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88 # The problem is growth

89 ## environmental harms of tech revisited

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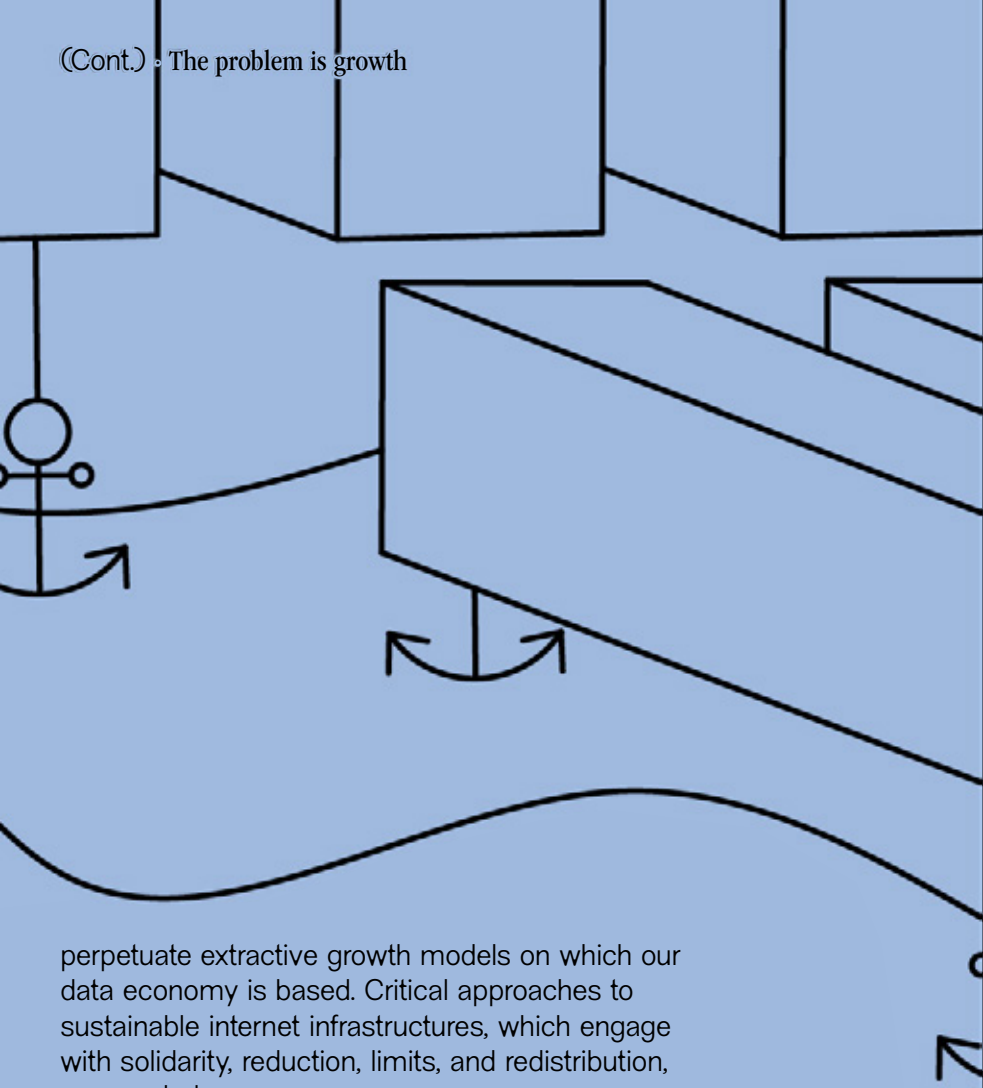
91 Keywords: data centres, economics, environmentalism, grassroots organising

92 Pollution in lithium mines in the Andes region and e-waste dumps in Ghana feel like worlds apart from the sterile data centres that store our data. Yet, the latter can't operate without the former. The internet's policy, engineering and governance communities are slowly coming to grips with the environmental harms of technology, but the sustainability solutions that circulate in response are often narrow in scope. In the fight against climate change and environmental degradation, we need to deepen, rather than flatten, the imaginary of what the problems and solutions are.

Indeed, the current notion of developing 'sustainable infrastructures' neglects the uncomfortable reality that economic growth, rather than inefficiency, might be the problem. As such, narratives and actions that seek to optimise single issues, like energy consumption in data centres, offer misleading solutions as these



perpetuate extractive growth models on which our data economy is based. Critical approaches to sustainable internet infrastructures, which engage with solidarity, reduction, limits, and redistribution, are needed.

THE ENVIRONMENTAL IMPACT OF THE INTERNET

Internet infrastructures contribute to carbon emissions and the extraction of natural resources. Despite the 'cyberspace' framing, these technologies are deeply implicated in conflicts over land, water, and energy consumption. Critically

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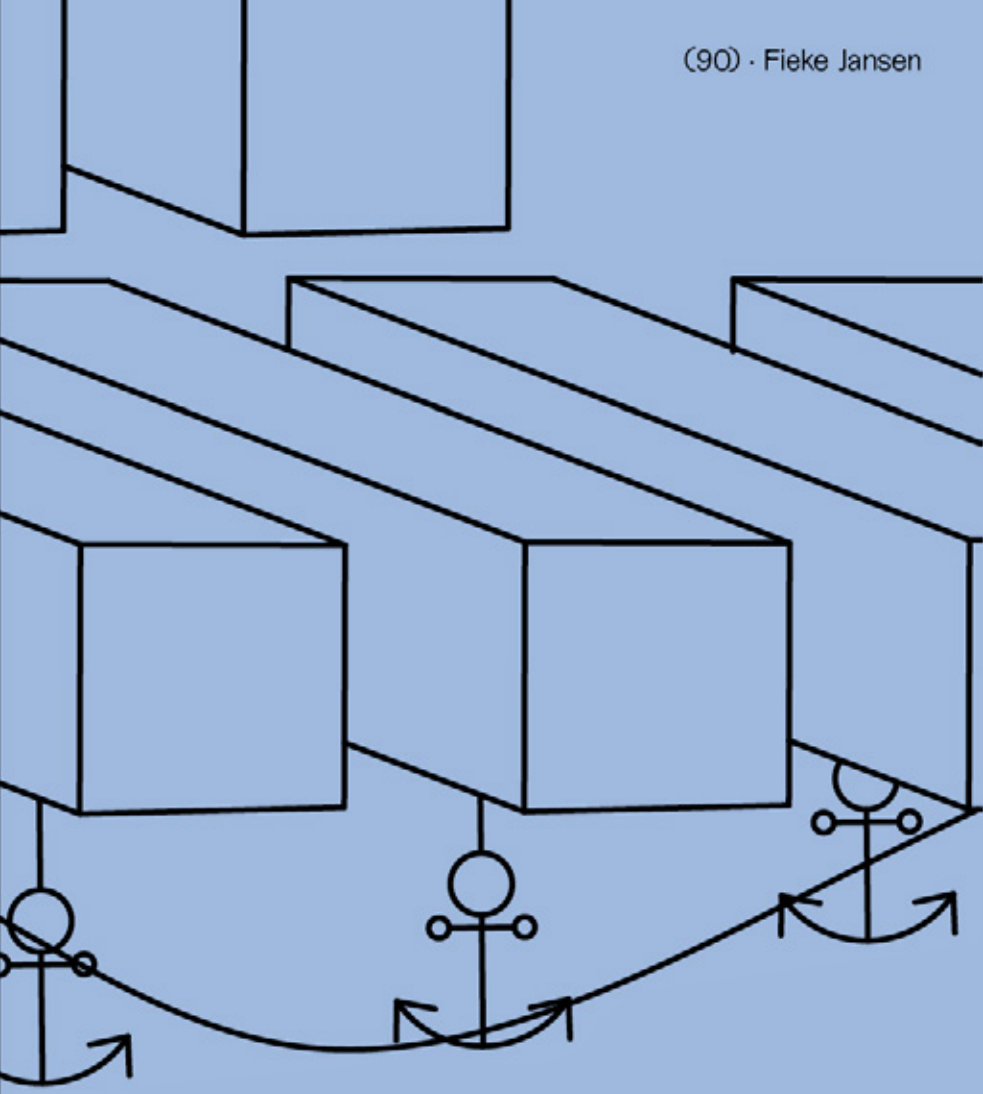

attending to infrastructure allows us to see which politics are embedded, or excluded, from responses to the internet's environmental harms. Some scholars have quantified the environmental impact of the extraction and production of raw materials, such as silicon and lithium, that are needed to manufacture end-user devices or expand internet infrastructure . Others have calculated the energy consumption, carbon

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emissions, and water usage of digital tasks such as internet searches, training Artificial Intelligence (AI) models, and the operation of data centres . This research points to the many ways in which internet infrastructures are entangled with questions around extraction and pollution.

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These developments need to be placed against a backdrop of infinite growth, scalability, resource, and data extraction of internet infrastructures. A central ideology of the internet industry is that when networks grow, the cost for each new node increases linearly but the value of the network increases exponentially . Thus, the value of infrastructures, and the services that run on top of it, are intrinsically connected to the market shares of Big Tech companies and the volume of users, nodes, and data they contribute. The operation, maintenance, and expansion of the internet infrastructures needed to accommodate this growth will involve further environmental harm.

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POLICY AND INDUSTRY RESPONSES

Responses to the undeniable relationship between internet infrastructures and the climate crisis fall into two categories. In the first response, the tech industry tries to minimise the environmental impact of internet infrastructures by increasing the efficiency of data centres, transitioning to renewable energy sources to reduce dependency on the fossil fuel industry, and offsetting carbon emissions. The second response presents computation as the solution to pressing social problems, including the climate crisis and environmental degradation. Internet infrastructures are presented as a critical component in planning for and responding to

97 climate change by making other industries, such as transportation and agriculture, more efficient. These twin responses are contentious for a number of reasons that have been explained by 98 others, but primarily, there is little evidence that one can decouple business growth from its inevitable environmental and climate impact.

More importantly, however, these responses offer insights into the political and economic interests that are shaping the future of our societies and planet. Climate change and environmental degradation are complex problems that are intrinsically tied to capitalism and the drive for perpetual economic growth. Narrow sustainability solutions, however, each with well-documented limitations, always allow individual 99 companies to ensure maximum value extraction while externalising harms. This is the myth of green capitalism: the widely held belief that the environmental problems caused by economic growth can be solved with more but different economic growth. To ensure that the world remains habitable for current and future generations, we need to be able to question the presumed compatibility between economic growth and the environment.

TOWARDS A MORE HOLISTIC APPROACH

Internet infrastructures have a demonstrated impact on the environment, as a growing body of research shows. Policy and industry responses 100 to these harms are primarily aimed at mitigation, however, and neglect to address the uncomfortable reality that economic growth itself might be the problem. Any critique raises the question of what

climate-supportive internet infrastructures could actually look like. There are no easy answers to this question. As a community of internet and sustainability practitioners, we are beginning to wrap our heads around the complexity of the problem and starting to articulate what sustainable and equitable infrastructures could look like. It is early days, but deeper approaches start with building alternative models, acting in solidarity with people and the planet, and exploring the values of reduction, limits, and redistribution.

There is an emerging community of grassroots organisers, environment and digital rights groups, academics, public interest technologists and others, who organise around the environmental implication of technology. This community challenges the dominant framing of 'green tech' and is discussing what internet infrastructures that centre sustainability over perpetual economic growth might look like. Initiatives range from Branch magazine , an online magazine written by and for people who dream of a sustainable and just internet for all. Low-tech magazine , which refuses to assume that every problem has a high-tech solution. And the solar protocol , a hosting proposition that routes internet traffic across a network of solar-powered servers. Websites are loaded from where the sun shines. The value of these initiatives lies in their ability to challenge the norm of green capitalism and create an alternative infrastructural imaginary.

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104 Notes:

93. For example, in 2021 Google emitted over 47 million tonnes of CO2 and used over 23,836 million litres of water. This means that the company exceeded the environmental impact of the entire country of Laos. See: Robinson, S., Hellstern, R. and Diaz, M. 2022. Sea Change: Prioritizing the Environment in Internet Architecture. IAB workshop on Environmental Impact of Internet Applications and Systems, 2022.
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