sciendo

Swiss Journal of Sociology, 49 (3), 2023, 473–498

A Tamed Transformation. Debating Digitalisation in Research and Higher Education Policy in Switzerland, 1998–2020

Philippe Saner*

Abstract: In this article, I investigate the discursive field of the digital transformation of higher education and research policy in Switzerland. The qualitative analysis of political strategies and documents shows that actors in this policy field use open, ambiguous terms to characterise digitalisation. By building on this discursive strategy, the political actors aim not only to reduce uncertainty about the digital transformation as a complex phenomenon but also to build political consensus about the future development of this discursive field.

Keywords: Digital transformation, research and higher education policy, discursive field, ambiguity, polyphony

Eine gezähmte Transformation. Die Debatten über Digitalisierung in der Forschungs- und Hochschulpolitik der Schweiz, 1998–2020

Zusammenfassung: Dieser Artikel untersucht das diskursive Feld der Digitalisierung der Hochschul- und Forschungspolitik in der Schweiz. Die qualitative Analyse politischer Strategien und Dokumente zeigt, dass Akteure der Hochschul- und Forschungspolitik offene, mehrdeutige Begriffe verwenden, um Digitalisierung zu charakterisieren. Mit dieser Strategie beabsichtigen die politischen Akteure, Unsicherheiten über die digitale Transformation als komplexes Phänomen zu reduzieren und politischen Konsens über die zukünftige Entwicklung dieses Diskursfeldes herzustellen.

Schlüsselwörter: Digitalisierung, Forschungs- und Hochschulpolitik, diskursives Feld, Ambiguität, Polyphonie

Une transformation apprivoisée. Débat sur la numérisation dans la politique de la recherche et de l'enseignement supérieur en Suisse, 1998–2020

Résumé : Cet article examine le champ discursif de la numérisation de la politique des hautes écoles et de la recherche en Suisse. L'analyse qualitative des stratégies et documents politiques montre que les acteurs de la politique des hautes écoles et de la recherche utilisent des termes ouverts et ambigus pour caractériser la numérisation. Par cette stratégie, les acteurs ont l'intention de réduire l'incertitude sur la transformation numérique en tant que phénomène complexe et de créer un consensus politique sur l'évolution futur de ce champ discursif.

Mots-clés : Numérisation, politique de recherche et des hautes écoles, champ discursif, ambiguïté, polyphonie

* Department of Sociology, University of Lucerne, CH-6002 Lucerne; Center for Higher Education and Science Studies, University of Zurich, CH-8032 Zurich, philippe.saner@unilu.ch.

Seismo

DOI 10.2478/sjs-2023-0023

Se vogliamo che tutto rimanga com'è,
bisogna che tutto cambi.
(Tancredi Falconeri, «Il Gattopardo» di Giuseppe Tomasi di Lampedusa, 1958)

1 Introduction[1]

Digital transformation has been the defining topic in higher education and research (hereafter: HER) policy in recent years, both in Switzerland and elsewhere. Universities, funding agencies and political authorities have formulated strategies and drafted action plans to make comprehensible the complexity of the digital transformation and to derive political and organisational goals from it. In addition, higher education organisations, research actors and states have invested large sums in the digital transformation of HER, not least to maintain or strengthen the *competitiveness* of their respective organisation(s) (Tratschin et al., this issue; Haase and Buus 2020), as well as the entire HER system (for Switzerland, e. g. Schweizerische Eidgenossenschaft 2016, 17).

The discussion regarding digitalisation is part of sociotechnical imaginaries: Political, economic and scientific actors create visions of the future that describe and frame the reciprocal relationships between social entities and digital technologies (Jasanoff 2015; Beckert 2016; Ruppert 2018; Meyer 2019; Saner 2019). Formulating political strategies and goals and adopting subsequent measures involve both discursive and non-discursive practices. By outlining the future development of society, political actors value and allocate attention, financial and other resources (Beckert 2016; Saner 2019; Bareis and Katzenbach 2022).

This paper focuses on organisational actors' collective statements in the discourse on digitalisation of HER policy in Switzerland since 1998, a period characterised by various profound changes (such as tertiarisation, diversification and internationalisation) in this field. Such collective statements can be interpreted as "compromise products" (Emirbayer and Johnson 2008, 19) of competing positions in HER policy organisations. I argue that the statements in this field are characterised by ambiguity (Eisenberg 1984; Leitch and Davenport 2007), polyphony (Andersen 2003; Schneider and Zerfass 2019) and arbitrariness. Thanks to these characteristics, they are especially suited to open spaces of collaboration with other actors. By combining conflictual and cooperative statements, they contribute to the constitution and permanence of the discursive field of digitalisation. The future scenarios drafted in this discursive field can be analysed as a case study of a collective conception of society.

1 For their comments on earlier versions of this paper, I thank Sophie Mützel, Thomas Ruoss, Nadine Frei, Luca Tratschin, the participants at the REHES IV workshop in Lugano, as well as two anonymous reviewers. The author gratefully acknowledges support from the Swiss National Science Foundation (NRP 75 Big Data).

First, the future scenarios articulate a political imperative to act to have an effect on grand societal challenges (public health, energy supply, climate change, food security, etc.) through investments in HER. In this way, different fields are put into social relations with each other. Second, the political discourse operates in a temporal dimension in that HER policy measures can shape and frame the future. In the emergence of new fields of knowledge, future visions contribute to coordinate and structure the expectations and actions of different actors (Tavory and Eliasoph 2013; Meyer 2019). In this respect, the discursive field of the digital transformation of HER policy is suitable for analysing collective visions and narratives regarding their multidimensional interactions.

In this article, I will investigate HER policy actors' strategies and documents to examine the role that societal visions of the future play in structuring digitalisation as a discursive field. The following research questions guide the analysis: How does the political discourse on the digitalisation of HER operate? How is HER framed in this discursive field? To answer these questions I draw on an existing data set on documents about digitalisation in Swiss HER policy between 1998 and 2020 (Saner and Mützel 2023). I will analyse this material using a social science approach to discourse analysis (Keller 2011; 2013), identifying the main topics and reconstructing the collective statements, strategies and investments regarding digital transformation that actors in Swiss HER policy made.

2 Theory Section

To investigate the research questions outlined, I will combine a discursive field theory approach with concepts from organisational communication to focus on the statements of collective actors regarding digitalisation in the field of HER policy. In this section, I will first introduce the concept of discursive fields (Foucault 1972; Keller 2011), in which policy goals, strategies and measures are formulated and alliances between different actors can be formed, despite possibly diverging interests. Second, I will highlight the role of ambiguity and polyphony as discursive strategies in organisational and political communication.

2.1 The Digital Transformation of Higher Education and Research as a Discursive Field

The digital transformation of society has recently gained much attention in social scientific analysis and description. It has been described as a semantic strategy (Süssenguth 2015), as a process (Grunwald 2019), as society 4.0 (Baecker 2018), as the reduction of societal complexity through regularities or "patterns" (Nassehi 2024), as a utopia (Rebhorn 2019) or in contrast, as a dystopic form of surveillance capitalism (Zuboff 2019), to mention only a few. Although these approaches

offer differing theoretical frameworks for macroscopic analysis of societal change, the scope of this article is somewhat more modest. In this work, I aim to address and interpret the discourse on the digital transformation in a specific policy field in Switzerland, that is, HER.

Following Michel Foucault, discourses can be understood as interconnected sets of statements, texts, images and symbols (as well as other materials) that, "systematically form the objects of which they speak" (Foucault 1972, 49). Discourses are based on relatively autonomous rules of formation that cannot be exclusively or deterministically attributed to specific social positions or actor interests (Foucault 1972, 42). Therefore, a discourse analysis aims to investigate and understand these rules as well as the power relations that underlie a particular system of statements. The sociology of knowledge approach to discourse analysis (SKDA) expands the notion of discourse as, "performative statement practices which constitute reality orders and also produce power effects in a conflict-ridden network of social actors, institutional *dispositifs*, and knowledge systems" (Keller 2011, 48; *italics* in original).

Building on this discourse concept, discursive fields are understood "as being social arenas, constituting themselves around contested issues, controversies, problematizations, and truth claims in which discourses are in reciprocal competition with one another" (Keller 2011, 52). The discursive field is where the differentiation of concepts, objects, modalities of expression and thematic as well as strategic choices takes place. Formulating political goals, strategies, and measures around the digitalisation of HER represents such an arena that integrates political viewpoints, strategies, investments, regulatory frameworks and other policy measures by various organisational entities (Selwyn 2013). Actors in this discursive field articulate their positions and try to convince others. Thus, a discursive field is an open space, delimited by communicative and material practices, which an actor or superordinate body does not control or rule (Keller 2013, 71). Rather, it forms a potentially conflictive and cooperative arena simultaneously.[2]

A central dimension for analysing discursive fields are power effects: The SKAD approach "[…] refers to different kinds of intended or non-intended consequences emerging out of a discursive field or discourse formation, that is the range of 'changes in the world' that are linked to the social processing of discourses" (Keller 2011, 60). This necessitates an in-depth analysis of the material and symbolic implications that results from the system of collective statements in a discursive field.

2.2 Ambiguity and Polyphony in the Construction of Discursive Fields

In organisational communication, clear and direct communication is only one possibility when the "goal is to be clear" (Eisenberg 1984, 30). In other situations, particularly during intense phases of organisational transformation and high degrees of uncertainty, of which digitalisation is a vivid example (Meyer 2019), more am-

2 In this sense, discursive fields represent promising spaces of opportunities (Eyal 2013b; Saner 2022).

biguous communication can be a viable option to accomplish organisational goals. Strategic ambiguity can "be understood as a form of discourse strategy, which […] constitutes the means by which actors achieve goals within discourse" (Leitch and Davenport 2007, 5). It allows multiple, sometimes contradictory, interpretations within discursive fields to coexist and actors with conflicting interests to achieve their respective goals.[3] Therefore, ambiguous communication can help to integrate actors with diverging intentions into a common framework to cope with complexity and reduce uncertainty.

Polyphony is another important characteristic in an emerging discursive field. Drawing on multiple fields of inspiration (from music to organisational sociology), Schneider and Zerfass (2019, 18) define polyphony in the following way:

> *Polyphony describes a state that stands for plurality and unity at once. A multiplicity of different and equal parts constitutes an ambiguous whole, which cannot be reduced to its single parts. Polyphony arises within the process of purposeful placement of the different parts and the perception of the provoked unity. It develops in a spatial as well as a temporal dimension.*

Organisational actors always speak to diverse publics, that is, multiple societal fields and are thus constituted in and by multiple narratives and discourses. They are, in Åkerstrøm Andersen's (2003) words, "polyphonic organisations". This applies in particular to political entities who permanently interact and communicate with various audiences (e. g. lobbyists, entrepreneurs, journalists, scientists, the general public) (Andersen 2003, 167–168). Therefore, political actors must communicate in many voices to legitimise and plausibilise their actions and decisions not only within the political field but also vis-à-vis other environments.

Thus, ambiguity and polyphony constitute discursive strategies to engage and include actors with different interests and goals. Their strategic openness by linking more consensual and cooperative as well as conflictual and controversial statements and practices contributes to the constitution and permanence of a discursive field. By envisioning promising future scenarios, the actors involved in a discursive field not only produce a common object but also frame and shape its further development (Beckert 2016; Saner 2019; Bareis and Katzenbach 2022).

Considering the aforementioned power effects, ambiguous, polyphonic communication represents a distinct strategy. Here, power is not understood as the concentration and monopolisation of resources or knowledge in a single entity, but as the ability to forge relationships, involve multiple actors with different interests and build consensus on controversial issues (Rose 1992; Eyal 2013a; Vedres 2022). In relation to this article's object of study, the discursive field of the digitalisation

3 Different fields have described ambiguity as a discursive strategy, including the construction of emerging markets (Suckert 2018), religion (Bauer 2011), politics (Leitch and Davenport 2007; Vedres 2022) and professions (Dorschel and Brandt 2021).

of HER, this means that actors prove powerful when they succeed in convincing others of their views and objectives, so that divergent, potentially contradictory visions of the future converge.

3 Data and Method

I reconstruct and interpret the collective statements, strategies and investments regarding digitalisation that actors make in Swiss HER policy through a social science approach to discourse analysis (Keller 2011; 2013). In doing so, I will reconstruct the interpretative schemes and the content-related structures that are articulated within the discourse. The documents and strategy papers on the digital transformation of HER policy are the material basis for this. First, I explain how I collected strategy papers in the corpus. Then I describe the discourse-analytical procedure and the process of coding the material.

3.1 The Corpus

The sample consists of documents and strategy papers that address the digital transformation in and of HER policy in Switzerland. Strategy papers form an important instrument in constructing the abovementioned discursive field: In them, different actors articulate multiple future scenarios to be achieved with political means and financial investments, linking these to various policy measures. Thus, strategy papers represent organisational actors' collective statements and compromises of their different, coexisting *wings*, convictions and world views (Emirbayer and Johnson 2008), which includes political actors such as government agencies (Andersen 2003).

The starting point for compiling the sample was the documents of the Federal Council's strategy "Digital Switzerland" (hereafter: SDS). Through these, I collected 36 strategy papers and other documents that are devoted in whole or in part to the aforementioned topic area (Saner and Mützel 2023). The actors include political institutions such as the Federal Council; the State Secretariat for Education, Research and Innovation (SBFI); the State Secretariat for Economic Affairs (SECO); the Federal Office of Communications; the ETH Board; and the Conference of Cantonal Ministers of Education, as well as scientific commissions, business associations and think tanks (see Table A1 in the appendix).[4]

The period of the documents examined ranges from 1998 to 2020, with the vast majority published after 2014. The older strategy documents were considered in order to examine continuities and ruptures in the Federal Council's strategies.

4 I did not include the digitalisation strategies of cantonal universities or universities of applied sciences as organisational actors because my research interest lies on the federal level. All documents examined, the coding scheme and the codebook are stored in the SWISSUbase data repository (Saner and Mützel 2023).

This period is marked by profound institutional change in the field of HER policy. To mention only the most important institutional changes (Lepori and Fumasoli 2010): The system of universities of applied sciences was institutionalised (Weber et al. 2010; Kiener 2013), professional teacher education was academicised (Criblez 2010; Criblez et al. 2016), several new universities were founded, the internationalisation of universities was intensified and a fundamental study structure reform was carried out as part of the Bologna Process (Bieber 2010). Finally, public financing of higher education by the federal government and the cantons was reorganised (Eckert 2019).

A central component of the political discourse on digitalisation in Switzerland is formed by the Federal Council's strategy documents, action plans and reports on the "Information Society Switzerland" (hereafter: ISS) and the SDS. Although there were certainly some prior technology policy initiatives after the Second World War (Straumann 2001; Geiss 2021), the Federal Council launched the first comprehensive strategy for dealing with "new communication and information technologies" at the end of the 1990s. The ISS was adopted in February 1998 and revised in 2006 and 2012, with goals, principles and policy areas being continuously adapted (Abun-Nasr 2009). The subsequent SDS strategy was launched in April 2016 and revised twice in September 2018 and September 2020.

The six strategy documents form a subsample within the corpus. In addition to their common authorship (i. e., the Federal Council), they formulate political visions about the future relationships between technology and society. This makes them particularly interesting for an in-depth analysis across the period under consideration. Moreover, the Federal Council's strategies address a broad, hybrid audience, indicating an ambiguous, polyphonic mode of communication.

3.2 The Analytic Strategy

All documents were coded using ATLAS.ti. In an open, inductive coding process (Flick 2016, 388–92), I coded the text passages relevant to the research question with summarizing or explanatory categories (Friese 2012, 92 ff.). In this process, a category system emerged, which I reviewed and revised in a total of three passes. By reading and coding the text passages several times, I was able to expand and differentiate the category system (cf. the coding scheme in Saner and Mützel 2023). In addition to structuring the content of the material, the inductive approach allows us to elicit the central discourse strands, themes and interpretations articulated in the documents.

The documents in the sample were primarily coded using specific terms or combinations of terms. For example, the text passages whose content is coded as "digitalisation as social transformation" very often include processual terms such as automation, modernisation, structural change, transformation, or development (see Table A2 in the appendix). To better account for the meaning and development of such terms, I developed a keyword approach to discourse analysis (Leitch and

Davenport 2007): After identifying the relevant terms in the documents and counting their relative frequencies, I aggregated them to more encompassing topics that can be evaluated and compared in an aggregate form. This approach allowed me to analyse the developments of central categories as well as the shifts in meaning in the political discourse about digitalisation of HER over time.[5] More generally, analysing keywords enables the linking of utterances, speech acts and other communicative measures on an organisational meso-level with the analysis of discursive structures on a macro-level (Leitch and Davenport 2007, 9). This is particularly interesting for the sub-corpus of strategy documents, as they formulate sociotechnical future scenarios for Switzerland over two decades. The resulting 22 topics vary from multiple conceptions of digitalisation (see section 4.1) to document- and genre-specific content (e. g., "plan, strategy, implementation") to general political topics (e. g., "equal opportunities, discrimination"; Saner and Mützel 2023).

In the following empirical part, I will concentrate on those topics that are closely related to my research question: First, I analyse the multiple conceptions of "digitalisation" in the corpus. I then turn to the objectives of Swiss HER policies regarding digital transformation. Third, I investigate multiple evaluations of the object of study. Finally, I look at the changing relationship between the Swiss political system and the *outside world* regarding digitalisation.

4 The Digital Transformation of Research and Higher Education Policy in Switzerland

4.1 The Multidimensionality and Arbitrariness of Digitalisation[6]

The discursive field of digitalisation of HER is characterised by a striking ambiguity and arbitrariness: Even though the term "digitalisation" is ubiquitous, it is not defined or explained in any of the documents examined, a finding that is supported by other studies of digital education strategies (Selwyn 2013; Förschler 2018; Haase and Buus 2020). Thus, the term remains underdetermined in the discursive field, which makes it open and connectable to multiple perspectives. Nevertheless, the following three divergent conceptions of digitalisation can be identified:

- Digitisation as the conversion of analogue into digital signs
- Digitalisation as a technology (field)
- Digitalisation as social transformation

First of all, digitisation in the literal sense refers to the conversion of analogue into digital, that is, discrete, machine-readable characters – a process that began in the

5 The comparison of certain word frequencies must be put in relation to the rapidly growing text volume of the strategy documents.

6 All quotations in the following are translated from German by the author (exceptions are indicated).

military, academic and industrial large-scale computing machines of the 1940s and continues to this day (Gugerli and Zetti 2019). The ISS used the attribute "digital" only when explicitly talking about "digital content", certificates or signatures. Otherwise, they addressed technological aspects of the information society under the acronym "ICT", that is, information and communication technologies. The SDS strategy documents build upon this understanding, but link and expand it with the now ubiquitous concept of "digital data".

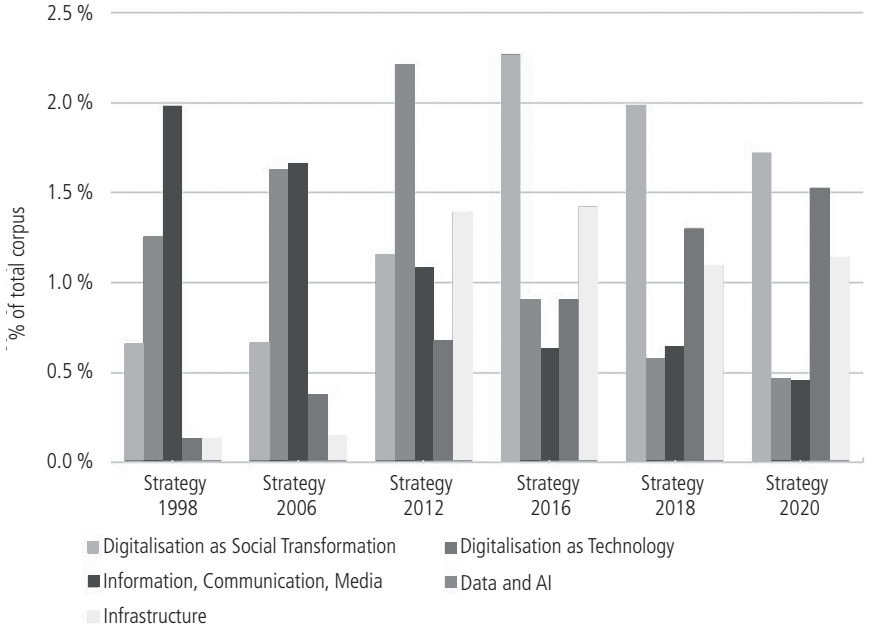
In the documents examined, the latter two conceptions are predominant. Digital technologies are understood to mean "new technologies from information and communication technology (ICT) as well as more powerful computers and network infrastructures that represent the technical basis of digitalisation" (SBFI 2017, 3). At the same time, the texts increasingly use the term as a synonym for technology per se. However, the meaning of digitalisation as a technology (field) only becomes apparent in combination with the third understanding, digitalisation as a social transformation. The term already indicates a process logic (Grunwald 2019) and is aimed at the various – political, economic, technological, organisational and other – dimensions of "digital transformation". The SDS is increasingly based on the logic of a progressive process: Digitalisation is characterised as "progressive" or "increasing" (SDS 2016, 3) and is closely linked to terms such as "development", "change", or "transformation".

4.2 The Rise of Data and Artificial Intelligence

These shifts in meaning in the discursive field can be empirically traced in the strategy documents (cf. Figure 1): The topic area "digitalisation as social transformation" increases markedly after 2006. While the term "structural change" appears only once in the ISS 2006, it becomes a central principle in the SDS 2016 ("actively addressing structural change"). From then on, "structural change" and "digital transformation" are no longer just opportunities to be seized; they turn into the main focus of political attention.

The pronounced process semantics are accompanied by a relative loss of importance of the topic "technology": Although "ICT" is the central term in the strategies on the information society, the acronym loses significance (SDS 2016) and later no longer appears at all (SDS 2018). The related topic area of "information, communication, media" experiences an even greater decline. Simultaneously, a shift can be identified from the "ICT" of the information society to "data and artificial intelligence" as well as "infrastructure" of the digital society – two policy fields that were still irrelevant in the first two strategy documents have become increasingly important in recent years and take on a significant role in the collective future designs

Figure 1 Development of Technology-Indexing Topics in the Strategy Documents 1998–2020



Source: Saner and Mützel (2023); author's calculations.

articulated in the discursive field.[7] Actors in HER policy increasingly recognise the constitutive importance of data and algorithms as operational principles in various fields. The proclamation of a new "data policy" (BAKOM 2018) thus substantiates the representation of Switzerland as a data(fied) society (Schäfer and van Es 2017; Houben and Prietl 2018).

However, the use of process semantics is not consistent: Despite the frequent use of terms such as "development" or "transformation", the same documents also speak of a "digital society" or "digital world" alongside "digital Switzerland" (SDS 2016, 17). Although digitalisation is described as dynamic and "progressive", the existence of a pre-existing digitality is also recognised. Accordingly, the documents outline a vision of a Switzerland that is already digitally structured on the one hand, while on the other hand it is subject to an unfinished, dynamic development process, that is, it is always "in the process of becoming digital". The complex, dialectical relationship between the present and the future points to the emergence of knowledge and technologies within established paths, which in turn shape further

7 Despite these shifts, the technology-indexing topics in the strategy documents remain constant with a cumulative relative share of 3.5-3.8% of all words in the corpus, except for the ISS 2012.

development. Conversely, future implementations and modes of use also change the evaluation of historical events and processes.

Furthermore, the use of the term "digitalisation" is ambiguous and arbitrary because different descriptions of society (such as "information society", "knowledge society", and "digital society") coexist, with no demarcation in previous or current reports. The synchronicity and parallelism of these terms results above all from the continuation of the Federal Council's strategies (Abun-Nasr 2009): Since they explicitly refer to previous strategies in their introductions, they therefore produce continuity between the various documents.

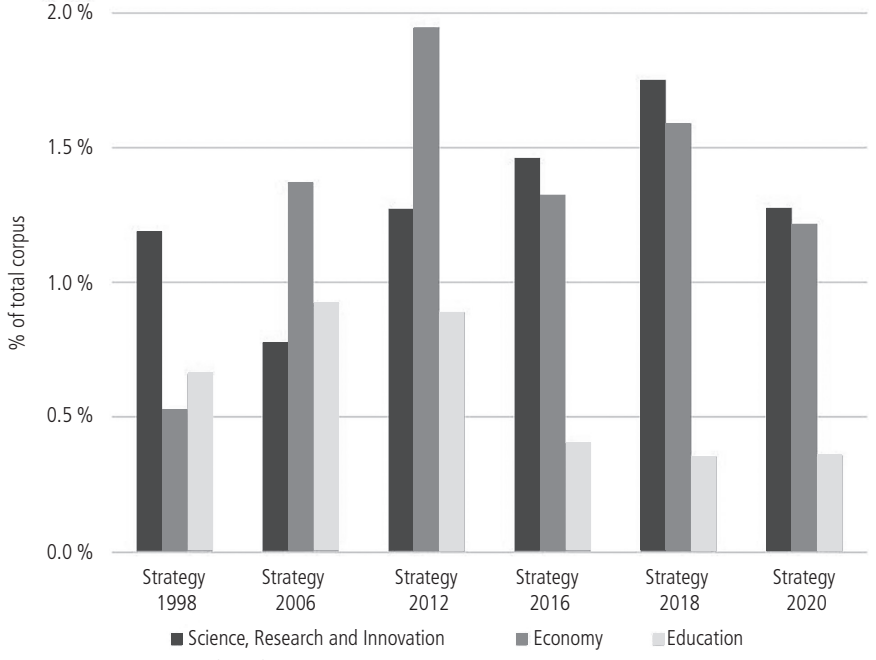
The Federal Council's strategy documents, which are aimed at a broad public, accordingly imagine the "digital transformation" as a continuous, linear development (Godin 2006) which thus becomes to a certain extent predictable and plannable. It thereby contributes to reducing the uncertainties associated with digitalisation. The strategy documents thus signal continuity precisely through the transformation process that has been embarked upon, that is, "stability through change" (Esposito 2014, 102), and transfer this into a political format with the SDS. The arbitrariness of the concept of digitalisation, organised and ordered in this way, not only allows the strategies to be connected to other actors in the sense of a boundary-object (Star and Griesemer 1989; Star 2010; Tratschin 2021), but also allows uncertainty to be dealt with and reduced (Beckert 2016; Meyer 2019). The contingencies and uncertainties of the future, which are exemplarily condensed in the multidimensional concept of digitalisation, are prospectively extrapolated through political ideas of linearity and continuity.

4.3 The Objectives of "Digital Switzerland": Maintaining Prosperity and Competitiveness through Innovation

The continuity in the political ideas on the future of Switzerland is not only expressed in the use of discursive frames; the documents also show significant overlaps in terms of content. Such overlaps are prominently evident in the fundamental objectives: The use of ICT or digital technologies to maintain Switzerland's prosperity and competitiveness marks the primary objective of the strategies throughout the period under review. The first core objective of the SDS 2016 specifies the positive economic effect by directly linking digitalisation with innovation, value creation, economic growth, and prosperity (SDS 2016, 7). The other core objective emphasises the relevance of digital technologies for the formation of political opinion and participation, the transparency and security of digital technologies, and sustainable development (SDS 2016, 6f.). In this way, the strategy's objectives establish a coherence in the content of the political objectives over a longer period and show consistency in a phase of technological, economic and social change.

The topics "prosperity", "quality of life" and "competition" are extremely constant – at a very low level – in the period studied. Alongside the technological aspects,

Figure 2 Development of Topics "Science, Research & Innovation", "Economy", and "Education" in the Strategy Documents 1998–2020



Source: Saner and Mützel (2023); author's calculations.

they form the substantive core of the discourse since they are repeatedly referenced in all strategy documents. Conversely, the linking of technological developments with HER policy becomes the most important framework for maintaining the prosperity of a knowledge-based society or economy: HER face the task of ensuring the production, distribution and transmission of new knowledge and technological innovations (Jessop 2008). Policy measures to promote and transfer scientific and technological innovations into the economic sphere are central elements of the strategy to achieve the objectives.

In the strategy documents, the increasing importance of this narrative can be seen in the prevalence of the topics "economy" and "science, research and innovation" (cf. Figure 2). Although the documents examined show education in general and the education and training of skilled workers in particular as a central focus, the topic "education" loses relevance after 2012. "Science, research and innovation", on the other hand, are not limited to the thematic field of the same name, but frame and permeate various important fields of action (such as "economy", "infrastructure", "data and artificial intelligence", etc.). In other words, the documents attributed a

transversal effect to them in the discursive field under investigation. Achieving a high quality of life and economic growth in the future through research-based innovation has become a central reference point of research and science policy efforts in recent decades (Blümel 2016; Rammert et al. 2016). In this way, strategy papers mark the cross-field connectivity of the objectives instead of specific political solutions and situate them in the desired continuity of the "digital transformation".

4.4 Opportunities and Challenges: Positive and Negative Evaluations of Digitalisation

> *For some, the digital revolution is the perfect storm brewing; for others, it is the opportunity for the next step in society's development.* (Expertengruppe 2018, 25)

The framing of digitalisation as a social transformation implies socioeconomic change and transformation, which, as contingent events in the future, are inherently fraught with uncertainties (Beckert 2016; Meyer 2019). They must therefore be made plausible and legitimised in political discourse (Jasanoff 2015). Assessments and evaluations of the future of "digital technologies" fulfil an important function here: Positive and negative evaluations of technologies coexist, which makes it possible to address and process the uncertainty of ideas about the future (Esposito 2014). Thus, the articulation of negative horizons of possibility, such as expected dangers or risks that need to be avoided or minimised, helps direct further development towards certain aspects through measures and investments in research funding (Beckert 2016, 175).

The strategy papers fundamentally frame the "digital transformation" as an "opportunity" to preserve or increase prosperity. By initially emphasising primarily the positive aspects of digitalisation, the documents signal continuity or even optimisation of the current socioeconomic situation. The frequent use of "opportunities" and "potentials" arising from digitalisation marks a "rhetoric of potentiality" (Dickel and Schrape 2015; Hänzi 2015) which largely dispenses with fixed, contoured ideas of the future; rather, it operates by opening up spaces of opportunities in which "digital technologies" can release their "potentials" beyond the horizon of existing knowledge and given sociotechnical conditions.

However, since transformations are contingent, open-ended processes, a reduction in prosperity is also possible. This is addressed indirectly, as an implicit negative horizon, if the "opportunities [...] of ongoing digitalisation" are not seized. The strategies therefore not only emphasise the "opportunities" and "potentials", but also focus on possible "risks" and "dangers" of digitalisation, especially in connection with security in "cyberspace". Simultaneously, an increased reference to issues of digital inequality, which must be prevented, and data protection can be observed.

Figure 3 Development of the Topics "Challenges, Risks" and "Opportunities, Possibilities" in the Strategy Documents 1998–2020

Source: Saner and Mützel (2023); author's calculations.

Overall, positive and negative assessments of digitalisation appear synchronously in the discursive field: The discussion of opportunities, possibilities and potentials is often followed by descriptions of possible challenges, difficulties and dangers.[8] Viewed in aggregate, the topics of "opportunities, possibilities" and "challenges, risks" develop in parallel to each other in the strategy documents (with the exception of ISS 2012), that is, there are almost equal numbers of terms with positive and negative connotations in each case (cf. Figure 3).[9] The "rhetoric of potentiality" is thus linked to the risk discourse of the digital transformation of society, the economy and science.

The SDS not only identifies positive and negative evaluations of the coming digital future, but also formulates a vision for solving the looming challenges: In order to cope with socioeconomic "structural change", characteristics induced by digitalisation such as "transversality", "interdisciplinarity" or "networking" are brought into line with those "assets" assumed to be characteristic of Switzerland such as "multiculturalism, willingness to engage in dialogue and consensus, and direct democratic processes characterised by pragmatism" (SDS 2016, 5). The strategies update the fundamentals of the Swiss understanding of the state against

8 The antagonistic logic of "opportunities" and "risks" of digital technologies is a recurring element in the documents studied.

9 For the entire corpus, however, the code "challenges" predominates by a factor of 1.3.

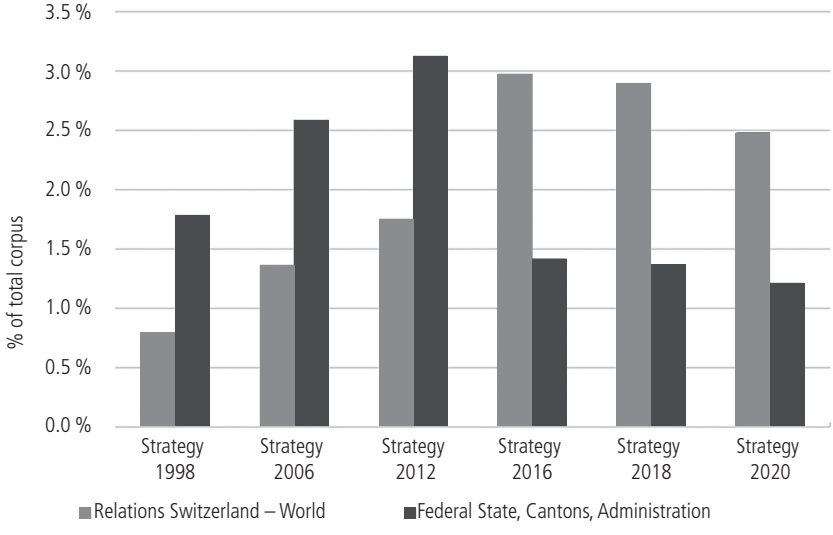
the backdrop of the rhetoric of a network(ed) society (Castells 2010). This suggests a certain continuity between current and future values that are necessary for the digital transformation. However, how these can be reconciled is not made explicit. Moreover, a techno-deterministic reading of digitalisation, which is also present in the documents, suggests that the digital transformation offers precisely no time for lengthy democratic negotiation processes. By linking them, on the other hand, the policies signal a balance between positive and negative framings, which in turn offers inclusion to heterogeneous stakeholders.

4.5 Digital Switzerland Goes International

> *Switzerland is ranked 8th in the world in digitalisation.* (Former Federal Councillor Doris Leuthard, Digital Switzerland Conference, 20.11.2017)

Finally, the strategy documents are characterised by a changed relationship between the self-referencing of the Swiss political system and political relations with the *outside world* such as other states or international organisations. While the strategies on the information society in 1998 and 2006 primarily addressed the political actors in Switzerland, the number of international references increased markedly after 2012.

Figure 4 Development of the Topics "Relationship between Switzerland and the World" and "Confederation, Cantons, Administration" in the Strategy Documents 1998–2020



Source: Saner and Mützel (2023); author's calculations.

The analysis of the topics "Relationship between Switzerland and the world" and "Confederation, cantons, administration" makes this clear: While the prevalence of both topic areas initially increases, the frequency of domestic references ("Confederation, cantons, administration") decreases sharply, while references to external actors such as other states, the European Union or international organisations increase significantly (see Figure 4).

This applies distinctly to HER: Diagnoses of the current state of the Swiss HER system in international comparison are combined with an analysis of the opportunities and challenges of digitalisation. The reports examine the current state and compare it with other nation states or the European Union. The comparisons are made on the basis of specific metrics, rankings and bibliometric procedures such as the frequencies and impact of publications, citations or patents (SBFI 2017; IDAG KI 2019, 42 ff.).

The conclusions drawn from this are usually as follows: Switzerland, or rather its HER system, is very well to excellently positioned, enjoys international recognition and is, at least in certain areas, a global leader in research (Economiesuisse and W.I.R.E. 2017; Federal Council 2016; ICTswitzerland & Economiesuisse 2011; SBFI 2017; SECO 2017a). Although problems and weaknesses are also addressed (such as the lack of equal opportunities, the low STEM quota in general and the low proportion of women in technical courses in particular), there is continuous self-assurance about Switzerland's "top position". The goal of maintaining "Switzerland as a top international location for research and innovation" becomes the central core postulate of HER policy efforts from 2012 onwards.

In contrast, the challenges of the "digital transformation" are kept open and general. The actors in the discursive field imagine innovation as well as knowledge and technology transfer as central instruments to counter the supposed "backsliding" of the research and development performance of Swiss universities, colleges, and companies in international comparison. The scenario of an imminent loss of the global "top position" forms the negative horizon against which "rapid" and "coordinated" action must be taken (SBFI 2017, 41 ff.). Although it is recognised, for example, that the two Federal Institutes of Technology (ETH Zurich and EPFL), compared to their size, have particularly numerous and influential publications in the research areas that are framed as central to digitalisation (i. e., computer sciences and engineering), the absolute number of professorships alone justifies additional financial resources in the millions for the two technical universities in an international comparison ("lack of capacity").

The increasing orientation towards international references is not induced by the political discourse on digital transformation alone: In the university field, rankings integrate universities into a global field that creates specific hierarchies and visibility (Heintz 2008; Sauder and Espeland 2009). Following this institutional logic, actors in HER policy need to legitimise their activities and funding initiatives by referring

to similar programmes in other HER systems (primarily countries in the European Union, North America and East Asia; e. g., SNSF 2015, 2018; SBFI 2017; Expertengruppe 2018; IDAG KI 2019). Mutual observation thus promotes the coordination of distributed activities across different HER systems (Parreira do Amaral 2018). As a result, the application of similar strategies and measures helps to structure and stabilise the further development of emerging fields of knowledge across nation-state and field boundaries (Zapp and Ramirez 2019; Zapp et al. 2021).

The analysis illustrates the extent to which the examined HER policy measures and the discursive means transform the goals and content of the strategies into HER policy concepts. Competences, innovation, adaptation and internationality translate the contingencies of digitalisation into processable variables that are connectable for the actors of HER policy. In the documents analysed, so-called "future technologies", such as data sciences, artificial intelligence and robotics, are framed as new fields of knowledge not only for dealing with social problems with the help of "digital technologies" but also for keeping up in the international competition for locations. However, the instrumentalist conceptions of digital technologies and a one-sided, technology-deterministic approach to progress tend to ignore many social, political and organisational aspects. The orientation towards technical and economic rationalities, on the other hand, is not new, but rather represents a central, historical guideline of Swiss HER policy since the second half of the 20th century (Gugerli et al. 2005; Honegger et al. 2007). In this respect, the discourse on HER policy remains oriented towards stability and continuity despite the changing terms and the all-transforming rhetoric of digitalisation.

5 Discussion

This paper has examined how digitalisation strategies and measures operate and how HER is framed in this discursive field. The analysis shows that actors in HER policy use open, ambiguous terms to characterise digitalisation, creating a polyphony of the subject matter: Despite a pronounced rhetoric of process and transformation, the documents studied show a surprising continuity and stability in the discursive field of digital transformation. For example, the strategies all share and refer to established, long-term political goals such as increasing the prosperity and competitiveness of science and the economy. This is all the more remarkable given that, during the same period, the Swiss higher education field underwent profound institutional changes (Lepori and Fumasoli 2010), including processes of tertiarisation, internationalisation and the reform of study structures. The "digital transformation" is imagined as a continuous, linear development (Godin 2006), which thus becomes to some extent predictable and plannable. By building on this discursive strategy, the documents aim not only to reduce uncertainty about a world perceived as increasingly

complex (Beckert 2016; Meyer 2019) but also to build political consensus in the discursive field of HER policy.

In the discursive field under investigation, HER are imagined both as driving and as driven by digitalisation, in that they permanently produce innovations. At the same time, however, they must always process and adapt the innovations of other fields. Various HER policy activities are taken as measures to promote innovation and are accordingly geared towards crossing field boundaries and, in particular, linking the fields of HER more closely with the economic field. The interpretative openness, ambiguity and polyphony of central terms such as "digitalisation", "competences" or "innovation" is not so much a weakness of the discourse as it is a structural and connecting element, and thus a strategic one: They allow actors from different fields to refer to them strategically in order to establish transversal collaborations. The discursive framing as opportunities and challenges unites divergent evaluations of digital technologies, formulating offers of inclusion for a broad audience. The staging of a collaborative process also involves actors beyond the directly involved political, technical-scientific, and economic stakeholders. In this respect, the ambiguity and polyphony of such discursive practices contribute to the coordination of actors beyond the HER policy field, resulting in power effects in the discursive field since they allow actors in other fields to coordinate their respective digitalisation strategies with the core objectives. This, in turn, stabilises the whole network around "Digital Switzerland" and strengthens the political coalition about the future development of HER (see Förschler 2018 for the German case).

The promotion of so-called "future technologies", such as the data sciences, artificial intelligence and robotics, is a central element of the new "data policy": These technologies are framed as fundamental "basic sciences" for addressing the challenges and problems of the future in a data-driven way. They are considered central factors for "competitiveness", not only of HER, but also of the economy and the nation-state as a whole (Jessop 2008). In this respect, the strategies of federal policy makers contribute to the stabilisation of such fields of knowledge, which in turn create incentives for other actors, especially economic and academic actors, to also become active in these areas. The statements, measures and investments of actors in HER policy thus have foundational effects in the spaces between the fields of politics, science and economics in which such arrangements emerge and develop (Eyal 2013b; Saner 2022).

This also manifests the close alignment with the narrative of international competitiveness, which integrates HER into economic policy interests, if not equating them. It points to the historical continuity of techno-economic rationalities in Swiss HER policy since the second half of the 20th century. By using polyphonic, ambiguous terminology and a ubiquitous rhetoric of transformation, the discourse thus shows an only supposedly contradictory orientation towards stability and continuity. In this respect, the discursive logic of process signals stability and continuity

precisely through the transformation process that has been embarked upon, in which everything remains the same because it changes (Esposito 2014; Brunsson 2017). Because digitalisation is constructed as a plannable and predictable political object, it remains a tamed transformation arranged under Helvetic conditions.

6 References

Abun-Nasr, Sonia. 2009. *Strategie für eine Informationsgesellschaft in der Schweiz. Eine zehnjährige Politik im Lichte empirischer Analyse*. Lausanne: IDHEAP, Chaire de politiques publiques et durabilité.

Andersen, Niels Åkerstrøm. 2003. Polyphonic Organisations. Pp. 151–182 in *Autopoietic Organization Theory. Drawing on Niklas Luhmann's Social Systems Perspective*, edited by Tore Bakken and Tor Hernes. Oslo: Copenhagen Business School Press.

Baecker, Dirk. 2018. *4.0 oder die Lücke die der Rechner lässt*. Leipzig: Merve Verlag.

Bareis, Jascha, and Christian Katzenbach. 2022. Talking AI into Being: The Narratives and Imaginaries of National AI Strategies and Their Performative Politics. *Science, Technology, & Human Values* 47(5): 855–881.

Bauer, Thomas. 2011. *Die Kultur der Ambiguität: Eine andere Geschichte des Islams*. 1. Aufl. Berlin: Verlag der Weltreligionen.

Beckert, Jens. 2016. *Imagined Futures: Fictional Expectations and Capitalist Dynamics*. Cambridge, MA: Harvard University Press.

Bieber, Tonia. 2010. Playing the Multilevel Game in Education – the PISA Study and the Bologna Process Triggering Swiss Harmonization. Pp. 105–131 in *Transformation of Education Policy. Transformations of the State*, edited by Kerstin Martens, Alexander-Kenneth Nagel, Michael Windzio, and Ansgar Weymann. London: Palgrave Macmillan.

Blümel, Clemens. 2016. Der Beitrag der Innovationsforschung zur Wissenschaftspolitik. Pp. 1–16 in *Handbuch Wissenschaftspolitik*, edited by Dagmar Simon, Andreas Knie, Stefan Hornbostel, and Karin Zimmermann. Wiesbaden: Springer.

Brunsson, Nils. 2017. *Reform as Routine: Organizational Change and Stability in the Modern World*. Oxford: Oxford University Press.

Castells, Manuel. 2010. *The Rise of the Network Society*. Volume 1. Malden / Oxford: Blackwell.

Criblez, Lucien. 2010. Die Reform der Lehrerinnen- und Lehrerbildung in der Schweiz seit 1990: Reformprozesse, erste Bilanz und Desiderata. Pp. 22–58 in *Tertiarisierung der Lehrerinnen- und Lehrerbildung. Bilanztagung I*, edited by Hans Ambühl and Willi Stadelmann. Bern: Schweizerische Konferenz der kantonalen Erziehungsdirektoren.

Criblez, Lucien, Lukas Lehmann, and Christina Huber. 2016. *Lehrerbildungspolitik in der Schweiz seit 1990: Kantonale Reformprozesse und nationale Diplomanerkennung*. Zürich: Chronos.

Dickel, Sascha, and Jan-Felix Schrape. 2015. Dezentralisierung, Demokratisierung, Emanzipation. Zur Architektur des digitalen Technikutopismus. *Leviathan* 43(3): 442–463.

Dorschel, Robert, and Philipp Brandt. 2021. Professionalisierung mittels Ambiguität. Die diskursive Konstruktion von Data Scientists in Wirtschaft und Wissenschaft. *Zeitschrift für Soziologie* 50(3–4): 193–210.

Eckert, Nancy. 2019. Das Hochschulförderungs-und -koordinationsgesetz und seine Bedeutung für die Steuerung Pädagogischer Hochschulen in der Schweiz. *Beiträge zur Lehrerinnen- und Lehrerbildung* 37(October): 96–109.

Eisenberg, Eric M. 1984. Ambiguity as Strategy in Organizational Communication. *Communication Monographs* 51(3): 227–242.

Emirbayer, Mustafa, and Victoria Johnson. 2008. Bourdieu and Organizational Analysis. *Theory and Society* 37(1): 1–44.

Esposito, Elena. 2014. Plans and the Future: Designing the Unpredictable. Pp. 100–109 in *Driving Desired Futures*, edited by Michael Shamiyeh. Basel: De Gruyter.

Eyal, Gil. 2013a. For a Sociology of Expertise: The Social Origins of the Autism Epidemic. *American Journal of Sociology* 118(4): 863–907.

Eyal, Gil. 2013b. Spaces Between Fields. Pp. 158–182 in *Bourdieu and Historical Analysis*, edited by Philip S. Gorski. Durham/London: Duke University Press.

Flick, Uwe. 2016. *Qualitative Sozialforschung. Eine Einführung*. Reinbek bei Hamburg: Rowohlt Taschenbuch Verlag.

Förschler, Annina. 2018. Das "Who is who?" der deutschen Bildungs-Digitalisierungsagenda. Eine kritische Politiknetzwerk-Analyse. *Pädagogische Korrespondenz* 58: 31–52.

Foucault, Michel. 1972. *The Archaeology of Knowledge*. London: Tavistock.

Friese, Susanne. 2012. *Qualitative Data Analysis with ATLAS.ti*. London: Sage.

Geiss, Michael. 2021. Trade Unions, Digital Technologies and the Skill Question in Switzerland. Pp. 79–95 in *Transformationen von Arbeit, Beruf und Bildung in internationaler Betrachtung*, edited by Stefanie Dernbach-Stolz, Philipp Eigenmann, Chantal Kamm, and Stefan Kessler. Wiesbaden: Springer.

Godin, Benoît. 2006. The Linear Model of Innovation. *Science, Technology, & Human Values* 31(6): 639–667.

Grunwald, Armin. 2019. Digitalisierung als Prozess. Ethische Herausforderungen inmitten allmählicher Verschiebungen zwischen Mensch, Technik und Gesellschaft. *Zeitschrift für Wirtschafts- und Unternehmensethik* 20(2): 121–145.

Gugerli, David, Patrick Kupper, and Daniel Speich (eds.). 2005. *Die Zukunftsmaschine: Konjunkturen der ETH Zürich 1855-2005*. Zürich: Chronos.

Gugerli, David, and Daniela Zetti. 2019. Computer History. The Pitfalls of Past Futures. *Preprints zur Kulturgeschichte der Technik* 33. ETH Zürich. https://doi.org/10.3929/ethz-b-000385896 (20.06.2023).

Haase, Sanne, and Lillian Buus. 2020. Translating Government Digitalisation Policy in Higher Education Institutions: The Danish Case. *Nordic Journal of Digital Literacy* 15(4): 246–258.

Hänzi, Denis. 2015. Verheißungsvolle Potenziale. Ein neues Ideal der zukunftssicheren (Selbst-)Investition? *Berliner Journal für Soziologie* 25(1): 215–236.

Heintz, Bettina. 2008. Governance by Numbers. Zum Zusammenhang von Quantifizierung und Globalisierung am Beispiel der Hochschulpolitik. Pp. 110–128 in *Governance von und durch Wissen*, edited by Gunnar F. Schuppert und Andreas Voßkuhle. Baden-Baden: Nomos.

Honegger, Claudia, Hans-Ulrich Jost, Susanne Burren, and Pascal Jurt. 2007. *Konkurrierende Deutungen des Sozialen. Geschichts-, Sozial- und Wirtschaftswissenschaften im Spannungsfeld von Politik und Wissenschaft*. Zürich: Chronos Verlag.

Houben, Daniel, and Bianca Prietl (eds.). 2018. *Datengesellschaft. Einsichten in die Datafizierung des Sozialen*. Bielefeld: transcript.

Jasanoff, Sheila. 2015. Future Imperfect: Science, Technology, and the Imaginations of Modernity. Pp. 1–33 in *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power*, edited by Sheila Jasanoff und Sang-Hyun Kim. Chicago: Chicago University Press.

Jessop, Bob. 2008. A Cultural Political Economy of Competitiveness and its Implications for Higher Education. Pp. 13–39 in *Education and the Knowledge-Based Economy in Europe*, edited by Bob Jessop, Norman Fairclough, and Ruth Wodak. Rotterdam: Sense Publishers.

Keller, Reiner. 2011. The Sociology of Knowledge Approach to Discourse (SKAD). *Human Studies* 34(1): 43–65.

Keller, Reiner. 2013. *Doing Discourse Research. An Introduction for Social Scientists*. London: Sage.

Kiener, Urs. 2013. Die Fachhochschule als Missverständnis. Reform, Identität, Selbstbeschreibung. *Schweizerische Zeitschrift für Soziologie* 39(2): 341–360.

Leitch, Shirley, and Sally Davenport. 2007. Strategic Ambiguity as a Discourse Practice: The Role of Keywords in the Discourse on "Sustainable" Biotechnology. *Discourse Studies* 9(1): 43–61.

Lepori, Benedetto, and Tatiana Fumasoli. 2010. Reshaping the Swiss Higher Education System: Governance Reforms and Fields Reconfigurations. *Swiss Political Science Review* 16(4): 811–814.

Meyer, Uli. 2019. The Institutionalization of an Envisioned Future. Sensemaking and Field Formation in the Case of "Industrie 4.0" in Germany. Pp. 111–138 in *Socio-Technical Futures Shaping the Present. Futures of Technology, Science and Society*, edited by Andreas Lösch, Armin Grunwald, Martin Meister, and Ingo Schulz-Schaeffer. Wiesbaden: Springer.

Nassehi, Armin. 2024. *Patterns: Theory of the Digital Society.* Hoboken: Wiley.

Parreira do Amaral, Marcelo. 2018. Influencing the Other. Transnational Actors and Knowledge Transfer in Education. Pp. 589–598 in *The Routledge Handbook of Transregional Studies*, edited by Matthias Middell. Abingdon/New York: Routledge.

Rammert, Werner, Arnold Windeler, Hubert Knoblauch, and Michael Hutter (eds.). 2016. *Innovationsgesellschaft heute: Perspektiven, Felder und Fälle*. Wiesbaden: Springer.

Rebhorn, Daniel. 2019. *Digitalismus. Die Utopie einer neuen Gesellschaftsform in Zeiten der Digitalisierung*. Wiesbaden: Springer.

Rose, Nikolas. 1992. Engineering the Human Soul: Analyzing Psychological Expertise. *Science in Context* 5(2): 351–369.

Ruppert, Evelyn. 2018. *Sociotechnical Imaginaries of Different Data Futures: An Experiment in Citizen Data*. Rotterdam: Erasmus University Rotterdam.

Saner, Philippe. 2019. Envisioning Higher Education: How Imagining the Future Shapes the Implementation of a New Field in Higher Education. *Swiss Journal of Sociology* 45(3): 359–381.

Saner, Philippe. 2022. *Datenwissenschaften und Gesellschaft. Die Genese eines transversalen Wissensfeldes*. Bielefeld: transcript.

Saner, Philippe, and Sophie Mützel. 2023. *Erhebung von Dokumenten zur Digitalisierung von Hochschulbildung und Forschung in der Schweiz (1998-2020)*. (2.0.0) [Datensatz]. Lausanne: FORS Datenservice. https://doi.org/10.48573/a2cp-xk88 (20.06.2023).

Sauder, Michael, and Wendy Nelson Espeland. 2009. The Discipline of Rankings: Tight Coupling and Organizational Change. *American Sociological Review* 74(1): 63–82.

SBFI. 2017. *Herausforderungen der Digitalisierung für Bildung und Forschung in der Schweiz*. Bern: Staatssekretariat für Bildung, Forschung und Innovation.

Schäfer, Mirko Tobias, and Karin van Es (eds.). 2017. *The Datafied Society. Studying Culture through Data*. Amsterdam: Amsterdam University Press.

Schneider, Lena, and Ansgar Zerfass. 2019. Polyphony in Corporate and Organizational Communications: Exploring the Roots and Characteristics of a New Paradigm. *Communication Management Review* 3(2): 6–29.

Schweizerische Eidgenossenschaft. 2016. *Strategie «Digitale Schweiz»*. Biel: Bundesamt für Kommunikation.

Selwyn, Neil. 2013. Discourses of Digital "Disruption" in Education: A Critical Analysis. Paper presented at the *Fifth International Roundtable on Discourse Analysis*, Hong Kong, China, May 23–25, 2013.

Star, Susan Leigh. 2010. This is Not a Boundary Object: Reflections on the Origin of a Concept. *Science, Technology, & Human Values* 35(5): 601–617.

Star, Susan Leigh, and James R. Griesemer. 1989. Institutional Ecology, "Translations" and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907–39. *Social Studies of Science* 19(3): 387–420.

Straumann, Tobias. 2001. Rezession, Technologiepolitik und Risikokapital. Das Scheitern der Innovationsrisikogarantie 1985. *Schweizerische Gesellschaft für Wirtschafts- und Sozialgeschichte* 17: 403–420.

Suckert, Lisa. 2018. Unravelling Ambivalence: A Field-Theoretical Approach to Moralised Markets. *Current Sociology* 66(5): 682–703.

Süssenguth, Florian. 2015. Die Organisation des digitalen Wandels. Zur Funktion von Digitalisierungssemantiken in Wirtschaft, Medien und Politik. Pp. 93–121 in *Die Gesellschaft der Daten. Über die digitale Transformation der sozialen Ordnung*, edited by Florian Süssenguth. Bielefeld: transcript.

Tavory, Iddo, and Nina Eliasoph. 2013. Coordinating Futures: Toward a Theory of Anticipation. *American Journal of Sociology* 118(4): 908–942.

Tratschin, Luca. 2021. Post-NPM-Governance und Grenzobjekte. Zur organisationalen Funktion des Digitalisierungsdiskurses an Universitäten. *Soziale Systeme* 26(1–2): 285–312.

Tratschin, Luca, Christian Leder, and Katja Rost. 2023. Identity Articulation and Competition. Digitalization in the Swiss University Field, 2010–2020. *Swiss Journal of Sociology* 49(3).

Vedres, Balázs. 2022. Multivocality and Robust Action Dynamics in Political Discourse. *Poetics* 90: 101–576.

Weber, Karl, Patricia Tremel, and Andreas Balthasar. 2010. Die Fachhochschulen in der Schweiz: Pfadabhängigkeit und Profilbildung. *Swiss Political Science Review* 16(4): 687–713.

Zapp, Mike, and Francisco O. Ramirez. 2019. Beyond Internationalisation and Isomorphism – the Construction of a Global Higher Education Regime. *Comparative Education* 55(4): 473–493.

Zapp, Mike, Marcelo Marques, and Justin J. W. Powell. 2021. Blurring the Boundaries. University Actohood and Institutional Change in Global Higher Education. *Comparative Education* 57(4): 538–559.

Zuboff, Shoshana. 2019. *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power.* London: Profile.

7 Appendix

Table A1 Documents Examined

Abbrevation	Author	Title
BAKOM 2018	Bundesamt für Kommunikation	Eckwerte für eine Datenpolitik der Schweiz
BFS 2017	Bundesamt für Statistik	Dateninnovationsstrategie
Bundesrat 2016	Bundesrat	Botschaft zur Förderung von Bildung, Forschung und Innovation in den Jahren 2017–2020 vom 24. Februar 2016
Bundesrat 2018	Bundesrat	Strategie für offene Verwaltungsdaten in der Schweiz 2019–2023. (Open-Government-Data-Strategie, OGD-Strategie.)
Bundesrat 2020	Bundesrat	Der Bundesrat schafft ein Kompetenzzentrum für Datenwissenschaft. Medienmitteilung vom 13.05.2020.
Christen et al. 2020	Markus Christen, Clemens Mader, Johann Čas, Tarik Abou-Chadi, Abraham Bernstein, Nadja Braun Binder, Daniele Dell'Aglio, Luca Fábián, Damian George, Anita Gohdes, Lorenz Hilty, Markus Kneer, Jaro Krieger-Lamina, Hauke Licht, Anne Scherer, Claudia Som, Pascal Sutter, Florent Thouvenin	Wenn Algorithmen für uns entscheiden: Chancen und Risiken der künstlichen Intelligenz. TA-SWISS Publikationsreihe 72/2020
Economiesuisse & W.I.R.E. 2017	Economiesuisse & W.I.R.E.	Zukunft digitale Schweiz. Wirtschaft und Gesellschaft weiterdenken.
EDK 2018	Konferenz der Kantonalen Erziehungsdirektoren	Digitalisierungsstrategie. Strategie der EDK vom 21. Juni 2018 für den Umgang mit Wandel durch Digitalisierung im Bildungswesen.
ETH-Rat 2014	Rat der Eidgenössisch-Technischen Hochschulen	Strategische Planung 2017–2020 des ETH-Rats für den ETH-Bereich.
ETH-Rat 2016a	Rat der Eidgenössisch-Technischen Hochschulen	Der ETH-Bereich lanciert die «Initiative for Data Science in Switzerland»
ETH-Rat 2016b	Rat der Eidgenössisch-Technischen Hochschulen	Internationale Wettbewerbsfähigkeit stärken und in zukunftsweisende Forschungsbereiche investieren
Expertengruppe 2018	Expertengruppe zur Zukunft der Datenbearbeitung und Datensicherheit	Bericht der Expertengruppe zur Zukunft der Datenbearbeitung und Datensicherheit

Continuation of Table A1 on the following page.

Continuation of Table A1.

Abbrevation	Author	Title
GDS 2016	Geschäftsstelle Digitale Schweiz, Bundesamt für Kommunikation	Aktionsplan Digitale Schweiz. Massnahmen der Bundesverwaltung. April 2016. Biel: Bundesamt für Kommunikation.
GDS 2017	Geschäftsstelle Digitale Schweiz, Bundesamt für Kommunikation	Aktionsplan Digitale Schweiz. Massnahmen der Bundesverwaltung. Stand: November 2017
GDS 2018	Geschäftsstelle Digitale Schweiz, Bundesamt für Kommunikation	Aktionsplan Digitale Schweiz. Stand: 5. September 2018.
ICTswitzerland & Economiesuisse 2011	ICTswitzerland & Economiesuisse	ICTswitzerland und Economiesuisse: Digitale Agenda 2020. Auf dem Weg an die Weltspitze.
IDAG KI 2019	Interdepartementale Arbeitsgruppe «Künstliche Intelligenz» (SBFI)	Herausforderungen der künstlichen Intelligenz. Bericht der interdepartementalen Arbeitsgruppe «Künstliche Intelligenz» an den Bundesrat
ISA IG 2016	Interdepartementaler Steuerungsausschuss Informationsgesellschaft, Bundesamt für Kommunikation	Bericht 2012–2015 zur Umsetzung der Strategie des Bundesrates für eine Informationsgesellschaft in der Schweiz vom März 2012. April 2016.
ISS 1998	Bundesrat	Strategie des Bundesrates für eine Informationsgesellschaft in der Schweiz vom 18. Februar 1998
ISS 2006	Bundesrat	Strategie des Bundesrats für eine Informationsgesellschaft in der Schweiz, Januar 2006
ISS 2012	Bundesrat	Strategie des Bundesrates für eine Informationsgesellschaft in der Schweiz März 2012
Jarchow & Estermann 2015	Jarchow, Thomas & Beat Estermann	Big Data: Chancen, Risiken und Handlungsbedarf des Bundes. Ergebnisse einer Studie im Auftrag des Bundesamts für Kommunikation
SATW 2019	Schweizerische Akademie der Technischen Wissenschaften	Künstliche Intelligenz in Wissenschaft und Forschung
SBFI 2017	Staatssekretariat für Bildung, Forschung und Innovation	Herausforderungen der Digitalisierung für Bildung und Forschung in der Schweiz
SCNAT 2018	Schweizerische Akademie der Naturwissenschaften	Synthese des Workshops vom 8. Februar 2018. Bedeutung der Informatik heute – Visionen für morgen.
SDS 2016	Bundesamt für Kommunikation	Strategie Digitale Schweiz. April 2016

Continuation of Table A1 on the following page.

Continuation of Table A1.

Abbrevation	Author	Title
SDS 2018	Bundesamt für Kommunikation	Strategie «Digitale Schweiz». Vom Bundesrat verabschiedet am 5. September 2018
SDS 2020	Bundesamt für Kommunikation	Strategie «Digitale Schweiz». September 2020
SECO 2017a	Staatssekretariat für Wirtschaft	Auswirkungen der Digitalisierung auf Beschäftigung und Arbeitsbedingungen – Chancen und Risiken.
SECO 2017b	Staatssekretariat für Wirtschaft	Bericht über die zentralen Rahmenbedingungen für die digitale Wirtschaft. Bericht des Bundesrats vom 11. Januar 2017.
SEFRI 2019	Secrétariat d'Etat à la formation, à la recherche et à l'innovation	L'intelligence artificielle dans la formation
SNSF 2015	Swiss National Science Foundation	NRP 75 Big Data. National Research Programme. Call for Proposals
SNSF 2018	Swiss National Science Foundation	NRP 77 Digital Transformation. National Research Programme. Call Document
Staatslabor 2018	Staatslabor	Kurzbericht zum Workshop Aktualisierung der Strategie Digitale Schweiz vom 10. April 2018 in Bern
swissuniversities 2018	swissuniversities	Strategische Planung 2021–2024 von swissuniversities. Zuhanden der Schweizerischen Hochschulkonferenz
UVEK 2019	Eidgenössisches Departement für Umwelt, Verkehr, Energie und Kommunikation UVEK	Bericht zu den Empfehlungen der Expertengruppe zur Zukunft der Datenbearbeitung und Datensicherheit: Kenntnisnahme und weiteres Vorgehen. Stand: 15. Oktober 2019

Table A2 Aggregated Frequencies of Selected Topics in the Sample[a]

Topic	Terms	Strategy 1998	Strategy 2006	Strategy 2012	Strategy 2016	Strategy 2018	Strategy 2020
Digitalisation as social transformation	Digital*	0	0	4	22	48	61
	Automatisation	0	0	0	1	4	4
	Modernisation	1	0	0	1	1	0
	Transformation	0	0	0	10	11	19
	Change	0	1	2	5	11	14
	Transition	0	0	3	4	6	9
	Development	8	16	28	50	50	67
	Process*	1	1	11	25	20	27
	Absolute Frequency	10	18	48	118	151	201
	Relative Frequency in %	0.66	0.67	1.16	2.27	1.99	1.72
Data, artificial intelligence	Data	2	10	17	31	56	134
	Algorithm*	0	0	0	0	1	1
	Artificial*	0	0	0	1	7	10
	Intelligen*	0	0	4	6	20	16
	Smart*	0	0	5	3	9	11
	Distribut*	0	0	2	6	6	6
	Absolute Frequency	2	10	28	47	99	178
	Relative Frequency in %	0.13	0.37	0.67	0.9	1.3	1.53

[a] The topics as well as the terms are translated from the German original by the author. Source: Saner and Mützel (2023).