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Understanding digital agency: Digital transformation as an organizational update of subjective sovereignty

Thomas Wendt, University of Trier, GER, wendtth@uni-trier.de

The digital transformation significantly impacts the agency and sovereignty of the modern subject. Traditionally, the defining feature of the modern subject has been its capacity for autonomous decision-making. This classic premise of modernization theory is now being updated through digital transformation. The article integrates subject and organization theory to trace the historical evolution into the digital age. It becomes clear that the agency and decision-making capacity of the modern subject have never existed in isolation; rather, they have always been shaped by and dependent upon organizational structures. Therefore, the question of the subject's digital sovereignty is closely linked to the social form of organization, which structures social opportunities by differentiating behavioral expectations and imperatives for action. The early integration of technical systems into organizational design laid the foundation for digitization within organizations. The growing algorithm-based design of subjective guidelines for action is now refining organizational structuring processes and marks a turning point for subjective agency and decision-making power. As a result of this new actor model, the subject in the digital society faces new questions regarding the relevance and social scope of its decisions.

Introduction

The advent of digital transformation necessitates a re-evaluation of the concept of subjectivity. Classical modernization theory posits that the sovereignty of the subject is contingent upon the capacity to make decisions. The article integrates subject and organization theory to trace a historical trajectory of the evolution of the digital age. This connection elucidates that the agency and decision-making power of the modern subject was never autonomous in a vacuum; rather, it was also reliant on the organizational processing and filtering of decision-making alternatives. The question of the analogue and digital sovereignty of the subject is inextricably linked to the concept of organization as a social form that structures social spaces of opportunity through the differentiation of behavioral expectations and imperatives for action. From the outset, organizations have paved the way for digitization by fostering a proclivity for data through the implementation of technical registries. As technology progresses, the degree of specificity in subjective action guidelines continues to increase. The technical-medial conditioning of the subject, which was developed and perfected above all in organizations, is now continuing as an algorithmic genesis of opportunity. Through the computational construction of reality, the digital subject is confronted with questions about the relevance and social scope of its decisions.

The article initially posits that modernization theory is most commonly conceptualized as a form of decision theory (1). The capacity of the subject to make autonomous decisions is increasingly being called into question in the context of digitality diagnoses (2). As a consequence of the digital transformation, the foundations of the concept of sovereignty are being challenged, particularly in light of the pervasive influence of organizations across society (3). From one perspective, organizations structure social and subjective spaces of opportunity. From another perspective, organizations have historically employed data-driven forms of control to construct their own structures. In this context, the history of organizational management appears to be an anticipation of the advent of digitization (4). As part of the digital transformation, the technical-medial systematization of subjective options for action and decision-making is not limited to organizations. Rather, it constitutes a new type of algorithmic genesis of possibility, which is expressed not least in the emergence of a new actor model (5). It is therefore unsurprising that the optimism and formerly liberal promise of digital transformation with regard to social developments and individual lifestyles is now being met with increasing skepticism in the context of socio-diagnostic debates. The article concludes with a call for the integration of subject and organizational theory for the analysis of digital transformation, thereby introducing a novel perspective into the discourse (6).

1. Modernization theory as decision theory

One of the fundamental experiences of the modern subject is the possibility that things can be different. Alternatives make decisions necessary and generate selection problems. Decision-making is a process that transforms contingency by converting possibilities into realities. One of the principles of decision theory is the fact that, in general, neither all alternatives are known nor is it possible to precisely estimate their respective consequences.[1] Considering that only undecidable decisions can be decided,[2] the practical handling of decision paradoxes is part of the everyday life of the modern subject. Decisions cannot be ultimately justified[3] and, due to their underlying contingency, take their toll in the constant weighing up of alternatives. Modern life is typified by an ongoing quest for compelling justifications to engage in or abstain from actions, driven by the desire to circumvent potential adverse outcomes.[4] The social spectrum of opportunities makes the associated decision-making and freedom potentials appear risky[5] and the historical liberation process of the subject appear ambivalent.[6] In reference to Descartes, the constitutive *conditio sine qua non* for the modern subject could be stated as follows: "I decide, therefore I am."

Theories of modernization integrate different points of departure in order to provide an analytical account of the historical process of the subject's liberation: From a theoretical standpoint, the concept of modernity can be understood as a phenomenon characterized by an increase in possibilities and a process of selection. This understanding is based on a combination of observations that determine the nature of modernity as a temporal difference.[7] The assumption of an increase in possibilities is based on the distinction between modern and pre-modern societies. The growing need to make decisions presupposes a readjustment of the relationship between social structure and subject, with the result that the multiplication of decision-making possibilities inscribe an increasing function into the inherent logic

[1] Herbert A. Simon, "Theories of Decision-Making in Economics and Behavioral Science," *The American Economic Review* 49, no. 3 (1959): 253–283.

[2] Heinz v. Foerster, "Ethics and Second-Order Cybernetics," in *Understanding Understanding. Essays on Cybernetics and Cognition* (New York: Springer, 2003), 287–304.

[3] Niklas Luhmann, "Die Paradoxie des Entscheidens," in *Schriften zur Organisation. Band 2. Theorie organisierter Sozialsysteme*, ed. Ernst Lukas and Veronika Tacke (Springer VS, 2019): 405–433.

[4] Sebastian Manhart, "Der Preis der Freiheit. Bildung, Wissen, Organisation," *Zeitschrift für Soziologie der Erziehung und Sozialisation* 29, no. 1 (2009): 80–95.

[5] Ulrich Beck and Elisabeth Beck-Gernsheim, eds. *Riskante Freiheiten. Individualisierung in modernen Gesellschaften* (Suhrkamp, 1994).

[6] Peter Gross, *Die Multioptionsgesellschaft* (Suhrkamp, 1994).

[7] Ulrich Beck, Anthony Giddens, and Scott Lash, *Reflexive modernization. Politics, tradition and aesthetics in the modern social order* (Polity, 1994); Zygmunt Bauman, *Retrotopia* (John Wiley & Sons Ltd, 2017).

of modernity.[8] The modern age is characterised by a spirit of innovation and growth, as well as a commitment to progress and the advancement of social conditions. In the context of historical upheaval, the belief in progress as the defining principle of modernity has emerged as a functional equivalent to the theological fixed point that previously occupied this role. By transforming the church's monopolized interpretation of reality into a belief in the necessity of dynamic conditions,[9] the process of social modernization is also grounded in a quasi-religious notion.[10] In terms of the modern subject's factual, temporal, and social circumstances, new possibilities are regarded as enhancements, while existing possibilities are perceived as obsolete. This results in individualizing deviation through subjective decision-making becoming a positive value.[11] The phenomenon of individualizing deviation can be attributed to the subjective decisions of the modern subject. In essence, the modern subject occupies its place in the world by making decisions on its own responsibility.

In addition to the diagnosis of the increasing need for modern subjects to make decisions due to the dynamization of social conditions and a spectrum of stress symptoms associated with this,[12] what is particularly striking about social multi-optionality is that the omnipresence of opportunities is more social ideology than subjective practice in the sense of appropriation. Social opportunities are distinguished by subtle but sharp differences.[13] With regard to modern subjectivity, the social critique of the promise of modernization, which has only been partially fulfilled, can be seen as being allowed but not able.[14] In particular, the criticism of a lack of equal opportunities and social mobility indicates that social conditions are static, thereby demonstrating that the subject's decisions have a limited social reach. Consequently, subjective autonomy is always relative.

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[8] Andreas Reckwitz, "Die Moderne jenseits der Modernisierungstheorien," in *Kreativität und soziale Praxis. Studien zur Sozial- und Gesellschaftstheorie* (transcript, 2016): 139–153.

[9] Joseph A. Schumpeter, *Capitalism, socialism and democracy*. 2nd ed. (Harper & Brothers, 1942).

[10] Arnold Gehlen, "Die Säkularisierung des Fortschritts," in *Säkularisation und Utopie. Ebracher Studien. Ernst Forsthoff zum 65. Geburtstag* (W. Kohlhammer GmbH, 1967): 63–72.

[11] Sebastian Manhart and Thomas Wendt, "Delokalisierung, Entzeitlichung und Entpersonalisierung organisierter Pädagogik. Zur digitalen Transformation organisationaler Raumzeit und ihres Subjekts," *Zeitschrift für Weiterbildungsforschung* 42, no. 2 (2019): 235–248.

[12] Georg Simmel, "The Metropolis and Mental Life," in *On Individuality and Social Forms*, ed. Donald Levine (The University of Chicago Press, 1972); Richard Sennett, *The Corrosion of Character: The Personal Consequences of Work in the New Capitalism* (Norton, 1998); Sighard Neckel and Greta Wagner, eds., *Leistung und Erschöpfung. Burnout in der Wettbewerbsgesellschaft* (Suhrkamp, 2013).

[13] Pierre Bourdieu, *Distinction: A social critique of the judgement of taste* (Harvard University Press, 1984).

[14] Jürgen Habermas, "Die Moderne – ein unvollendetes Projekt," in *Wege aus der Moderne. Schlüsseltexte der Postmoderne-Diskussion,* ed. Wolfgang Welsch (VCH, 1988): 177–192.

Criticism of the autonomous agency and decision-making capacity of the subject is not only the subject of social theory, but also a classic subject of anthropology. Debates about the decentration and recentration of the subject have been an established social discourse pattern not only since digitization.[15] Anthropological reflection and the associated responses to the question of humanity's place in the world indicate a consistent trend: humanity is becoming increasingly detached from a central position. Historically, the belief in self-exaltation and specialness of an autonomous subject has come under increasing pressure,[16] not only due to the work of Copernicus, Darwin and Freud[17] or the modernization-theoretical scepticism of post-structuralism,[18] but currently above all due to new technical possibilities associated with the digital transformation.[19] In the context of upheavals and the associated uncertainty, individuals tend to engage in self-reflection and examine the possibilities available to them.[20] The question of people's position in society and thus their sovereignty also arises in the context of digital transformation. As a constitutive problem of modernization theory, the question of individualizing deviation and the social scope of subjective decisions is also a central question regarding the constitution of the digital society. Similarly to previous technical-media upheavals,[21] digitization signifies a restructuring of social and subjective possibilities.

2. Diagnoses of digital society as the end of the sovereignty of the subject

Not only the social critique of an autonomous subject or the long-running history of reflection in anthropology put a question mark behind the sovereignty of the subject.

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[15] Helmuth Plessner, *Levels of organic life and the human: an Introduction to philosophical anthropology* (Fordham University Press, 2019).

[16] Norbert Ricken, "Menschen–Zur Struktur anthropologischer Reflexionen als einer unverzichtbaren kulturwissenschaftlichen Dimension," in H*andbuch der Kulturwissenschaften. Grundlagen und Schlüsselbegriffe*, ed. Friedrich Jaeger and Burkhard Liebsch (Metzler, 2011): 159f.

[17] Klaus Kufeld, "Vom Homo sapiens zum Homo Digitalis. Steuern wir auf ein neues Menschenbild zu?," in *Rückkehr zur Utopie. Philosophische Szenarien* (Karl Alber, 2021): 73–85.

[18] Detlef Pollack, "Modernisierungstheorie – revised: Entwurf einer Theorie moderner Gesellschaften," *Zeitschrift für Soziologie* 45, no. 4 (2016): 220.

[19] Sebastian Manhart, "Das gekränkte Subjekt in den Mythen digitaler Technik. Das Digital Mindset zwischen analoger Individualisierung und digitaler Personalisierung," in *Digitale Mindsets*, ed. Stephan Kaiser and Bernard Ertl (Springer, 2023): 211–35.

[20] Jörg Zirfas, "Ohne Gewähr oder: Die unsichere Zukunft," *Paragrana. Internationale Zeitschrift für Historische Anthropologie* 24, no. 1 (2015): 26–38.

[21] Yvonne Ehrenspeck, "Kontingenz in den Medientheorien der Moderne," in *Tradition und Kontingenz*, ed. Alfred Schäfer and Michael Wimmer (Waxmann, 2004): 83–200.

The social scope of his decisions is also questioned and problematized in the context of numerous diagnoses of digital society. The optimistic and originally libertarian vision of digital transformation is now being met with skepticism with regard to social developments and individual lifestyles. The vision of facilitation, participation and deliberative interaction originally associated with the invention and spread of the internet has lost its appeal.[22] Social diagnoses such as Black Box Society,[23] surveillance capitalism,[24] and digital panoptism[25] express a critical stance towards the implications of accelerating digitization, which is perceived to undermine the fundamental tenets of the modern subjectivity. This is consistent with the view that diagnoses of modernity do not necessarily view social progress and subjective liberation as inherently positive. Rather, they are seen as potentially ambivalent due to the increasing pressure to make decisions and the associated emergence of uncertainty and risk.[26] The subjective reworking of alternatives into decisions represents a central task of modern identity formation. This process is linked not only to opportunities but also to the subject's selection problems. At the same time—and this is comparatively new—characteristic definitions of digital modernity are reversing an observation scheme previously associated with modernization theories. In contrast to the perceived advantages associated with the implementation of contemporary principles, there is a growing perception that it is, in fact, a disadvantage. This is leading to the social space of opportunity being conceptualised as a space of impossibility.[27] The traditional notion of subjectivity is once again being challenged by the advent of digitization. The aforementioned diagnoses suggest that the foundation upon which subjects make decisions is undergoing a transformation.

Different lines of discourse in the analysis of digitization converge in postulating the impossibility of subjective autonomy and decision-making and understanding the digital transformation as a progressive undermining of the subject's

[22] Jaron Lanier, *Dawn of the New Everything: Encounters with Reality and Virtual* (Henry Holt and Company, 2017).

[23] Frank Pasquale, *The Black Box Society. The Secret Algorithms That Control Money and Information* (Harvard University Press, 2015).

[24] Shoshana Zuboff, *The Age of Surveillance Capitalism* (Public Affairs, 2019).

[25] Gesa Lindemann, "In der Matrix der digitalen Raumzeit. Das generalisierte Panoptikum," in *Privat 2.0. Kursbuch* 177, ed. Armin Nassehi (Murmann, 2014): 162–173; Sabine Maasen and Barbara Sutter, "Dezentraler Panoptismus. Subjektivierung unter techno-sozialen Bedingungen im Web 2.0," *Geschichte und Gesellschaft* 42, no. 1 (2016): 175–194.

[26] Ulrich Beck, Anthony Giddens and Scott Lash, *Reflexive Modernisierung. Eine Kontroverse* (Suhrkamp, 1996).

[27] Thomas Wendt, "Paradoxe Möglichkeiten. Management, Führung und die Pädagogik der Organisation," in *Paradoxien (in) der Pädagogik*, ed. Ulrich Binder and Franz Kasper Krönig (Beltz Juventa, 2021): 300–312.

sovereignty. Subjective autonomy in the form of informational self-determination, for example, is becoming increasingly impossible.[28] As data markets expand, the aggregation of user traces into data portfolios is becoming a significant aspect of the digital modern age. This has the potential to impact the fundamental principles of democracy and individual autonomy. Citizens become users and these become the plaything of economic interests. It is no coincidence that large tech companies are associated with an anti-liberal counter-revolution that loudly emphasizes disruption, but primarily stabilizes wealth and inequality.[29] As a result, the diagnosis of individuals alienated from politics by the economy[30] adds a new chapter to the book of critical theory, given that their current situation of digitally transmitted powerlessness negates the subjective potential for influence. The concept of "alienation 2.0," as posited by Nassehi,[31] is not merely a consequence of the increasing digitization of social relations; it is also a consequence of a renewed structural change in the political public sphere. The deliberative character of democratic processes is undermined by the platform form of social media and the self-referentiality of echo chambers produced there. As a result, the political public sphere is facing significant challenges, not only due to the influence of fake news,[32] but also because it is increasingly becoming an expression of particularly loud but ultimately private points of view, rather than a communicative negotiation process.[33] From the perspective of the subject, digitality gives rise to challenges in terms of lifestyle. Filter bubbles,[34] for instance, not only reinforce the selectivity of subjective perception and diminish the potential for reflection, but they also foster narcissism.[35] This is the consequence of the self-referential processing that occurs on social media. The self-presentation and self-marketing of the subject are problematic, in part, because the permanent storage of content and the permanence of digital memory mean that the past is no longer

[28] Evgeny Morozov, *To save everything, click here: technology, solutionism and the urge to fix problems that don't exist* (Penguin Books, 2013).

[29] Adrian Daub, "Die Erben des Silicon Valley," *Merkur. Gegründet 1947 als deutsche Zeitschrift für europäisches Denken* 76, no. 876 (2022): 20–32.

[30] Hartmut Rosa, "Demokratischer Begegnungsraum oder lebensweltliche Filterblase? Resonanztheoretische Überlegungen zum Strukturwandel der Öffentlichkeit im 21. Jahrhundert," *Leviathan* 49, no. 37 (2021): 252–274.

[31] Armin Nassehi, "Arbeit 4.0. Was tun mit dem nicht organisierbaren Rest," in *Freiheit, Gleichheit, Ausbeutung. Kursbuch* 179, ed. Armin Nassehi and Peter Felixberger (Murmann, 2014): 135–154.

[32] Byung-Chul Han, *Infocracy: Digitalization and the Crisis of Democracy* (Polity, 2022).

[33] Jürgen Habermas, "Überlegungen und Hypothesen zu einem erneuten Strukturwandel der politischen Öffentlichkeit," *Leviathan* 49, no. 37 (2021): 470–500.

[34] Eli Pariser, *The Filter Bubble. What the Internet Is Hiding from You* (London: Viking, 2011).

[35] Michael Haller, Narzissten in der Filterblase. Das Medienverhalten der Millenials, in *#realitycheck_medien. Kursbuch 195*, ed. Armin Nassehi and Peter Felixberger (Kursbuch Kulturstiftung, 2018): 75–186.

forgotten; rather, it becomes transparent as an inexhaustible reservoir of subjective transgressions.[36] The fact that a dystopian potential is inscribed in the omnipresence of information acts as an intersection in the analysis of digital social conditions. The panoptic character of a surveillance regime, whose technical contexts remain opaque, is a pivotal aspect in the formulation of various interpretations of the present, irrespective of whether these are predominantly articulated as political, economistic, or technicist diagnoses of time. In consideration of the premises of modernization theory, the dystopian potential of the various diagnoses of digitality is primarily evident in the manner by which the subject's sovereignty and capacity for decision-making find themselves subjected to constraints. The potential for subjective self-development through automated decision-making is being called into question. This prompts the pivotal question concerning the future of digital society: whose agency and decision-making ability will be central?

The enduring criticism of the idea of an autonomous subject is once again taking place in the context of the digital transformation of society. Less attention has so far been paid to the fact that the question of the digital sovereignty of the subject is also closely linked to organization as a social form that structures social spaces of possibility through the differentiation of behavioural expectations and imperatives for action. The digital reconfiguration of social possibilities represents not only the advent of a new technological revolution,[37] but also the consequence of the fact that the structuring of social opportunities is inextricably linked to the principle of organization.[38] In their role as drivers of progress, organizations serve as generators of social and subjective opportunities. Their historically evolved continuity of data-driven management and control makes the use of digital software solutions a probable outcome. The progressive digitization of organizations is essentially a consequence of their data affinity.[39] This affinity generates and forms the modern subject through the production of behavioral expectations and action imperatives as part of the organization's structural formation processes. In the following, the intrinsic logic of the organization thus serves as a point of departure for the analysis of digital transformation processes, which allows for their examination along a long-term

[36] Viktor Mayer-Schönberger, "Vergessen und das digitale Gedächtnis," in *Soziologie des Vergessens. Theoretische Zugänge und empirische Forschungsfelder,* ed. Oliver Dimbath and Peter Wehling (UVK, 2011): 229–241.

[37] Don Tapscott, *The digital economy: promise and peril in the age of networked intelligence* (McGraw-Hill, 1996).

[38] Thomas Wendt, *Die nächste Organisation. Management auf dem Weg in die digitale Moderne* (transcript, 2020).

[39] Thomas Wendt, "Organized Futures. On the Ambiguity of the Digital Absorption of Uncertainty," *Frontiers in Education* 6 (2021), https://doi.org/10.3389/feduc.2021.554336.

continuum in order to develop a novel perspective on the genesis of digital sovereignty. In other words, the interlinking of subject and organization theory provides a new opportunity to pose the question of the sovereignty of the subject.

3. The organization of social and subjective opportunities

The history of the digital subject commences prior to the advent of the Internet and the advent of dynamic interface input, which structures the possibilities for perception and action.[40] And it begins to a significant extent in organizations. The digital structures and the associated shaping of behaviors and actions, which are now taken for granted in society due to the omnipresence of digital devices and the data traces of digital practice, are primarily developed and systematized in organizations.[41] The integration of technical registries in organizational settings has fostered an inherent affinity for data from the outset, thereby facilitating the advent of digitization within these entities.[42] The concept of digitization has a long history within the organization, with its use of media-based forms of data-driven control being a key factor in the development of its internal structures.

The analysis of the social form of organization therefore allows a better understanding of the conditions of reality and possibility of subjects in the digital modern age. The disruptive quality of digitization becomes just as visible as a continuity line of organizational data affinity. This becomes apparent by focusing on the social function of organizations: The principle of organization is based on the coordination of different job-specific partial tasks, which are aligned with each other through the differentiation of structures. These structures serve as a framework for action based on the division of labor and are oriented towards a fixed point in the future.[43] Nevertheless, there is an irreconcilable discrepancy between general structural specifications and subjective respecification that cannot be circumvented.[44]

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[40] Armin Nassehi, "Arbeit 4.0. Was tun mit dem nicht organisierbaren Rest," in *Freiheit, Gleichheit, Ausbeutung. Kursbuch* 179, ed. Armin Nassehi and Peter Felixberger (Murmann, 2014): 135–154.

[41] Thomas Wendt and Sebastian Manhart, "Digital Decision Making als Entscheidung, nicht zu entscheiden. Zur Zukunft des Entscheidens in der Digitalisierung," *Arbeit. Zeitschrift für Arbeitsforschung, Arbeitsgestaltung und Arbeitspolitik* 29, no. 2 (2020): 143–160.

[42] Thomas Wendt, "Organized Futures"; Sebastian Manhart and Thomas Wendt. "Soziale Systeme? Systemtheorie digitaler Organisation," *Soziale Systeme. Zeitschrift für soziologische Theorie* 26, no. 1/2 (2021): 21–53.

[43] Niklas Luhmann, *Organization and Decision*. (Cambridge University Press, 2018).

[44] Thomas Wendt, "Regelmäßigkeiten der (Un-)Ordnung. Organisation und Management zwischen Theorie und Praxis," in *Organisation zwischen Theorie und Praxis. Jahrbuch der Sektion Organisationspädagogik*, ed. Anja Mensching et al. (Springer VS, 2023): 75–88.

From a planning perspective, the subject's potential for deviation is always an obstacle to the organization running efficiently. Accordingly, the preliminary stages of management entail the cultivation of a practice of medially formatting the subject,[45] thereby affording scope for action that is meticulously planned and tailored to facilitate the realization of organizational objectives. Organizational structure formation always aims to filter alternatives or avoid decisions so as not to overload everyday practice with contingency.

The claim of formatting behaviours and scope for deviation and placing them on a reliable—and preferably predictable—basis has a long tradition in the design of organizations. Organizational data affinity corresponds to the attempt not to leave organizational processes to random arbitrariness, but to design the order of the organization as something that can be planned and controlled. If digitization is related to the organizational systematization and coordination of actions, the following picture emerges: digitization implies structuring or automating work-sharing processes and their coordination with the help of software solutions in order to make them trouble-free. In the design of work contexts and the coordination of different courses of action, the formation of digital structures thus serves as an organizational response to subjective motives and idiosyncrasies that render the rationality of organizational planning untenable. The data affinity of organizational control continues to evolve over the various waves of industrial revolution from mechanization, electrification and automation to the current point where algorithms are increasingly being used for organizational structure formation. In essence, in the history of the organization, the work instruction card becomes the punch card, the punch card becomes the computer, and the computer becomes what is currently being discussed as artificial intelligence. From a historical perspective, the organizational systematization of subjective scope for action has progressed from its origins in the pre-digital era to the digital age in a relatively short period of time.

4. The technical-media formatting of the subject through organization

Organizational structures aim to filter alternatives or make decisions unnecessary. What is possible is structured to coordinate actions and align them with organizational goals. From this vantage point, the organization serves to obviate the necessity for the subject to make too many decisions. Organizations always function as a reconfiguration of agency by specifically arranging subjective options for action.

[45] Thomas Wendt, "Das Subjekt im Zeitalter digitaler Reproduzierbarkeit. Subjektivierung als Praxis digitaler (Selbst-)Organisation," *merzWissenschaft | MEDIEN + ERZIEHUNG* 66, no. 6 (2022): 37–48.

The demand for a precise allocation of subjective room for maneuver through the design of datafied orders in management is therefore justified by the fact that the subjects involved are ascribed autonomy and maturity and thus a potential for deviation. In essence, the subject can be regarded as a problematic entity. Digital technology is therefore a continuation of considerations that have been central design principles since the beginning of modern management.

The various management programs of Frederick Taylor, Erich Gutenberg, Henry Ford, or Frank Gilbreth use the deficits of the subject as a starting point to overcome them through processes of datafication. On closer inspection, the beginnings of management theory thus function not only as a laboratory for digitization. The early phase of management also provides an anthropology of organizational control that is remarkably timely in light of the digital transformation of organizations and society. This concerns both a pronounced technological euphoria with the explicit assumption that man is better off with a machine than without it and a related deficit-oriented perspective on the deficiency of the subject.[46] Ford, for example, states that the imperfections of human nature stand in the way of our goodness, since human beings make enormous mistakes due to distorted evaluations of things.[47] Taylor diagnoses an anthropologically determined laziness. From this arises a subjective motive for systematic avoidance.[48] For Gutenberg, it is the deficiencies inherent in the subject that cause it to lack the means to fully implement the correct measures.[49] And for Gilbreth, clumsiness and bad habits function as anthropological factors in identifying deficient movement patterns.[50]

In early management, the inadequacy of the subject leads to structurally analogous solutions, in that the respective programs are aimed at the technical-medial formatting of the subject and its possibilities for action. The overall goal is to overcome anthropological deficits by specifying precise steps of action, whether Ford conceives of human labor as a prosthetic extension of machines, Taylor measures steps of work and breaks them down into small parts, Gutenberg uses numerical units of organization as the object of his calculations, or Gilbreth uses visualizations as data-shaped specifications of the only correct movements.[51] Machinization, measurement,

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[46] Thomas Wendt, "Vom Homo organisans zum Homo digitalis. Anthropologie als Theorie digitaler Organisation," *MedienPädagogik. Zeitschrift für Theorie und Praxis der Medienbildung* 63 (2024): 21–41.

[47] Henry Ford and Samuel Crowther, *My Life and Work* (Doubleday, Page & Company, 1922).

[48] Frederick W. Taylor, *The principles of scientific management* (Harper & Brothers, 1911).

[49] Erich Gutenberg, *Die Unternehmung als Gegenstand betriebswirtschaftlicher Theorie* (Spaeth und Linde, 1929).

[50] Frank B. Gilbreth, *Applied Motion Study: A Collection of Papers on the Efficient Method to Industrial Preparednes* (Sturgis & Walton, 1919).

[51] Thomas Wendt, *Die nächste Organisation*.

calculation, and visualization constitute organization in a data-shaped structure that not only goes hand in hand with the decentering of the subject, but also functions as a projection of the rationality of planning. By making the necessary steps of action visible from lists, tables, or work instructions, the technical-medial formatting of the subject acts as an access to and thus an extension of the body.[52] The premises of modernization theory, namely autonomy and the ability to make decisions, are systematically undermined by organizations.

What these different early management design strategies have in common is that they aim to generate a data matrix as a blueprint for the only correct course of action, which precedes the subject of the organization as a preview of its actions. The mapping and transfer of various activities into a data track in Frederick Taylor's *Scientific Management* is based on the symbiosis of the metrics of a chronometer and the logic of a table. By measuring time, distance, or weight, the function of organizational design is to anticipate the behaviors required to achieve goals through planning. The result is a data-driven one-best way of doing work that is available regardless of the individuals involved. Measuring the organization makes it possible to overcome the deficiency of the subject by reducing its potential for interference and establishing a structural primacy that renders the mass of inherited knowledge meaningless as a hitherto established form of subject-dependent transmission.[53]

The structural decentering of the subject through the formatting of its field of action is also the goal and the result of the visualization of the organization. An image is a moment in time that remains visible. Movement studies with the camera graphically depict work processes, which as a database make it possible to eliminate unnecessary and undirected movements because they are permanently available.[54] A technology-enabled process generates a data structure from movements that visualizes the correct movement as a guideline and thus serves as a precise model for individual action steps. Like the measurement of work processes, the visualization of actions is attractive for the data-based design of organizational structures, as precise specifications of the required behaviors can be addressed to workers through a limited number of graphical decision objects.[55] Organizational possibilities result from the restriction of subjective possibilities, which not only illustrates the subjectivation principle of organizations, but also makes plausible their planning attempt to

[52] Marshall McLuhan, *Understanding media: The extensions of man* (McGraw-Hill, 1965).
[53] Frederick W. Taylor, *The principles of scientific management*.
[54] Frank B. Gilbreth, *Applied Motion Study: A Collection of Papers on the Efficient Method to Industrial Preparednes* (Sturgis & Walton, 1919).
[55] Florian Hoof, *Angels of Efficiency. A Media History of Consulting* (Oxford University Press, 2020).

systematize the subject's possibilities for action and decision by means of data-filled orders.[56]

Appearing as an irrational factor, the psycho-physical subject is also the starting point for modeling the organization as a complex of quantities.[57] The calculability of the organization aims at ensuring that steps of processing run smoothly according to mathematical principles. The ideal type of calculability enables transparency, controllability and planning reliability of organizational processes. Individual agency is understood as agency to deviate, and thus as efficiency and control problems that stand in the way of negating and inhibiting contingency. The construction of indicators becomes the decisive organizational problem, and the organization becomes a literally formalized structural context, since it is based on mathematical formulas that define calculation paths and thus determine the subjective scope for decision-making and action.

The beginnings of management theory reflect a media history of managerial control programs whose function is to contain the idiosyncrasies of the subject and the contingency associated with them. The subject's possibilities of perception and action structured in this way are systematically used by organizations. The organization of early management is synonymous with contingency aversion and data-driven control ambition in the elimination of subjective interference potential. Despite different approaches, the practices of measurement, visualization, calculation, and mechanization produce a subject formatted in the sense of the organization, whose alignment with a metrically determined ideal, formalized patterns of movement, or the objectivity of mathematical calculation makes it possible to secure the organization's future and at the same time generates a continuum of different design strategies.[58] Against this background, it becomes understandable why Niklas Luhmann, following Fritz Heider, understands the principle of organization as a medium that enables the creation of different forms through the design of structures,[59] which generate organizational possibilities through the targeted limitation of subjective possibilities. Luhmann's use of the term "program" for the design of task profiles is a conceptual anticipation of the digital age, particularly with regard to the input-output logic of standardizable activities and processes, and points to the continuity of data-driven control in organizations.[60] Adaptation to data-based

[56] Thomas Wendt, "Das Subjekt im Zeitalter digitaler Reproduzierbarkeit."

[57] Erich Gutenberg, *Die Unternehmung als Gegenstand betriebswirtschaftlicher Theorie* (Spaeth und Linde, 1929), https://doi.org/10.1007/978-3-322-82428-8_2.

[58] Thomas Wendt, *Die nächste Organisation*.

[59] Niklas Luhmann, *Die Wirtschaft der Gesellschaft* (Suhrkamp, 1988): 313.

[60] Niklas Luhmann, *Organization and Decision*.

structural specifications and the organizational demands of data-driven order formation are once again playing out in the context of digital transformation.

In the early days of management theory, a data-based blueprint became established as the ideal model of formalization, whose appeal continues to resonate in the digital age. The fixed coupling of input and output, which is intended to guarantee the absence of interference from the subject, is cultivated as a structural principle in early management and is now realized not only in numerous forms of organizational structural automation. In lifelogging practices such as the self-tracking of biometric data, the use of social media, navigation systems, text-based dialogue systems, image generators, apps on smartphones or smart home applications, it also continues as a practice of digital (self-)organization. Behavioral expectations and action imperatives associated with the differentiation of organizational structures are realized as a technical-medial formatting of the subject not only in the context of work processes, but increasingly also as an update for the practice of subjective life. The interface has become a symbol of social possibilities.[61] In the digital society, the structuring of subjective options for action and decision-making is linked more than ever to the user interfaces of colorful displays. This now also applies beyond organizational contexts, although the structural logic of the organization is still formative. The boundaries of organization are becoming permeable, allowing the organized self to increasingly utilize digital technology in its own organization.

5. The digital transformation of organization

With the spread of the social form of organization and the associated expansion of digital structural services, the conditions of subjective sovereignty are changing fundamentally. The fact that structure-building processes are becoming increasingly successful leads to a reconfiguration of organizational decision-making structures. Digital structure-building processes perpetuate the contingency-negating effect of mechanization, measurement, calculation, and visualization by not only systematically limiting decision-making options, but also substituting them. While everyday organizational life has been characterized by gaps in control, digital structure formation increasingly presents itself as an opportunity to overcome the rationality pathologies of the past: In e-recruiting or predictive policing, in the use of recommendation algorithms or in the application of big data-based risk assessment tools from the financial industry to medicine and child protection, human experience

[61] Massimo Airoldi, *Machine Habitus: Toward a Sociology of Algorithms* (Polity, 2021).

and perceptions are becoming less decisive.[62] Rather, organizational structural automation is the result of deciding to no longer decide.[63] The algorithm-based integration of mechanization, measurement, calculation, and visualization thus makes it possible both to coordinate work processes—as in the case of standard operational software[64]—and to replace these with artificial intelligence.[65]

For example, the organizational function of managing subjective behavior is updated through predictive behavioral targeting. However, the continuity line of data-driven control in organizations is not only extended by algorithm-based processes[66] of online targeting, but currently also by large language models or image generators, which as forms of artificial intelligence make the potential of subjective microdiversity increasingly dispensable. Applications such as ChatGPT and LaMDA are connected by the fact that they identify patterns[67] that appear to be unordered chaos to the perception capabilities of the subject. Neural networks compute structures between input and output, with the multitude of recombination possibilities due to an essentially infinite data base making it invisible what is old and what is new.[68] The computational recombinations resulting from the processing of algorithms are only momentary variations of what already exists. Algorithms learn through their application and thus produce contingencies, i.e. surprising and not necessarily repeatable results. The structural logic of an organization, however, does not only manifest itself in social relations but also affects the subject's understanding of itself.

Algorithmization and the formatting of subjective scopes of action converge in the use of digital devices.[69] As a new actor model emerges through the algorithmization of structures, the mode of organizational subjectivation is updated. This simultaneously continues and transcends the continuity line of the technical-media control techniques developed in organizations. Referring to the computational logic as well as the prosthetic function of digital software in defining the digital

[62] Sven Kette and Veronika Tacke, "Editorial: Die Organisation im Zoo der Digitalisierungsforschung," *Soziale Systeme. Zeitschrift für soziologische Theorie* 26, no. 1/2 (2021): 1–18.
[63] Thomas Wendt and Sebastian Manhart, "Digital Decision Making."
[64] Hannah Mormann, *Das Projekt SAP. Zur Organisationssoziologie betriebswirtschaftlicher Standardsoftware* (transcript, 2016).
[65] Markus Furendal and Karim Jebari, "The Future of Work: Augmentation or Stunting?" *Philosophy & Technology* 36, art. 36 (2023).
[66] David Beer, "The social power of algorithms," *Information, Communication & Society* 20, no. 1 (2017): 1–13.
[67] Armin Nassehi, *Patterns: Theory of the digital Society* (Polity, 2024).
[68] Emily, M. Bender et al., "On the dangers of stochastic parrots: Can language models be too big?," *Proceedings of FAccT* (2021): 610–23.
[69] Airoldi, *Machine Habitus.*

subject points to the data affinity of the organization and the potential of digital structuring. It is not surprising that the digital subject is described as the incarnation of a data-driven order mania,[70] based on big data applications as a media tool for psychometric behavioral control. And in the reference to the prosthetic character of digitality,[71] the technical expansion of the body in the sense of McLuhan comes back into play, which shifts the answer to the question of the source of action[72] towards digital structure formation through new technical possibilities. Algorithms do not act in an anthropomorphic sense. However, in their volitionless processing of computational recombination, they are, to quote Max Weber, "related to the behavior of others and oriented to it in their execution."[73] The influence of new non-human actors on the social possibilities and conditions of the subject should not be underestimated.[74] The question of who or what decides is therefore posed anew in the digital age. As digital technology advances, the processes of digital structure formation are not necessarily designed as human-in-the-loop systems in which human intelligence acts as a regulator.[75] By filtering alternatives, they aim to make decisions in advance and/or superfluous. According to Marshall McLuhan, they are increasingly becoming hot media,[76] as the need for subjective participation diminishes the more computational recombination possibilities digital software realizes. The lower information density of analog decision support media requires relatively more subjective participation, while digital tools increasingly eliminate the need for decisions and subjective completion services. It is thus not the mere technologization of processes that creates a specific type of subject; rather, it is the synthesis of digital technology and organization that gives rise to this phenomenon.

Digital channels are magical channels in that the underlying computational links of processing algorithms elude subjective perception.[77] It is obvious that this insight is expressed not least in the introduced diagnoses of digitality, such as the black box or the panopticon. In addition to the subject and the social form of the organization, the nexus of actors in the digital society now also includes digital

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[70] Jorge Mauricio Cuartas Arias, "Homo digitalis and Contemporary Psychology," *International Journal of Psychological Research* 12, no. 2 (2019): 7.

[71] Frank Schulz-Nieswandt, *Die Formung zum Homo Digitalis. Ein tiefenpsychologischer Essay zur Metaphysik der Digitalisierung* (Königshausen & Neumann, 2019): 81.

[72] Bruno Latour, "On actor-network theory. A few clarifications", *Soziale Welt* 47, no. 4 (1996): 373.

[73] Max Weber, *Soziologische Grundbegriffe. 5., erneut durchgesehene Auflage mit einer Einführung von Johannes Winckelmann (*J. C. B. Mohr (Paul Siebeck, 1981): 19.

[74] Luciana Parisi, "The alien subject of AI," *Subjectivity* 12 (2019): 27–48.

[75] M. Beatrice Fazi, "Beyond Human: Deep Learning, Explainability and Representation," *Theory, Culture & Society* 38, no. 7–8 (2021): 55–77.

[76] Marshall McLuhan, *Understanding media*.

[77] Sebastian Manhart and Thomas Wendt, "Soziale Systeme? Systemtheorie digitaler Organisation."

systems. As with organizations, these raise questions about the assumption of autonomous subjective decision-making. The convergence of algorithmization and subjectivation creates a new actor model that relativizes subjective agency (once again). Currently, the absolutizing of technology and the resulting relativization and undermining of subjective autonomy are further intensified in considerations of long-termism by excluding the significance of the present and the near future in favor of the long-term.[78] Following reflections on artificial superintelligence and transhumanism,[79] the human future is discussed as a derivative of technological utopias, whose dystopian potential emerges as the dark side of digital transformation in scenarios of machine supremacy. Human-machine interactions become machines among themselves, without the participation of humans. However, the convergence of subjectivation and algorithmization does not have to be exaggerated in order to reflect on the relevance of autonomy and decision-making for the formation of the subject's identity and to conclude that the premises of modernization theory are becoming obsolete due to technological developments.

6. Agency and digital sovereignty in the age of artificial intelligence

The premises for the subject's autonomy and decision-making capacity are being updated in the digital age.[80] While the decision-making practice of the subject is contingent, this does not apply to the processing of algorithms. However, contingency is a prerequisite for the classical understanding of subjectivity as individual deviation through choice.[81] Consequently, the premises of modernization theory are undermined by the contingency negation of calculation operations.[82] Decisions are only possible if there is (still) something to decide. The actualized relationship between the subject's experience of contingency and the loss of contingency justifies the need to reflect on the inherent logic of digital structure formation through the

[78] William MacAskill, *What We Owe The Future. A Million-Year View* (OneWorld Publications, 2022).
[79] Nick Bostrom, *Superintelligence. Paths, Dangers, Strategies* (Oxford University Press, 2013).
[80] Luciana Parisi, "Critical Computation: Digital Automata and General Artificial Thinking," *Theory, Culture & Society* 36, no. 2 (2019): 89–121.
[81] Niklas Luhmann, "Zur Komplexität von Entscheidungssituationen," *Soziale Systeme. Zeitschrift für soziologische Theorie* 15, no. 1 (2009): 3–35.
[82] Armin Grunwald, "Abschied vom Individuum–werden wir zu Endgeräten eines global-digitalen Netzes," in *Privatheit in der digitalen Gesellschaft,* ed. Steffen Burk (Duncker & Humblot, 2018): 35–48.

digital reconfiguration of decision-making possibilities.[83] An analytical starting point for this is the integration of organization and subject theory.

The question of the sovereignty of the subject is closely related to organization as a social form. Organization structures social spaces of possibility by differentiating behavioral expectations and imperatives for action. An inherent tension exists between the concepts of organization and subjectivity. The former tends to reduce the potential for decision-making, whereas the latter derives its conceptual capacity from autonomous decision-making. The fact that an affinity for data was cultivated in management right from the start through the use of technical registries means that digitization has been significantly driven by organizations. The course of the history of management thus corresponds to the history of the organization as a medium that, with technical progress, continues to increase the specificity of subjective guidelines for action. In this respect, William Whyte's observation from the 1950s remains pertinent: while structurally rigid organization in the differentiation of action imperatives demands sweat from people, the dissolution of organizational boundaries implies access to their souls.[84] By continuing the history of organization as a practice of digital self-organization, this thesis on the dissolution of boundaries is particularly relevant in the present context. The technical-media formatting of the subject, which was developed and perfected above all in organizations, has long since continued as an algorithmic genesis of possibility.

Through the calculative construction of reality, the subject is confronted with new questions about the relevance and social scope of his decisions. In the age of large language models, image generators, machine learning, targeting applications, or psychographics, it is clear that the subject is confronted with a reality that is not operationally analogous to its human decision-making capacity and agency, but that has an influence on the social conditions of possibility. A new actor model emerges as a result of increasingly successful digital structuring. The impact this has on subjective agency means that the central position of the human being in society is once again called into question. The de-centering of the modern subject in the digital age is therefore not a phenomenon that can be attributed solely to digital technology. Organizations have historically operationalized their own solutionism as part of their structural behavioral expectations and action imperatives. In the current digital age, these processes are increasingly mediated by digital structure formation. The enduring critique of the autonomous subject, which addresses the fact that the modernity of modernity was perhaps never as modern as projected, becomes more

[83] M. Beatrice Fazi, "Distraction Machines? Augmentation, Automation and Attention in a Computational Age," *New Formations*, no. 98 (2019): 85–100.

[84] William H. Whyte Jr., *The Organization Man* (Doubleday & Company, Inc., 1956).

readily comprehensible when viewed in this light. The subject's potential for decision-making and action are constrained by the differentiation of organizational structures, which provide a foundation for examining the multiplicity of supra-individual forms of structure formation and the actors associated with them. A historical look at the social form of organization and the structures that shape its actions shows that the subject has not been alone among humans for a long time. This should help us to understand the future.

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