



# Scientific Mobilities & Immobility's: Prospects for Making Political Subjects

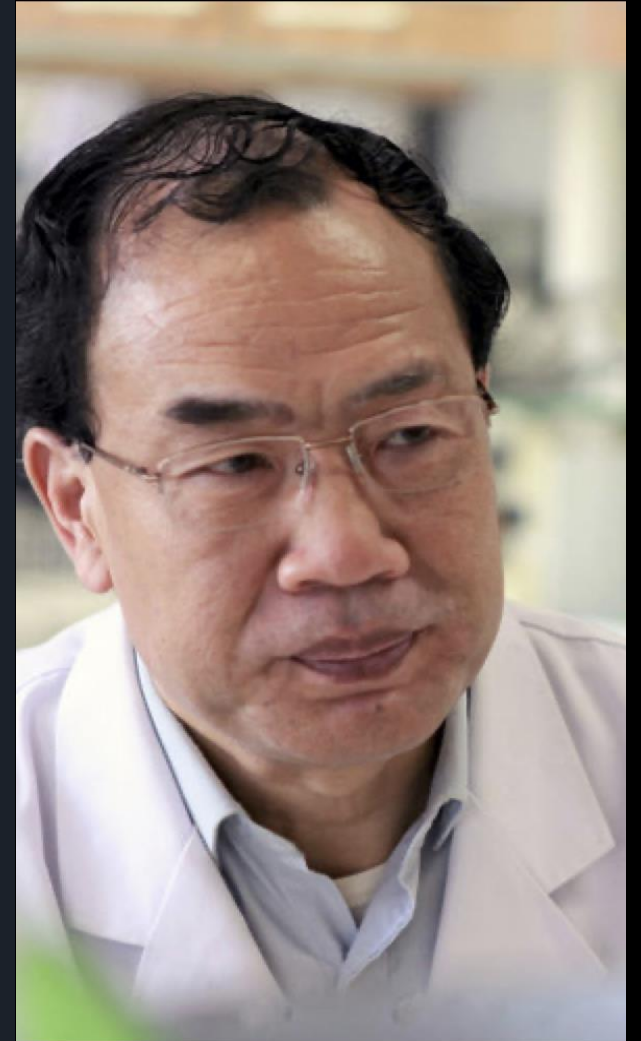
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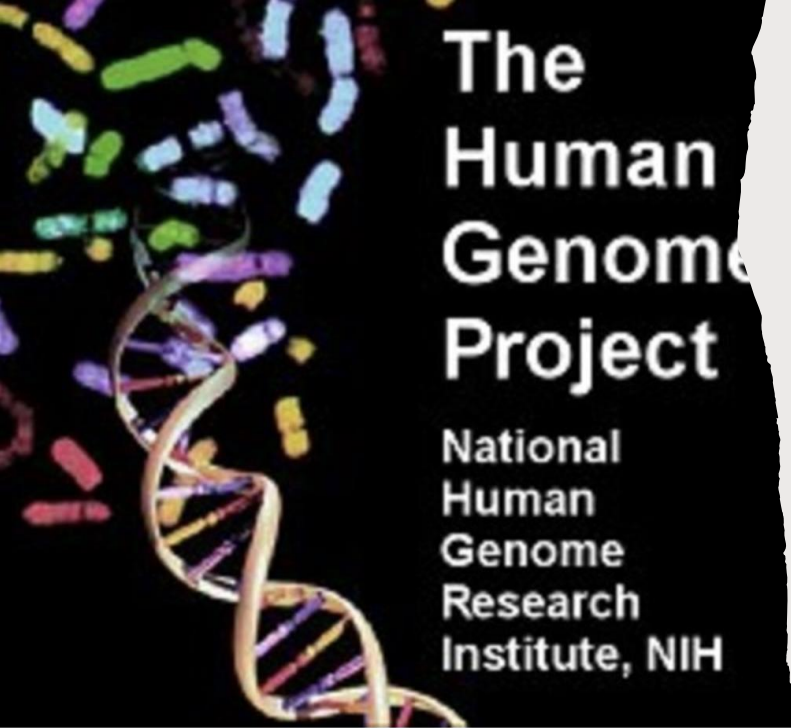
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## Introduction

- Global science: open and participatory relations to support collaboration
- Scientific advancements for global humanity.
- Science diplomacy & Covid 19 vaccine
- Sequencing of the SARS Cov-2 genome
  - “A story of collaboration & deep scientific relationships”
  - Zhang Yongzhen & Ed Holmes



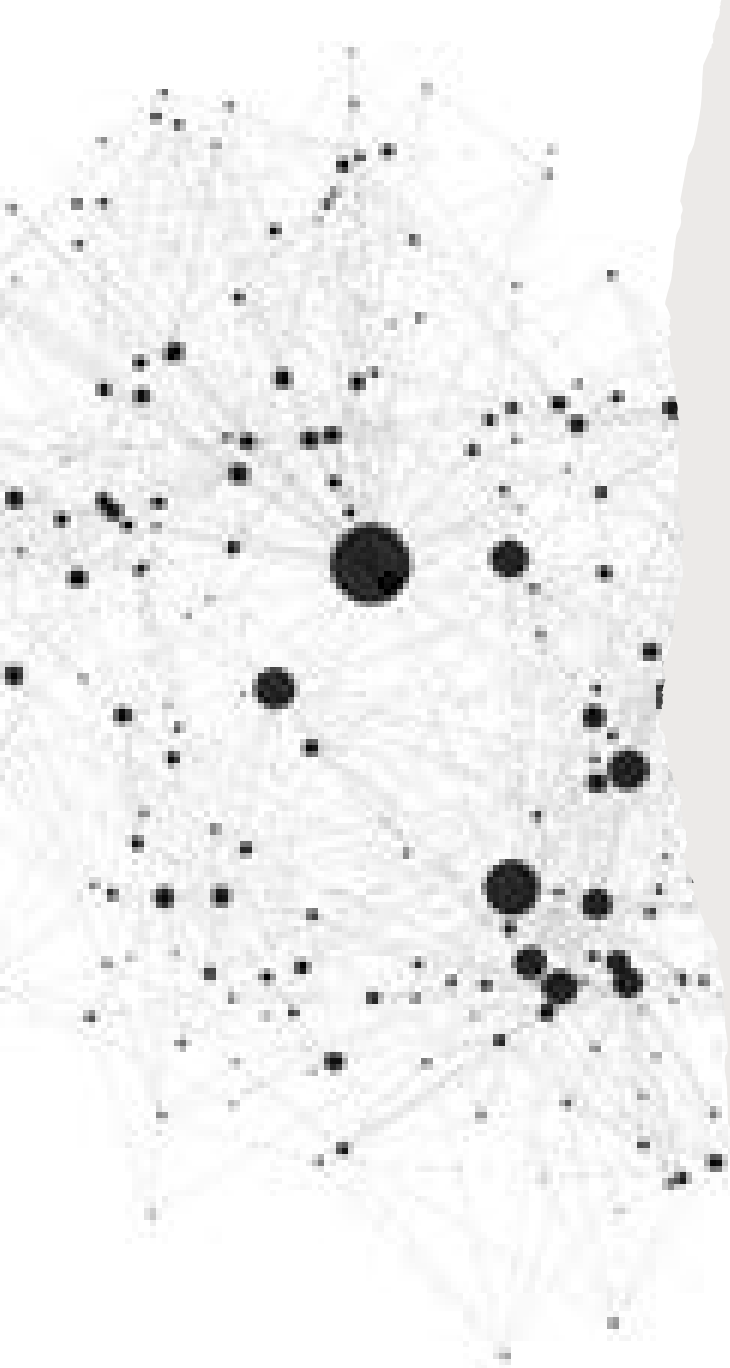


# Lifesciences: Recent history

- 1981: Chakrabarty obtained first US patent on a living, genetically engineered organism (*Pseudomonas*, plasmid mediated biodegradation), important moment in IP law (*Diamond vs Chakrabarty*), financed by Genentech
- 1980 Bayh-Dole Act – US universities retain IP on inventions
- Foundation laid for ‘bio-capitalization’/‘academic capitalism’
- Narrative of salvation: more & better medicines (personalized medicines), science-driven growth - nurturing excellence in places, people & institutions of science.
- 1990-2003 Human Genome Project. International collaboration: to map sequences of the human genome (3 billion chemical base pairs)
- Research: transnational spaces of innovation: what moves? Mobility & knowledge making? Mobility & care & cultivation of the self? Mobility & value, political subjectivities

# Studying Transnational Scientific Spaces

- Websites of universities/research institutes in 2 settings (Singapore/Brisbane)
  - Laboratory 'Groups' headed by Principal Researchers.
  - Individual CVs (where available), public engagement activities, metric identities
- 28-item online survey (Survey Monkey).
- Biographical information (survey, CVs): contextually relevant Q
  - PhD study, institutional positions, collaborators, research outputs (grants, pubs, prizes etc)
- Everyday: site for investigating banal or mundane political agency
- 'Epistemic living spaces' : Investigate borders/boundaries/fields





# (Feminist) Science & Technology Studies

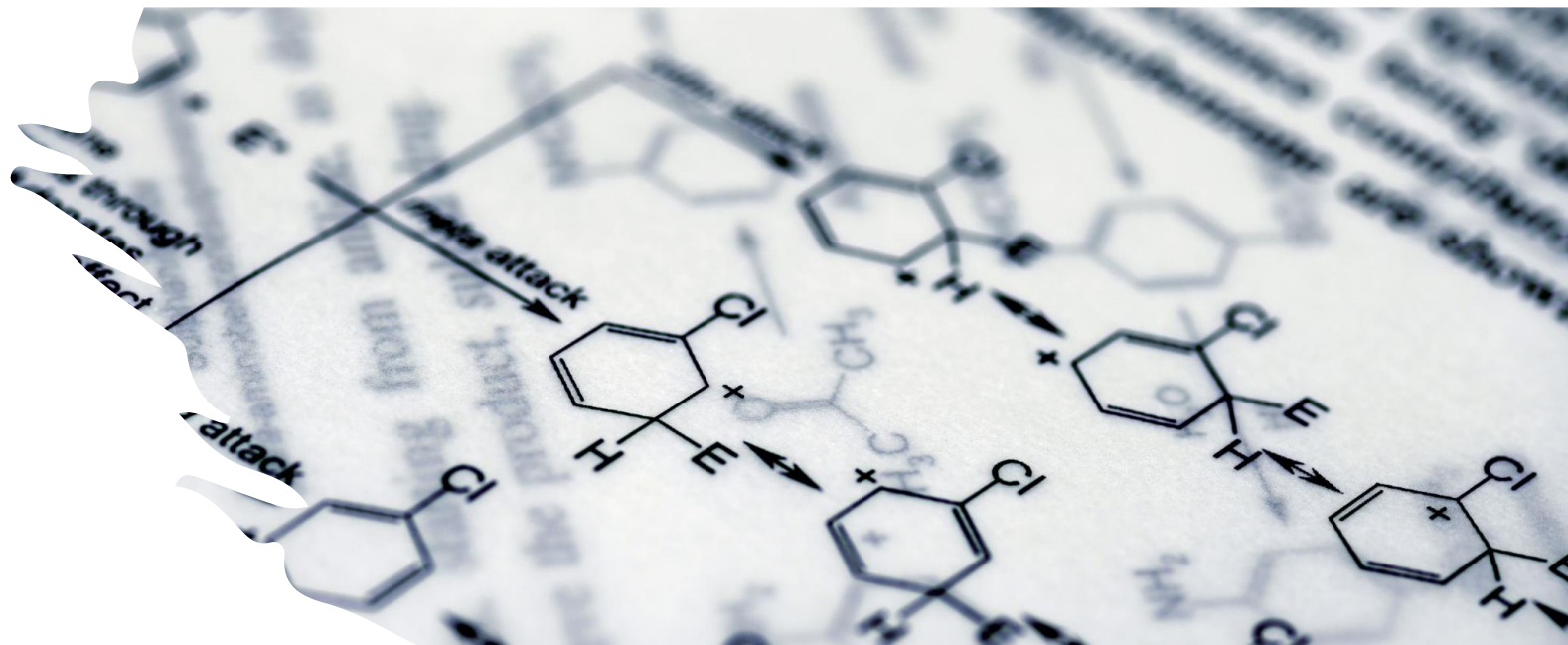
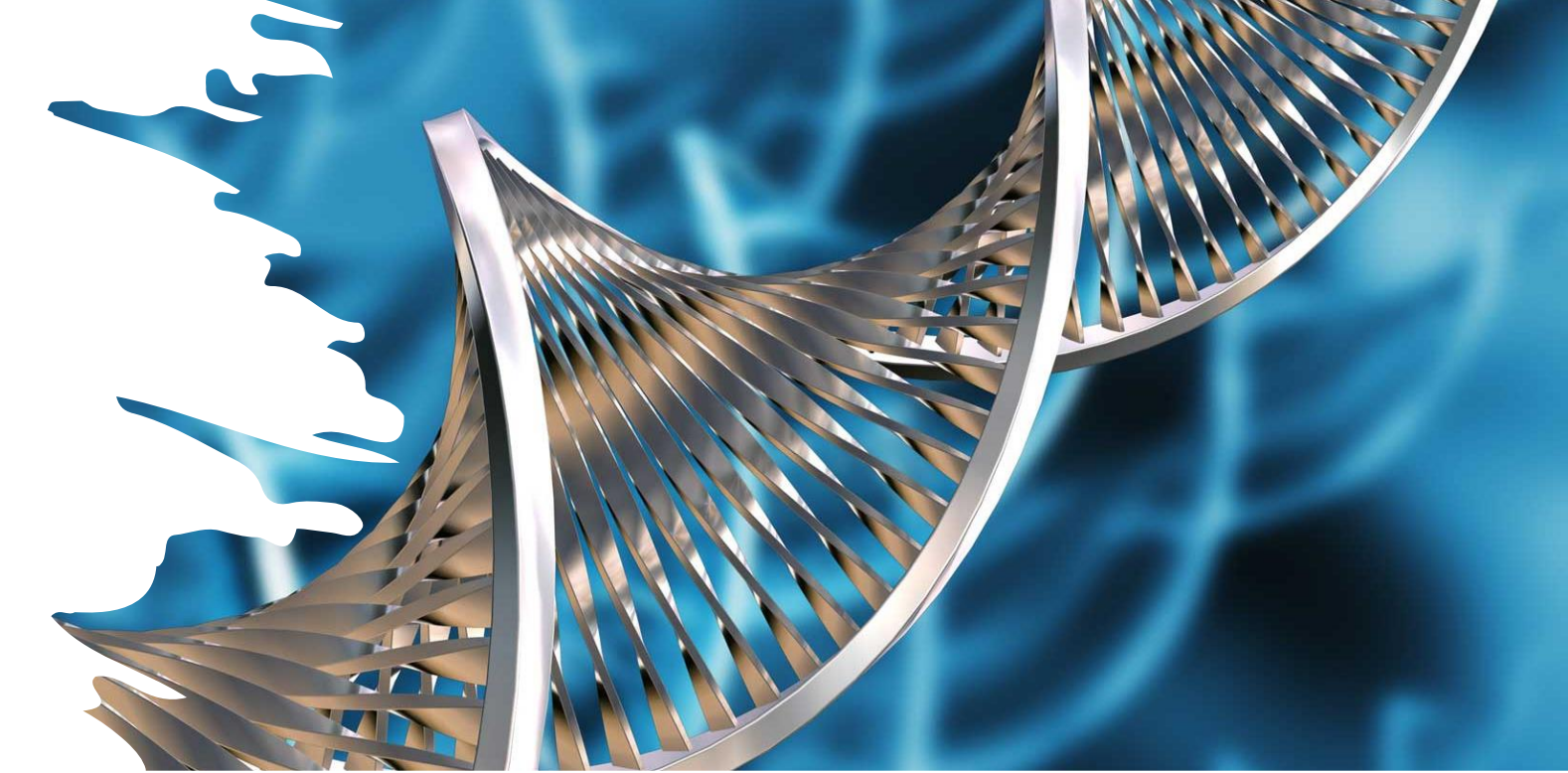


- Epistemic living spaces (5): ‘symbolic, social intellectual, temporal & material structures that mould, guide & delimit researchers’ (inter)actions, what they aim to know, their agencies & how they can produce knowledge’ (Felt, 2009, p. 19)
- Co-production (Sheila Jasanoff)
  - Scientists are social actors/social beings : interactions with the world they live in shapes scientific practices/activities
- Epistemic cultures: Karin Knorr-Cetina : cultural aspects of scientific
- Spatial variations in practices of global science, power-relations, at different scales, engagement with coloniality
  - Science as a handmaiden of empire & imperialism
  - Post-colonial nationalist aspirations

# Epistemic Living Spaces: Utility

Focus on knowledge making

- reducing scientist to Homo economicus in pursuit of 'capital' & under-study of innovative scientific practices.
- Links between logics & structures of production and social reproduction
- Co-production of personal and political
- Power relations (multiple scales) mobilities & immobilities
- Widening understandings of subject-making: 'connectedness'/entanglement of places, institutions, networks, instruments, and multiple others.



# A world on the move...

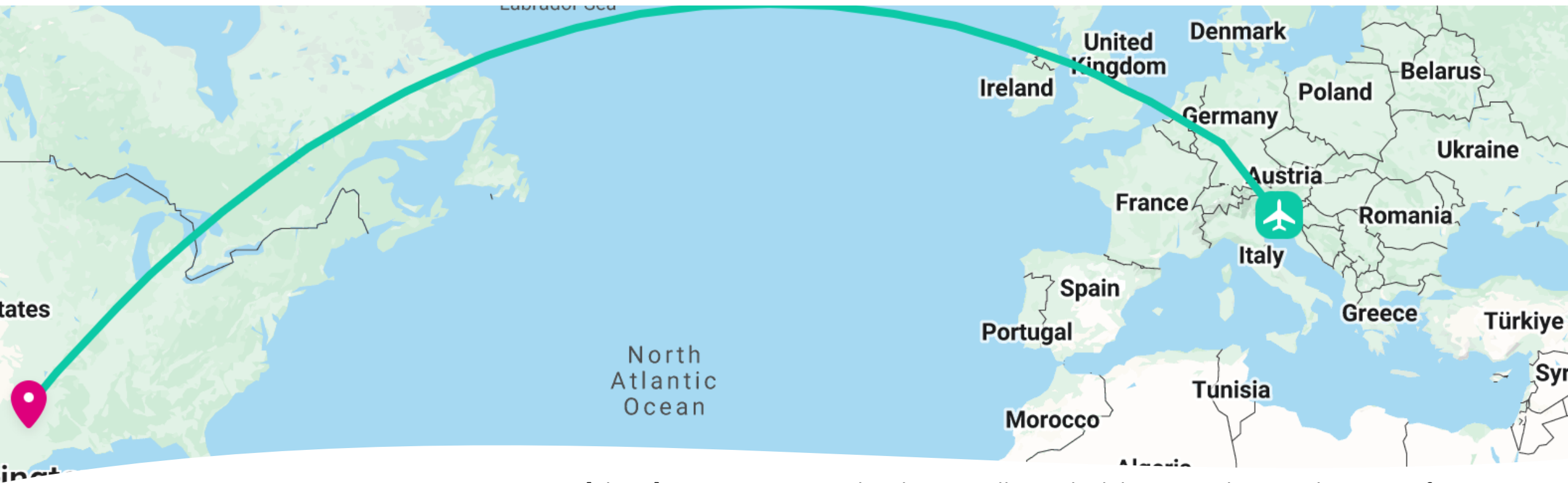
- People & things on the move: modernity
- Mobility of individuals (all stages of career)
- Scholarships & grants: recruitment of PhDs, conferences, lab visits, cross border authorships
- Movement of things: equipment, animals, reagents, services : screening clinical trials, tissue cultures
- Cross border mobilities of techniques & ideas
- Mobility of policy imaginaries: modernization, discourses of knowledge economies: entrepreneurial universities & innovation ecosystems, WCU rankings,, etc
- Cross border movements of ideas & techniques



## DREAMSCAPES *of* MODERNITY

*Sociotechnical Imaginaries and the Fabrication of Power*





## Choosing Knowledge Destinations

- [There] was no macro-molecular crystallography lab in Yugoslavia at that time. If I wanted to get trained in that area I would have to go to a foreign country. I sent a letter to Hans Deisenhofer who [later] became my PhD supervisor. He had recently moved to the US. He replied and told me where I needed to apply.
- The US has a very established system for getting overseas people to come to do a PhD there. They are heavily reliant on those types of individuals. They told you exactly what you had to do to apply: English proficiency test which was TOEFL and GRE. I could do both tests in Yugoslavia. I chose University of Texas, partly because [Hans] replied to my letter but also because he was the strongest structural biology faculty member.





# Choosing Knowledge Destinations

- “[Choosing the US] was a very important step – not only scientifically but also personally. Ever since I was a teenager, it was a dream of mine to go to America. It was a beacon of freedom and opportunity [and top-notch research] . Bulgaria was a Communist country then. [You] go through high school [and] university but you always dream of going to America.

# Knowledge Destinations: Space-time analysis

- Scientifically, there was no limit on what I could achieve in the US ( Australian research fellow, Memorial Sloan Kettering Cancer Centre in the 1990s)
- I would have experienced difficulties getting a Green Card as I am not married to my partner. [Also] I have a negative view of the US and its foreign policies (German molecular biologist, Singapore-based)
- The US is just work, work, work (German neuroscientist, based in Australia)
- My husband[was at Princeton] he felt that working in the US was like being eaten alive (Spanish immunologist, Singapore-based)

# Crossing epistemic borders: ‘Cell biology & theoretical physics’

- “[to] understand tissue mechanics [we got] theoretical physicists to help us out: they bring powerful conceptual frameworks to parse complex biology.
- the virtue of working with theoreticians at that level is that they can frame the problem at the level of granularity the biology needs. A molecular biologist feels uncomfortable with theory because it ignores all the details, but in some sense for me, at the level of a tissue, like an epithelium, at the first stage, I don't care about the details...We add the details, as the theory tells us that we need to add detail.
- It is interesting that we have made a lot of progress in identifying many of the molecular players, and we have made enormous progress in molecular mechanism.
- [The] problem of course, is that then you have to deal with the cell where you have a much greater level of complexity, which gets even greater when you think about the challenge of understanding how cells interact with other cells to form tissues. I think that that's a huge challenge for which we have relatively few good tools.
- The great challenge is embracing or finding ways to deal with the sheer complexity and redundancy of the cytoskeleton” (senior Australian scientist and interviewee in study commenting on interdisciplinary work,

# Epistemic border crossings

- Biotechnology is multidisciplinary ..the amalgamation of many many disciplines. So what we are doing right now – we have molecular biologists, protein chemists, physicists, we examine technological aspects of magnetics, electronics, immunochemistry. It takes energy and activation for people to launch into different disciplines and to learn. What you need basically is intrinsic curiosity and a little bit of confidence to venture into a discipline that you don't know much about. [As group leader] the challenge is to get people talking to each other (Brisbane based biologist)
- It is hard...you have to learn concepts [so] you can start to talk the line of biologists. Because biology is an experimental field what you really need to know is 'what are the experiments they are doing?' I look at their data at all stages of the process..[I] come up with problems that can be solved by using sophisticated computational analysis (Singapore based computer scientist)

# Temporal & Spatial Borders

- I am in at 8.30 and leave around 7.30 PM. I work weekends as well - about 3-4 hours. I also do reading at home. When lab work is in full swing , I am in the lab till 10 or 11 at night “ (Irish molecular biologist, Singapore based).
- ... the fortunate thing for me is that my partner chose to become a full time mum so that she is at home. [It has] made it much easier for me to do some of the things you need to do in my position, like travelling. It makes it so much easier that she can handle things. I really admire people where there are both parents working with children of this age (European scientist, based in Brisbane)
- Unfortunately I went to the East German part initially. [Security is a big issue. [The police conducted a seminar for us invited by the university because we live in international housing, “These parts [of city] please don’t go there. If you want to go, go on weekdays and get help from some [local] people. you are not safe. So, after finishing [our] contract, we decided to move. (Indian chemist resident in Singapore).

# Gender & Mobility

- Managing care responsibilities with work
  - Access to affordable childcare? carer's leave (not available in some settings), emotional burdens outsourcing care responsibilities
- Dual-career couples & trailing wife syndrome
- Immigration restrictions on spousal work rights
- Safe and respectful work environments free of harassment
  - 'Cliques – expected to go out drinking with the lab head',; 'Restricted collaborations'
- Masculinist norms in leadership: attitudes ('ego', arrogance')

# Gender & Mobility

- I have women in my lab who are not willing to move overseas because they have family commitments and they believe it is going to jeopardise their relationship.
- [women] are [often] willing to take a second-best option if their partner has something good. My suggestion is that this kind of balance is not good for either of you. Your career has to be considered as equal value. I don't know what proportion of marriages break down. What will you do if you are in a sub-standard job if your marriage fails? By a little bit of compromise on both sides, you can get what you want (senior Australian neuroscientist)
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# Mobility as risk management?

- Postdocs : critical elements in research infrastructure.
  - Precarious work & indefinite waiting
  - “A career in science is like a career in acting. People at the top earn a lot. [It] is long hours with not much of a salary. I don’t have the time or money to provide support for a second child. It was not what I expected when I entered science”
- “ I am in my 12<sup>th</sup> year as a postdoc... I was at MIT for 3 years. When I came back, I went to the Diamantina Institute, and now I am at IMB..I am going to be archived as a postdoc. I don’t want to be a group leader because I got into science to do science, not write grants”.



# Concluding comments

- Epistemic border-crossings can be enhanced through mobility
- Scientists do not experience frictionless mobility.
  - Industrial imaginations of states
  - Market-driven promissory sciences
  - Neoliberalised universities
    - Power-inflected asymmetries constrain agency
  - Gendered norms discipline & contain research imaginations
- Policy frameworks to mediate tensions, borders/boundaries  
Taxation, immigration, IP, higher education.  
Space-time specificities & policy uptakes