

Genomics as a new innovation regime - A research agenda

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The governance of genomics in the Netherlands

“The overall objective of the Netherlands Genomics Initiative is to ensure that society and economy benefit from the breakthrough enabled by genomics in important fields like health, sustainability, enabling technologies and society” (NGI homepage)

'Valorisation' as a particular mode of governance

- IP arrangements and quantified valorisation targets (dissertations, patents, start-up companies, industrial matching) for genomics consortia
- Valorisation events and meetings between researchers and entrepreneurs (Genomics Momentum, valorisation managers best practices exchanges, business development meetings)
- Roles for private parties and TTOs are described in 'valorisation plans' of consortia
- Valorisation is promoted with additional financial instruments (Venture Challenge, NGI Pre-SeedGrant, BioGenerations Ventures, and NGI Valorisation Award)

The emergence of genomics in the field of clinical genetics

Clinical genetics

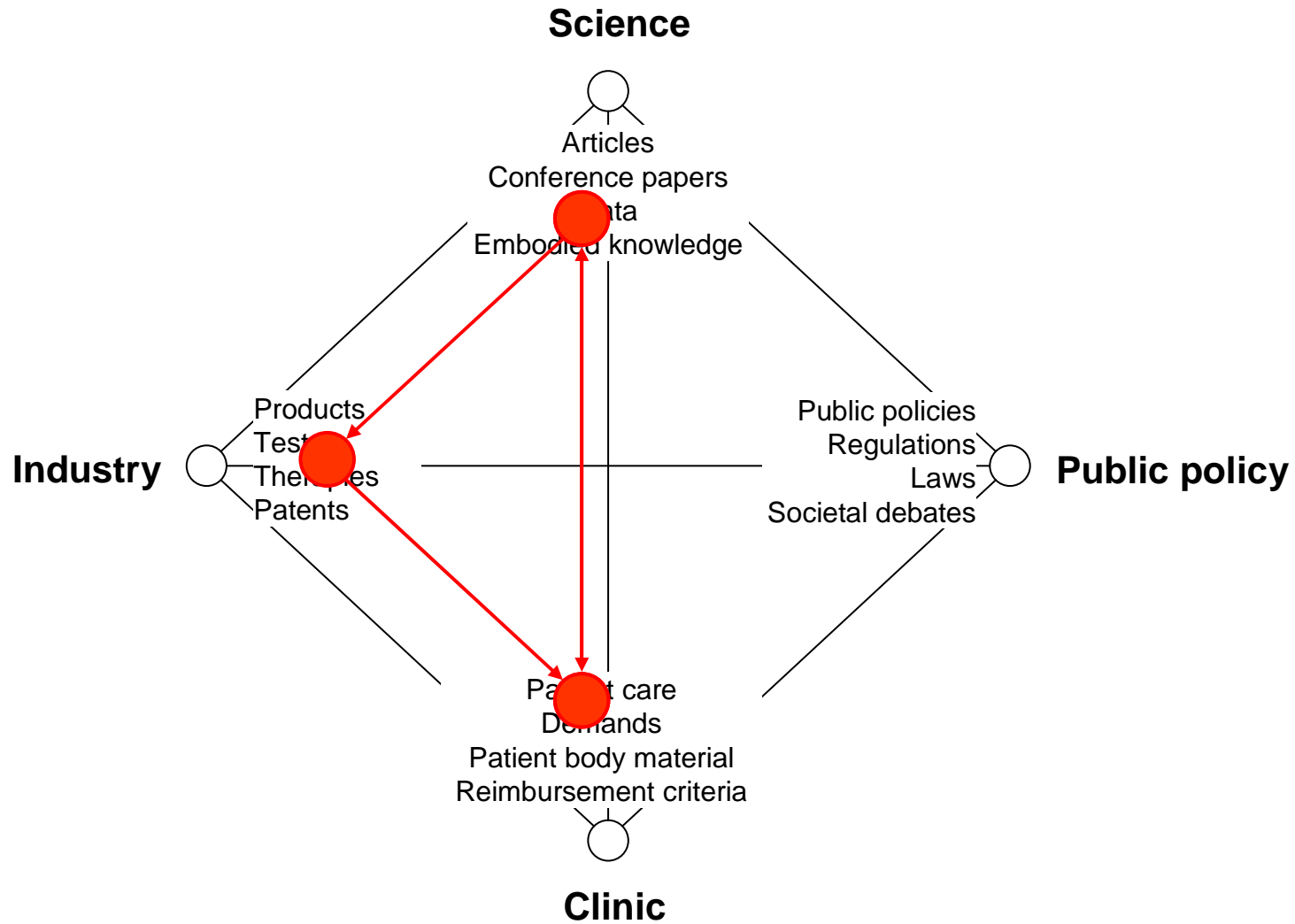
- national networks of scientists, clinicians, funding bodies based around hospitals
- clinical genetics centres linking laboratory research and diagnosis with clinical patient care and counselling
- strong orientation of research to clinically relevant genetic diseases,
- important role for patient groups as intermediaries



Genomics

- large-scale consortia with international, multi-disciplinary collaboration
- strategic public investments and public-private relationships
- use of high throughput technologies
- genetic databases as platforms linking academic and commercial interests
- strong focus on economic valorisation

Two routes of translation



Innovation regime

Complexes of coordination rules on how to act and interact in innovation networks

- Visions and assumptions
 - Division of labor
 - Meta-rules
 - Rules
- } Heterogeneous networks
- } Networks on poles

Labor division – The example of ‘association studies’ (1)

- Classical approach: gene identification
 - Monogenetic rare diseases, finding ‘magic bullet’
 - Close contacts with patient groups
 - Patient participation in research
 - Moral obligations to offer returns
 - Strong orientation towards making discoveries clinically relevant
- Association genotype (or phenotype) - disease
 - Multifactorial common diseases, finding correlations
 - High-quality biobanks
 - All kinds of relevant clinical data from medical records
 - Human DNA samples sequenced with advanced DNA-technology
 - No focus on particular diseases
 - Anonymity of donors, less commitment to clinic
 - Industry interested in large sub-populations
 - Strong orientation towards industrial exploitation (patents)

Labor division – The example of 'association studies' (2)

New labor division as emerging irreversibility

- Keywords in context:
 - Expectation statements
 - Research agenda
 - Networking activities
 - Scientific networks
 - Heterogeneous networks

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Irreversibility

(Van Merkerk & Robinson, 2006)

- 'Association' in a sample of representative articles

Indicators (1)

Expectation statements

- Articulation of association as promising approach (e.g. visions articulated in introduction and conclusions)

Research agenda

- Adoption of association as approach (e.g. association as method)

Scientific networking - modes of alignment

- Collective research conduct (e.g. co-authorship)
- Exchange of results (e.g. citations of articles)
- Collective fund raising (e.g. grant applications)

Indicators (2)

Heterogeneous networking - modes of alignment

- Industry orientation of scientists (e.g. patents filed by scientists)
- Industrial interest in science (e.g. private funding of research)
- Industrial appropriation of scientific results (e.g. licences, citations in privately funded research or patents filed by firms)

Labor division – The example of 'clinical relevance'

- 'Clinical relevance': different concept
 - Abstract, needs to be specified
- Different approach
 - Discourse analysis
 - Positioning theory

To wrap up

If the hypothesis holds:

- New division of labor between science and industry is emerging
- Strong mutual dependency
- Relation with clinic weakens
- Valorisation policy reinforces and specifies this emerging labor division
- A policy gap remains: translation to the clinic