Global citizens and the media infrastructures of transnational education

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Infrastruktur

infra-, Latin, below, under, beneath (Perseus)

“infrastructure, /ˈɪnfrəstrʌktʃə/, *noun*. The basic physical and organizational structures and facilities (e.g. buildings, roads, power supplies) needed for the operation of a society or enterprise.” (OED)

“Infrastructure is the fundamental facilities and systems serving a country, city, or other area, including the services and facilities necessary for its economy to function” (Wikipedia)

“Infrastructure is a fundamentally relational concept” (Star 1999)

“Infrastructures are material forms that allow for the possibility of exchange over space. They are the physical networks through which goods, ideas, waste, power, people, and finance are trafficked.” (Larkin 2013)

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1 Points of departure

1) Research on transnational education

Locates the 'transnational' at level of: institutions, practices, content, norms and values. Transnational educational spaces are conflations of practices, systems of symbols and artefacts. Has largely neglected infrastructure (Adick 2002, 2018; Hornberg 2009, 2014; Pries 2008).

2) Critical studies of infrastructure

Infrastructure is "mundane to the point of boredom". Study these "singularly unexciting" things to "unearth the dramas inherent in systems design" (Star 1999: 377; Anand et al. 2012; Donovan 2018; Larkin 2013; Rossiter 2016).

In education, focus on infrastructures of accountability, data infrastructures, governing by numbers. Less attention to the infrastructures of everyday practice (Anagnastopoulos et al 2013; Landri 2018; Sellar 2014; Williamson 2016).

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Is the infrastructure of selected DAS transnational?

And if so, what are the implications (for, e.g., knowledge practices, modes of control, global citizens) when media infrastructure becomes increasingly transnational?

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Classroom practices, digital technologies

"Well, last semester, in the Sekundaria 1 (Grade 7), we spoke **about problems in the rain forest, the exploitation of the rainforest, environmental problems**. And then we focused on palm oil. And I showed the students a **couple of sites where you can see satellite images**, to get a big spatial overview. Or I showed them an **anti-palm-oil-app**, where you can download that. […] And [later] the students had to **calculate their own ecological footprint. But they did that on individual iPads.**""

(Teacher interview 8-2016)

Bild: INPE

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Sets of “invisible” infrastructure

1 // iOS code and development tools

2 // Google data centres

3 // Fibre optic cables

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1 // iOS code and development tools

Hardware

- Global
- “Supplier Responsibility Report”
- Violations

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1 // iOS code and development tools

Software

- “Sustainable Palm Oil Shopping” (Cheyenne Mountain Zoo)
- iOS software development kit (SDK)
- Xcode 10 integrated development environment (IDE)
- “Human Interface Guidelines”

1 // iOS code and development tools

Selected Xcode 10 descriptions:

- Aethetics: “Code you write in Xcode **looks stunning** as the dark Xcode interface makes your work the star of the show.”
- Speed: “Xcode includes a **lightning-fast** source code editor.”
- Collaboration: “It's never been easier for **your team to work together** in the cloud or on self-hosted servers within your organization.”
- Fun: “Swift was built to be **fun** to use.”

Libertarian politics of a “Californian ideology”? (Barbrook & Cameron 1995)

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1 // iOS code and development tools

“Human Interface Guidelines”:

- “A consistent app implements **familiar** standards and paradigms by using system-provided interface elements, **well-known icons**, **standard** text styles, and **uniform** terminology. The app incorporates features and behaviors **in ways people expect**.”
- “People learn more quickly when an app’s virtual objects and actions are **metaphors for familiar experiences**.”
- “Throughout iOS, people—not apps—are in control. […] An app can make people **feel like they’re in control** by keeping interactive elements **familiar and predictable**”.

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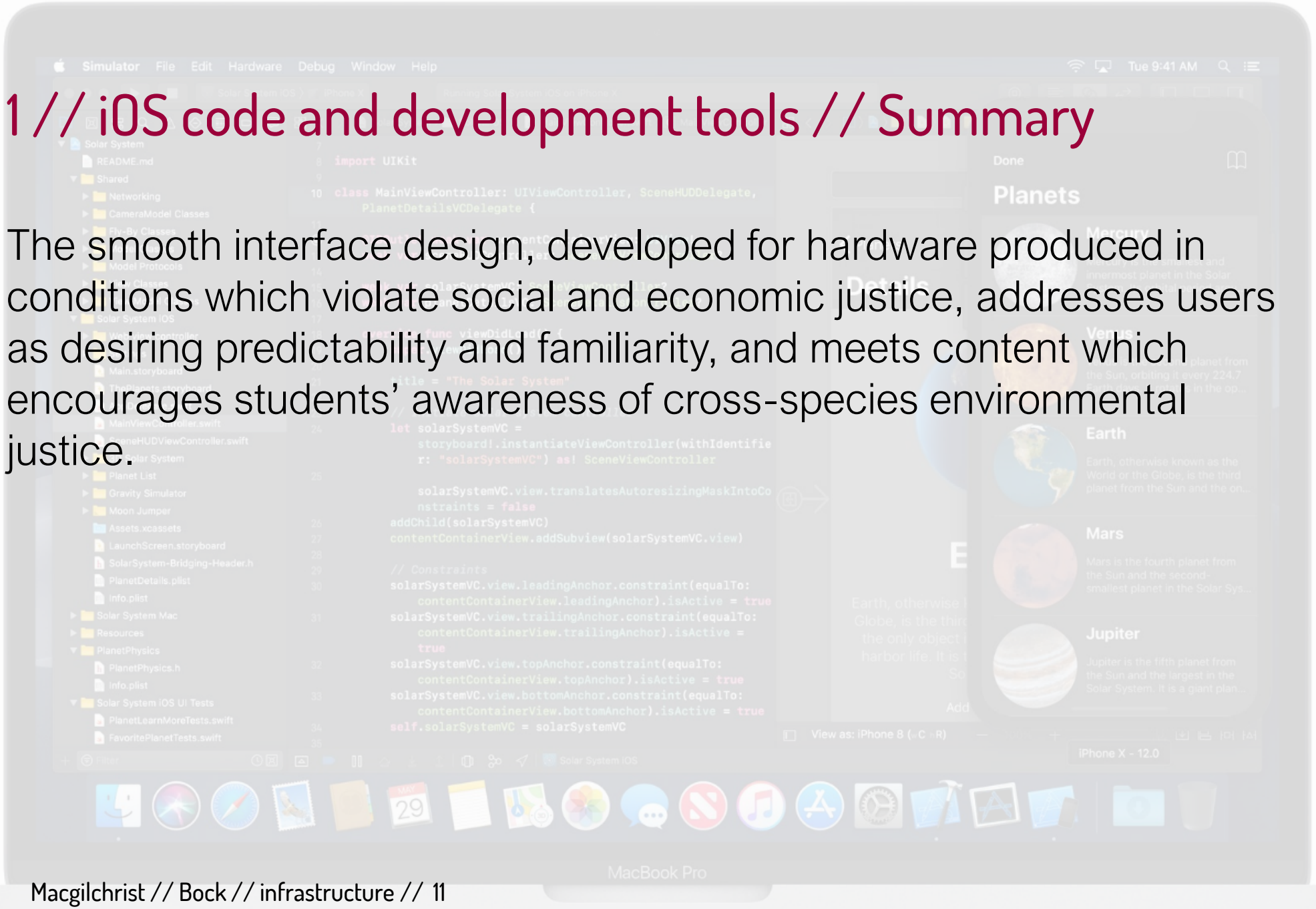
1 // iOS code and development tools // Summary

The smooth interface design, developed for hardware produced in conditions which violate social and economic justice, addresses users as desiring predictability and familiarity, and meets content which encourages students' awareness of cross-species environmental justice.



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2 // Google data centres

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Americas

Berkeley County, South Carolina
Council Bluffs, Iowa
Douglas County, Georgia
Jackson County, Alabama
Lenoir, North Carolina
Mayes County, Oklahoma
Montgomery County, Tennessee
Quilicura, Chile
The Dalles, Oregon

Asia

Changhua County, Taiwan
Singapore

Europe

Dublin, Ireland
Eemshaven, Netherlands
Hamina, Finland
St Ghislain, Belgium

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2 // Google data centres

Standardisation:

- Energy: ISO 50001 Energy Management System certification
- IT: Data centres should be “simple”, “agile”, “adaptive” and “dynamic” (IBM 2014)
- IT: Avoid “complex”, “fragmented” and “inflexible” processes

But also:

- Culture of sharing: complex, diverse, stable

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2 // Google data centres // Summary

The school's infrastructure for storing data is no longer local: Shelves are replaced by transnational data flows.

As technical standards are smoothed, standardised, codified and made familiar, predictable, environmentally friendly and transnational, pedagogies are expected to constantly change, adapt, innovate.

By using Google's infrastructure, the school is becoming increasingly dependent on one commercial entity and simultaneously enabling more open pedagogical practices.

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3 // Fibre optic cables

Prize money invested in laying fibre optics cables on school grounds to ensure stable, fast internet connection.

In La Paz, 7 of 87 municipalities have fibre optic connection.

In Bolivia, 88 of 339 municipalities have fibre optic connection.

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3 // Fibre optic cables // Summary

The infrastructure folds knowledge work in the school into a general marketization of education by (1) investing the prize money in fibre optic cables, to use commercial products; (2) giving economically privileged students – or students/families aspiring to be transnational, international, global – access to the fibre optic cables which are thought to open the door to a 'modern' pedagogy and to economic success; and (3) marketing itself as excellent and competitive in order to win the prize.

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Concluding thoughts

1. The transnationalism of German Schools Abroad rests not only on institutional structures, practices, artefacts and symbol systems, but also on infrastructure, the 'hidden enabler'.
2. The politics and economics of media infrastructures are also shaping transnational dynamics in schools which are not explicitly marked as transnational.

Attending to which/whose infrastructure is being used, and the implications of this infrastructure (standardisation, predictability, culture of sharing, dependency, marketisation, etc.), points to key modes of control in education.

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