Feher and Morozov put forth two parallel possibilities: as far as a subject position is concerned, Feher stresses the necessity of active participation in the rating economy of platforms to instantiate the mode of activism commensurate with our financialized age. The systemic analogue to Feher's rating subject is drawn by Morozov in his discussion of platforms as "feedback infrastructures." Digitized rating, operational in platforms like Uber and Amazon, implements a paradigm shift in the previous contractual system, traditionally formalizing prices and the rights of the sellers and buyers. Reputational feedback-as a diversion or upgrade to traditional law—allows price-setting activity to take place outside the formalizing mechanisms of either governmental regulations or worker union petitions, making it a function of opinion-formation that happens through the platforms' algorithmic frameworks. In this sense, reputational feedback enables speculative participation and distributed risk management, countering heterodox proclivity of law-based social coordination and risk aversion. As Morozov states, platformization is not solely about the replacement of prices with information—the cybernetic dream of a streamlined economy conjured in mega-platforms today—but shifts the grounds of socio-political practice as it exchanges law for the atomized consumer-based solutions based on competition and reputation the logic of the market.<sup>69</sup> In short, for a socialist future on a par with the latest stage of capitalism, the ownership of "feedback data" cannot be the only ground for politics, but the "feedback infrastructures"—platforms as the marketplace of reputation and rating—are equally important sites for future political battles. For the left, this project may look like "the ownership and operation of the means of producing feedback data."70 This speculation-compatible future socialism would seek non-market applications of feedback infrastructures on the basis of solidarity instead of competition.

The cybertonians in southern Kiev would have never imand speculative platform for all.

agined the current technologies of computation. If anything, this daunting vision of the codified rating future, whether in its state-centralized modality or its privatized techno-positivist analog, signals the need to shift the terms of the Socialist Calculation debate toward a discussion of the reputation infrastructures. Sweeping all domains of social coordination and political traction, as Cambridge Analytica's complicity in the triumphant isolationist and neocolonial political campaigns around the world has magnified, digital reputation needs to be reassessed today with far greater attention. This is a conversation directed not merely at the sphere of technological innovation—as the prevailing sentiment has it—but also at the sphere of policy, empowering experimentation around solidarity-based frameworks that are extendible from the city unit to the nation-state, and ultimately planetary governance. Although our imagination may fall short of picturing it at this dystopian present, one pivotal infrastructural piece underlying our future commons is a scalable

## HOW TO BREAK FREE FROM THE **GHOSTS OF THE FUTURE?**

# **Cassandra Collective** (Laura Cugusi, Chiara Di Leone and Anastasiia Noga)

Time becomes human to the extent that it is articulated through a narrative mode, and narrative attains its full meaning when it becomes a condition of temporal

We are following therefore the destiny of a prefigured time that becomes a refigured time through the mediation of a configured time.

—Paul Ricoeur¹

toxicity can occur in the opposite direction: by preserving what is internal to its self-referential modes of thought.

-Patricia Reed<sup>2</sup>

"Worldbuilding" is the single most important task in writing; it is the infrastructure of the narrative and if done unconvincingly, it can make it all crumble. Every successful screenwriter's advice on "how to build a world" of speculative fiction will point out the canonical five elements: character, want and need, plot, structure and conflict, but most importantly, the imperative "never start with a blank page."

Worldbuilding is sometimes looked at with disdain in design theory circles as an activity appropriate for art or speculative fiction, but entirely divorced from the rough realities of hard science or, say, engineering. In Cassandra's vocabulary, however, worldbuilding is not limited by these interpretations and simply relates to all phenomena responsible for actualizing the future. Whether material or intangible, these processes bring the world into being. The real implications of the word "building" often fly over one's

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head, but as all matters of construction, it should be a reminder that worldbuilding is necessarily structural.

"Radical imagination" is an often-abused label in design practices, intuitively connoting bold, groundbreaking creative ideas that "challenge" the familiar. However, these premises barely hold when working with future scenarios in the field of institutional climate governance, where some of the variables that compose the methodological framework refer to hard facts of science, mixed with qualitatively different, historically specific descriptions of transient and volatile human experiences.

Worldbuilding and radical imagination are not binaries, only subtle fluctuations within the same process, sometimes engulfing one another, sometimes going their separate ways. Radical imagination may lead to a staged rupture in the trajectory of movement, but not necessarily to the world being built. It can also set someone free so that new structures can appear in the now empty space of the present.

In the past fifty years, scenario planning techniques have been proliferating:

either simulating different versions of the same dystopia

or painting a frictionless fantasy defined by the absence of its opposite.

Not only is the future haunted by the specter of ossified forecasting techniques, but the practices of futuring themselves are haunted by binary models.

### Scenario Planning: Defining the Problem Space

Scenario planning (SP) is a worldbuilding technique, a literary genre, and a strategic analysis tool. It consists of writing quasi-fictional episodes—scenarios—about the future, as if the writer and the reader were already living in that specific future. Today, scenario planning is the most popular long-term strategic analysis method across the world. Born as a military technique aiming to rationalize the anxieties and endless stalemates of the Cold Wars, it was an instant hit in the planning and forecasting fields. SP started a field in its own right: of futurology, growing

in popularity in the following decades, also and especially outside of the military.

In the 1970s, Pierre Whack, head of the French branch of Royal Dutch Shell and a former magazine editor with a bent for Eastern philosophy and mysticism, made SP rise to prominence after writing convincing scenarios about the future of the company. Some of them—especially their "energy crisis" scenarios—ended up being prophetic, resulting in steep advantages over Shell's competitors. They also served as positive advertisements for business intelligence and other applications of the old military forecasting techniques.

After Shell's successes, SP became pervasive in the corporate and bureaucratic world. It has been used without fail by governments, coastal guards, universities, charities, business schools, hospitals, management consulting firms, museums, cities, design schools, and climate panels in order to anticipate and manage unknown events—always located beyond the horizon of the known present. The field counts endless consultants, gurus, specialized science-fiction writers, service design firms and various fortune tellers, who distinguish themselves from tarot readers only because of their meagre intellectual honesty.

SP's language and constructs of time—through the development of worst-/best-case scenarios, pathways, variables, probability space, known unknowns—inform geopolitical shifts, including the management of energy sources, the financial crisis, tax reforms, and even artworks. It is no stretch to say that today SP is used in all organizations, one way or another. Despite its ubiquity, its specific conceits of time remain as widespread as they are unscrutinized and unquestioned. Scenario planning has become infrastructural, albeit not in a bricks-and-mortar sense, but in the sense of knowledge infrastructure as defined by Paul N. Edwards in his seminal book on climate sciences, *A Vast Machine* (2010).

In Edwards's words, knowledge infrastructures are "robust networks of people, artifacts, and institutions that generate, share, and maintain specific knowledge about the human and natural worlds." Similar to physical infrastructures, they may appear elusive for "they are composed of many interacting, yet largely independent groups and institutions, each with its own imperatives, values, resources, revenue streams and temporal orientations."

Like many things infrastructural, SP is invisible, ghostly, even. But how did it mature to the point of seamlessly pervading the fabric of knowledge infrastructures of the Future? How did we come to a point where all forms of institutional and organizational long-term thinking are caged into this paradigm?

It is hard and perhaps impossible to offer a clean, linear trajectory for the birth of SP. The canonical story names the RAND Corporation military strategist Herman Kahn as its father. Khan was a founder of the Hudson Institute and one of the preeminent futurists of the latter part of the twentieth century. He came to public notice with the publication of *On* 

- 1 Paul Ricoeur, *Time* and narrative. Volume 1 (Chicago: The University of Chicago Press, 1983), 3.
- 2 Patricia Reed, The Toxicity of Continuity," Pages, March 18, 2021, Version # 1, available at https://pagesmagazine. net/en/articles/thetoxicity-of-continuity (accessed August 31, 2021).
- 3 Paul N. Edwards, A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming (Cambridge, MA: MIT Press, 2010), 17.
- 4 Paul N. Edwards, "Knowledge infrastructures for the Anthropocene," *The* Anthropocene Review, Vol. 4, No. 1, 2017, 36.

Thermonuclear War (1960), in which he accomplished a goal for which he is remembered and was, at least partially, resented: holding up a mirror for the public to the American fears of a nuclear war by narrativizing its possible unfolding. Through his applications of statistical simulations—especially the Monte Carlo methods, borrowed from physics—he modeled various "scenarios" for nuclear military strikes and their, until then, unimaginable consequences.

But Kahn was better known for his performative and provocative communication style rather than his accurate calculations. According to his most important scholar, Sharon Gamiri-Tabrizi, model design was artisanal and subjective. The process of setting up an efficient Monte Carlo problem depended on the intuition of the human analyst and model operator rather than on their ability to evaluate the formulae given. Khan certainly tried to maintain the "sleight-of-hand" impression of the process instead of backing up the methodology behind it. He routinely hired Hollywood screenwriters to craft convincing scenarios based on mathematical models and simulations that, if we look at them now, appear closer to cinematic props than the result of rigorous scientific research.

In *The Future of the World* (2018), Jenny Andersson contextualizes SP within the wider history of Futurism and shifts the focus toward computational advances and mathematical calculations underpinning sci-fi writing, which received less attention than Kahn's theatrical Hollywood-style writing of scenarios and preaching, but which were arguably infinitely more structural and influential to the field.<sup>6</sup> The key futurist at RAND, Andersson argues, was not the flamboyant Kahn, but the much more discreet mathematician Olaf Helmer, who developed the so-called Delphi Oracle—a compilation of experts' predictions, according to which we should have alien farming by now.

In his "World Futures" (2016) paper, John R. Williams emphasizes the "Orientalist" influences at the root of the paradigm shift in futurology that happened in the 1950s and 1960s, namely the transition from predicting the future to outlining *all* possible futures. This new form of projecting forward—a mode he refers to as World Futures—posited the capitalizable, systematic immediacy of multiple, plausible worlds, all of which had to be understood as equally potential and nonexclusive. The influences that made this shift possible came from the East, Williams argues, or rather, the mental images of Eastern philosophies that Californian strategists, including Kahn, had in mind; a particular kind of futurity—of a plurality of worlds existing at the same time—in endless fractals and branching paths of possibilities.

All these accounts bring forth important aspects of the birth and rise and institutionalization of SP within the most powerful and influential organizations. Orientalism and Monte Carlo methods, technics and mysticism, simulations and science-fiction have all contributed to the maturing of SP to the infrastructural and invisible levels at which it is applied today. But understanding the history of this technique is only useful

5 Sharon Ghamari Tabrizi, The Worlds of Herman Kahn: The Intuitive Science of Thermonuclear War (Cambridge, MA: Harvard University Press, 2005), 128.

6 See Jenny Andersson, The Future of the World: Futurology, Futurists, and the Struggle for the Post-Cold War Imagination (Oxford: Oxford University Press, 2018).

7 See R. John Williams, "World Futures," *Critical Inquiry*, Vol. 42, No. 3, Spring 2016, 473–546. to us in order to explain how SP has infiltrated a very particular pocket of institutional thinking: the imagining, planning, (mis) management, and dead-ends of climate-change policymaking.

#### **Ossified Infrastructure and Scenario Planning**

Diagnostics of the future have become central to the way we talk about climate change. Almost all discourse is concerned with catastrophic consequences unless we act now, and implement some drastic policy measures that never seem to question the economics and premises of the systems they operate within. Instead, climate-change agreements and policies often seem to merely circumvent, if not continue to accommodate, the economic and social systems in place.

We feel a sense of hopelessness and stasis, inertia, and often real rage, yet we are unable to point the finger at where the bottlenecks to actual change really are. Some say they are located at the level of inept older generations—"those in power"—incompetent and "not wanting to listen to the scientists," as Greta Thunberg, rightly, points out in her emotionally charged speeches. Others point the finger at the difficulties of asking countries of the Global South to reduce their emission, just when they are starting to be able to provide a better quality of life to their citizens—international coordination is arguably always a zero-sum game.

The reasons for inaction and stasis when it comes to climate change are many. They are interconnected and incredibly complex, but a fundamental (and overlooked) root cause for the systemic inaction at governmental and supranational levels is the use of scenario planning techniques and their impact (or lack thereof) when it comes to preventing tragic, planetary events.

SP, as applied to climate-change policymaking, has generated a particular kind of self-perpetuating disaster through its reliance on a specific knowledge infrastructure, which depoliticizes language, incentivizes a politics of stasis, and reaffirms old and unhelpful economic models.

The Intergovernmental Panel for Climate Change (IPCC), for instance, produces reports about how socio-economic factors are likely to influence future emissions. In the panel's own words about its first report of this kind, "[i]n 1992 the IPCC released emission scenarios to be used for driving global circulation models to develop climate change scenarios. The so-called IS92 scenarios were pathbreaking. They were the first global scenarios to provide estimates for the full suite of greenhouse gases." In reality, these IS92 scenarios were a far cry from pathbreaking; they assume that socio-economic paths are based on "business as usual" analysis and do not consider the potential effects of different climate policies.

This sense of acceptance of the status quo and relinquishment of the potential for change is further testified by the reports' writing style. In IPCC reports, the language is appropriately corporate and diplomatically bland. Glaciers don't melt, they

8 See Nebojsa Nakicenovic and Rob Swart (eds.) *Emissions Scenarios* (Cambridge: Cambridge University Press, 2000). "continue their widespread retreat," as the example from 2000 states. They write their own questions and answer them too:
"This Report reinforces our understanding that the main driving forces of future greenhouse gas trajectories will continue to be demographic change, social and economic development, and the rate and direction of technological change." Among the hundreds of different scenarios and pathways produced by the IPCC over decades, no signs of fundamental changes in economic and finance models, extraction strategies, and taxation regimes are to be found—not in writing, and certainly not in practice.

The ways in which SP makes sense of the future, models it, sketches its possible unfolding is a very particular one: it fosters passivity, fear and stasis, while also creating a veneer of multiplicity—a false sense of choices, possibilities, agencies, and the familiar relief that comes with making grandiose-sounding plans that do not need to be implemented. Of all the paradoxes to emerge in the last few decades, none is as consequential—and, alas, as tragically overlooked—as the Paradox of the Future(s). Why is it that the more we accept the idea of futures, in the plural, the more resigned we are to the inevitability of a singular future—that of climate collapse?

#### **Beyond the Paradoxes**

The rigidity of outdated methods of scenario planning contrasts with emerging attempts at speculation in design and architecture, which have been appropriating artistic license to push the boundaries of the possible in creative and conceptual practices. Speculative design leverages the luxury of being afforded exceptional freedom to outline a vision that starts with an evocative abstract sketch and eventually manifests in three-dimensional form in physical, or increasingly in virtual space. In other words, this radical imagination that promises total freedom without consequences as traditionally afforded to architects and designers clashes with the rigidity of the material conditions as the logical limits of the possible. As a result, most recently, practice is becoming almost exclusively speculative without even aspiring at infrastructural solidity and functionality—see the proliferation of SP workshops.

In a variety of discursive practices in architecture, design, politics, and visual culture, the borders of the possible are interpreted through distinct subjectivities and modalities of perception aligned to cultural specificities. They are articulated through narratives encompassing these disciplines and their own particular knowledge infrastructures, framing their scope of action. They are haunted by bottomless archives of models, simulations, databases, reports, projections, and exponentially accumulating data. These, in turn, generate the demand for larger and hungrier data servers collecting invaluable information, the vast majority of which is destined to decay or remain perpetually unread. Contemporary monsters are to be found in the uncertainties hiding among this abundance of data—like

those needed to produce IPCC reports—rather than beyond the borders of the existing map.

Knowledge infrastructures that emerge when the rigorous study of a phenomenon combines data with imagination still hold a degree of potential for the field of institutionalized climate futurology—the potential that doesn't seem to be explored yet, judging by the pervasiveness and rigidity of SP. Simulation and data visualization as aesthetic practices can offer unexpected insights in the framing of the problem space, like the experimental scientific research in VR that shows significant progress in the analysis of biological processes and diseases. Rather than replicate natural phenomena or aspire at reaching verisimilitude, augmented vision techniques provide additional angles and vantage points for the observation of a problem.

That said, aesthetic practices are often culturally positioned as if they are uniquely suited for dealing with imagination and experimental methodologies only. This assumption often implicitly goes hand in hand with a distrust in science as the domain of rigid, inherited modes of thinking and enquiry. In these assumptions, science cannot be associated with profound epistemological reconsiderations and is only useful as source material for artists and designers to take as ground zero and radically reimagine. The productive kind of speculation is relegated to the field of artistic production. Even if science is not explicitly attacked as a form of unproductive speculation, its omission from these discussions is still unhelpful. That is not to mention the cases in which scientific inquiry becomes tainted by its value for corporate R&D departments, the culture of Silicon Valley innovation and, therefore, capital. Needless to say, science has always been as fit for radical imagination and re-imagination, as well as philosophical paradigm shifts, as the art and design world. When this is written down it is painfully obvious, and yet in the popular imagination artistic practices are heroically responsible for imagining radical possibilities of the future, while science can barely keep up with making sense of the present.

It was the field of quantum physics that opened up an epistemological question, complicating the notion of the binary—like the (false) one of art and science. In quantum physics experiments, the spectrum of high and low energy is equally important, but it is not possible to collect more data for low energy, so the relevant information needs to be gathered in another way. There is no evidence of the existence of dark matter, but there is a ghostly presence, a trace for which we haven't found a way of defining yet, and which could dismantle the tools with which we see the world, the future, and how we plan for it. Success in this field of research means finding a new flaw in our ways of understanding. As Carlo Royelli illustrates "Science is not clean, especially on the boundary between what we know and we don't know [...] the idea of certainty is one of the most devastating and useless ideas ever produced in the history of culture." Similarly, as Tamara Vázquez Schröder, physics

10 Theia, a virtual reality cancer lab. is an example of the application of VR that made such discoveries possible. These tools were developed in the field of artistic expression, such as the gaming and entertainment industries, yet they are increasingly applied in industrial design, medicine, healthcare, and education. See https://www.biorxiv.org/ content/10.1101/2021. 06.28.448342v1 (accessed September 2, 2021).

researcher working on the ATLAS experiment for the LHC (Large Hadron Collider), points out, it is more the experiment rather than the theory that guides us through the next step in terms of the exploration of physics. She underlines that

The history of physics, in particular particle physics, proves that it has always been necessary to take a fresh look, to climb a tree and scan the horizon, to live in the treetops like Italo Calvino's Baron in the Trees, in order to discover the fundamental structure of a reality that is much more universal that the one that surrounds us here and now.<sup>12</sup>

The standard scientific model itself is entering a crisis, as discoveries in quantum physics and mathematics are highlighting that the model based on observation and evidence is limited by default. Blind spots in maps and data sets require maximum creativity and intuition—unlike the hygienic separation of these two areas seems to suggest. In absence of instructions on where to look, technology can assist in translating concepts and meaning that are beyond or between the senses. Art practices reveal modes of looking beyond and between and which can be systematized and applied as rigorous research methodologies.

It is almost as if the Paradox of the Future(s), as it has become manifest in the field of institutional climate strategy, stems exactly from the fact that SP has over time managed to embrace the worst of both worlds. In order to justify its own legitimacy, it has often served arbitrary and randomized choices under the veneer of scientific methodology. Because the results of SP are produced in a seemingly structured manner—like scenarios that are based on methodically combining a limited set of variables chosen to perpetuate the status quo in the first place—it is rational enough to be fit for strategy development and policymaking.

On the other hand, SP's embrace of subjective creativity—albeit only in its limited interpretation— allowed it to fit very well into the established mode of neoliberal knowledge production. Scenario planning as a narrative technique doesn't always revolve around first-person narration—in fact, as a rule it doesn't, it relies on the much more "neutral" eagle-eye perspective of the third person singular. But it is impossible to think of its history without the centering of a protagonist and a subjectivity inherently tied to personhood, since this has been key to SP's institutionalization.

As the short article "A Primer on Futures Studies, Foresight and the Use of Scenarios" states,

Scenarios are a valuable part of foresight work ... and need to be seen within the context of an on-going, long-term, 'closed-loop' organisational foresight process. With this understanding of their place in foresight work, they are a useful tool for generating *shared for-*

ward views, helping to align strategic action across an organisation on its journey into the future.'3

What this suggests is that sometimes scenarios are turned into narratives, often without specific individuals in mind—such as the members or employees of an organization that is using SP to develop a strategy—but with an institution as a presumed individual. The institution assumes the characteristics of personhood—a collating of heroes within one hero's journey.

In other SP workshops, participants are explicitly asked to use their first-person perspective when imagining all possible futures. If the goal is to test the validity of a concept, for example a new technology, participants are asked to speculate how their individual life would be changed if that technology were widespread. At other times, creativity extends to the realm of actual aesthetics, for example by questions such as "tell us what you see and feel in that imagined future: textures, sounds, images, things, etc." Scenarios are then abstracted from these exercises to map a strategic pathway for an institution—which are mostly infrastructural, dispersed entities. For these entities, a path forward would practically mean a sequence of decision-making protocols and resulting decisions made by a very small group of executives. What scenarios contribute to the process, is the anthropomorphization of these entities within the narrative as elements that have autonomous agency to walk those routes, when, in fact, this is never the case.

The culmination of this logic lies in the fact that the subjectivization of these infrastructural entities is allegedly undertaken in order to explore radically different possibilities of their future. However, in SP, radical speculation rarely overcomes the logic of individualized creativity, subjective expression, and individual choice. The seemingly "structural" and "systemic" approach in method and worldbuilding exercises gives credibility to the idea of radical imagination—which cannot overcome the limits of privileged personhood.

The combination of the worst of two worlds is what allows SP to be institutionalized into a formal practice. Its roots in systems thinking turn it into a suitable technology for "rationalized" governance and bureaucracy, while narrativized imagination is what allows it to be non-committal. Presenting corporations—like strategy scenario planning workshops do—or societies—like the IPCC reports do—as unified entities with agency absolves the decision-makers responsible for bringing the world into being from that very responsibility.

These flickering versions of unrealized futures haunt our present in the company of two other great spectral presences: the ghostly knowledge infrastructure that produced them, itself, and the shadowy agencies that shape the world as they see fit but are hard to pinpoint. As a result, scenario planning has evolved into a machine aptly fit to produce ghosts, and ghosts only—the possible versions of the future that will remain imagined and never constructed.

10 Theia, a virtual reality cancer lab. is an example of the application of VR that made such discoveries possible. These tools were developed in the field of artistic expression, such as the gaming and entertainment industries, yet they are increasingly applied in industrial design, medicine, healthcare, and education. See https://www.biorxiv.org/ content/10.1101/2021.06. 28.448342v1 (accessed September 2, 2021).

11 Carlo Rovelli, interview in Tank Magazine, issue 86, February 11, 2021, available at https:// tankmagazine.com/ issue-86/talk/carlorovelli (accessed September 2, 2021).

12 Tamara Vázquez Schröder, "The Elementary Bestiary," CCCBLAB, May 15, 2013, available at https:// lab.cccb.org/en/theelementary-bestiary/ (accessed September 2, 2021).

#### Coda: COP26, Glasgow, Scotland, UK, November 2021

We walk along a recently built corridor. We are in Glasgow, but we could be anywhere.

The hashtags #climateactionnow printed on a polyester wall, the non-place of the conference/art fair makeshift architecture with Old World ventriloquists stomping over it: the jungle-core sans-serif logo with the usual images of polar bears and melting glaciers. Lady Gaga gives a speech this year, last time it was Enrique Iglesias's turn.

The first workshop is inspired by The Future board game, a wargame designed to teach US defense professionals how different strategies could affect key planning factors at the intersection of force development, force management, force posture, and force employment. Everyone is in a good mood. We win. We take pictures for the press. It does not matter.

After the session, we move to the main conference hall for the plenary session, a swarm of prime ministers coming to congratulate us on our game victory, like a shoal of small, aged fish. We shake hands, Greta is there too.

I don't want to be here, none of us does. The sadness of seeing how things really are at the top, how brittle and superficial "those in power," is a weight that's too much to bear. I would prefer to believe the worst of conspiracy theories in which the master puppeteers who rule the world do that out of principle, even an evil and destructive one—here is all a vanity, a choreography, a vacuous performance.

Scenes oscillate between the makeshift and the ossified: the prefabricated architecture of international climate summits, where testimonials of electoral consensus unironically pontificate about resilience and sustainability.

Everyone eats their vegetarian sham lunch, the air is soporific. I take out my notebook and write:

In IPCC meetings the starkest contrast between different temporalities is staged: the modes of futurity of the non-place corporate aesthetics of repeatable and formulaic interiors, populated by the archaic ideologies of national sovereignty. In this setting, ghosts of both past and future show up to the party. The ones from the past wear suits and champion flags, shake hands and mentally rehearse their speeches. The ones from the future hide more gracefully in the big, pompous plans—and there are many more of them.