) – debates which are both responsible for, and indicative of the field's vibrancy. The same can be said about the more recent debate on the differences between forecasting, foresight and anticipation (see for instance Poli (2019b)). But whether we see this debate as an indication of the field's maturity or an expression of disciplinary "boundary-work" (Gieryn, 1983), it is clearly missing a more sustained engagement with the role of the past in futuring. If the academic ascendance of anticipation signifies the field's movement away from its occupation with prediction and its newfound embrace of complexity in all of its myriad forms, the role of the past in our engagement with the future requires clarification and deepening. Edward Cornish's (2004, p. 234) assertion that "Futuring can be thought of as the art of converting knowledge of the past into knowledge of the future" seems especially apt here, insofar as our capacity to "make-use-of-the-future" (Miller & Sandford, 2019) relies inherently, even if mostly implicitly, on our capacity to "make-use-of-the-past".

This paper attempts to move futures studies in this direction. First we provided a brief account of how the past already figures in futures studies in three different modes: as part of efforts to understand the lingering effects of the past on the future; as part of a drive for ontological pluralization; and as a way to augment more mainstream futuring exercises. Next we introduced two past-facing approaches to futuring, recasting and pastcasting, and illustrated their symmetry with the more familiar future-facing approaches, forecasting and backcasting. The symmetry, we argued, is based on shared aims and a shared style of inquiry. All four approaches seek

to expand the futurological imagination and open it up to new possibilities for knowledge and action – drawing new connections between the 'thinkable' and the 'doable' (Prendergast, 2019, p. 15). While each of the four approaches does so in a different way – in foregrounding outcomes or pathways, in featuring a different sense of the stakes involved, and, naturally, in setting their sights on different temporalities – they rely on a similar style of inquiry, applying counterfactual thinking in and through congruent "what if?" questions. As we illustrated above, such questions may be formulated differently but maintain a similar structure.

With that said, not all futuring approaches are useful in the same manner. While each of the four approaches can be applied in several ways, they are each uniquely situated to help futurists pursue a particular type of inquiry. Forecasting seems especially valuable for guiding sociotechnical innovation, while recasting appears as a useful way to playfully evoke the imagination and destabilize guiding assumptions about historical inevitability. Backcasting provides a potent framework for opening up decision-making processes to a wide array of stakeholders, effectively democratizing policymaking, while pastcasting, though perhaps more elusive than the other three approaches, appears useful for unravelling past decision-making processes and revealing the kind of biases that undermined and failed past possibilities and hopes.

Differences between the four approaches do not mean that they are mutually exclusive. In fact, we suggest that past-facing and future-facing approaches to futuring could be brought together in beneficial ways. Prendergast (2019, p. 17) argues that counter-factuals "are *always* questions without answers", however, "The fact that a question lacks an answer isn't necessarily a reason for not asking it; asking it can be a way of exploring the limits of answerability" (Prendergast, 2019, p. 18). In this sense, the kind of questioning presented by past-facing approaches would help interrogate the limits of answerability presented by future-facing approaches: forecasting exercises would surely benefit from recasting's capacity to alert futurists of the possibility that their most fundamental assumptions may be tentative or incorrect, just as backcasting exercises would benefit from the wisdom implied in pastcasting's identification of failed past levers for change. We intend to address this and other questions about the congruence of past- and future-facing approaches in future work.

As an experimental, conceptual paper, this is only a first step in bringing the past into futures studies in a more structured and comprehensive way. We invite others to think along with us about how knowledge of the past could be brought into futuring activities to help us collectively create better futures.

Declaration of Competing Interest

The authors report no declarations of interest.

Acknowledgement

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