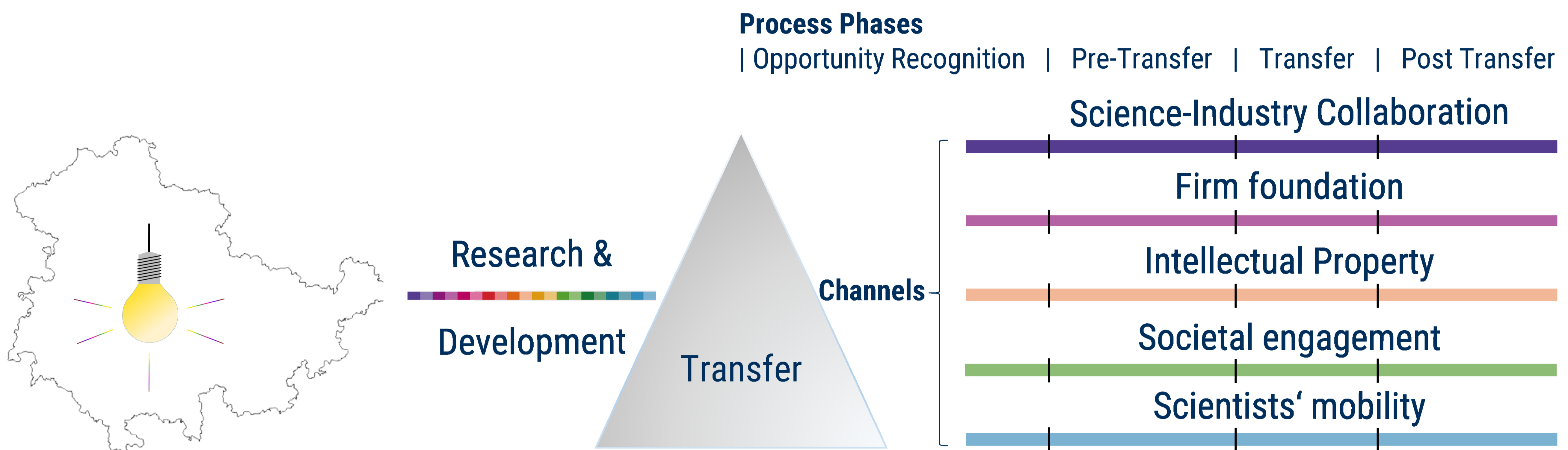


Opportunities and obstacles of knowledge and technology transfer

Empirical evidence on the innovation system in the German Free State of Thuringia

- Context** Knowledge and technology transfer (KTT) from academia to industry and society
- Relevance** KTT contributes to socio-economic problem-solving, economic development and social challenges
- Channels** Research commercialization (e.g. firm foundation), or societal engagement (e.g. popular scientific posts)
- Process** Process of KTT divided into successive phases from recognizing the opportunity to final application
- Issue** Relatively high research expenditures and research output but few applications (“European Paradoxon”)
- Tension** KTT socially and politically desirable but for some scientists in addition to research and teaching; with KTT, scientists face opposing norms, attitudes and logics in academia, industry and society
- Scope** Universities (of applied sciences) and research institutes in the Free State of Thuringia



Selected ongoing research

Opportunity recognition

Where it all began: Transfer Opportunity Recognition by Scientists and their Choice of Transfer Channels (Philip Doerr, Matthias Huegel, Martin Kalthaus)

While knowledge and technology transfer from academia to industry is important for economic and social problem-solving, there is hardly any finding about the determinants that make researchers recognize opportunities for such transfer activities. We examine which factors influence the recognition of a transfer opportunity and then investigate what determines the recognition of an opportunity for a particular transfer channel. We find that prior academic and non-academic knowledge positively influences the recognition of transfer opportunities, while scientists' research orientation, role models at the faculty and risk willingness determine for which transfer channel opportunities are recognized.

Science-Industry Collaboration

University-Industry collaboration outcomes: Case study of German University (Matthias Huegel, Martin Kalthaus, Indira Yarullina)

Collaboration with firms in R&D facilitates knowledge exchange, mutual learning and increases possibilities for successful knowledge recombination. However, collaboration with industry might have ambiguous effects on production of research output. On the one hand, industry involvement might delay or suppress academic publication, endangering the intellectual commons and the practices of open science. On the other hand, faculty participating in knowledge and technology transfer activities claim that industry collaboration improves research output due to, for example, access to financial and physical resources. Thus, our research objective is to identify what causal effect has an involvement of industry partner in a collaboration project on the research output from this project.

Firm foundation

A procedural perspective on academic spin-off creation: The changing relevance of the academic and the commercial sphere (Uwe Cantner, Philip Doerr, Maximilian Goethner, Matthias Huegel, Martin Kalthaus)

We analyze the influence of scientists' embeddedness in the two opposing spheres (academic and commercial) on scientists' development in the academic spin-off creation process. Building on a phase-based conceptualization of the process inferred from a representative sample of 1,149 scientists in Germany, we find decreasing relevance of the academic sphere during the process. The commercial sphere initially increases before it decreases in the latest stage of the process and has an overall higher relevance than the academic sphere. Our results offer a deepened understanding of the changing relevance of scientists' embeddedness in different spheres along the academic spin-off creation process which provides intervention points for policy.

Intellectual Property Rights

A piece of the pie: The effect of the inventor's share of a patent on exploitation (Lukas Dreier, Martin Kalthaus)

We analyze the explicitly listed inventive contribution to a patent. An invention protected by a patent is often a joint effort of different inventors, sometimes with different technical backgrounds. Although the invention is often a joint effort, the contributions and thus the shares in the invention are often different. Patent databases cannot distinguish here. However, on the basis of the official invention disclosures, the different invention shares can be assigned to the inventors. Therefore, this research aims at a detailed examination of the inventors with regard to the creation of an invention as well as its exploitation on the basis of the assignable shares.

Scientists' Mobility

Leaving the ivory tower: Determinants of academic scientists' intentions to take up private sector employment (Uwe Cantner, Lukas Dreier, Maximilian Goethner)

On the basis of the location of scientists in the German science system, we identify three clusters of scientists: teachers, researchers and boundary spanners, who are characterized by their transfer activities. However, not all scientists remain in the academic sector forever. Based on the clusters, we investigate the effect of the opportunity of a job in the private sector, the self-identity towards working in the private sector, and the necessity (due to contract-limitations) on the intention to move to the private sector for the different clusters. Compared to the other clusters, teachers are less driven by the opportunity of a job offer, researchers show a lower importance of self-identity towards working in the private sector and boundary spanners are often driven by necessity.

“Transfer-Inactive” Scientists

Untapped potential: Who are the scientists without knowledge and technology transfer activities and what can motivate them to engage in those activities? (Lukas Dreier)

Not all scientists engage in knowledge and technology transfer (KTT) activities. These “transfer-inactive” scientists have been largely neglected in previous research. This research attempts to help close this research gap by first characterizing transfer-active and transfer-inactive scientists. The results reveal differences between transfer-active and transfer-inactive scientists in terms of research orientation, research field, age, and the propensity to take risks. It also shows that a large proportion of transfer-inactive scientists, nevertheless, see a transfer potential in their own research. Moreover, further analyses show that for the different transfer channels, the intention to become active in these channels is influenced by different extrinsic regulations. Thus, policy measures should be tailored.