Fill In, Accept, Submit, and Prove that You Are not a Robot: Ubiquity as the Power of the Algorithmic Bureaucracy

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'Power' (*Macht*) is the probability that one actor within a social relationship will be in a position to carry out his own will despite resistance, regardless of the basis on which this probability rests.

Max Weber

Introduction: Bureaucratic Machine

Rapid development of digital technology influencing most areas of life has a particularly significant impact on human collective behavior, especially when it involves communication between an individual and

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an organization. Algorithms start playing an increasingly important role especially in those social spheres where human behavior has been regulated by cultural and legal protocols for centuries. Most types of routine interactions involving organizations, authorities and corporate bodies often perform relatively strict algorithmic procedures aimed at functioning with little or no regard to personal characteristics of participating individuals.

Governmental and corporate structures with the primacy of a function over a human connection had been perceived as "machines" long before the actual technology became their essential part. According to Alan Scott, the existence of "machine-like modern organizations and social relations'' was recognized as a "machine", one of the most famous modernity metaphors, at the beginning of the 20th century (Scott, 1997).

Classical meaning of a "bureaucratic machine" was conceptualized by Max Weber (Weber, 1930). He described it as a "living machine" consisting of skilled bureaucracy workers functioning together with a "lifeless machine" comprising the technology itself. Weber saw humanity as "trapped" forever in an "iron cage" striving for efficient means in attaining all objectives with little or no concern for the spirit of humanity" (Hewa and Hetherington, 1995).

Observing the current state of affairs by elaborating on this classical metaphor, we claim that with rapid digital transformation of administrative practices the balance between "living" and "lifeless" (in Weber's terms) has significantly shifted towards lifeless or humanless bureaucracy changing the nature of interactions within the context. The algorithms behind these interactions between an individual human being and a bureaucratic machine asymmetrically affect the

behavior of the human, imposing machine-like rules and protocols. This type of asymmetry tends to produce an asocial environment that lacks balanced psychological connections and empathy.

The Concept of Algorithmic Bureaucracy

Many of the traditional bureaucratic activities can be seen as essentially similar to algorithms. Rik Peeters and Marc Schuilenburg call digital bureaucratic instruments "the digital offspring of the classic bureaucratic procedure, creating classification through standardized and impersonal processing of data" (Peeters and Schuilenburg, 2018). In this respect algorithms are also very similar to AI-based systems as they normally consist of "step-by-step processes and/or rules processing inputs into outputs" (Jansen and Kuk, 2016). Both discussed tools remind of the classical bureaucratic protocols aimed at functioning highly efficiently but as impersonally as possible. This is arguably one of the reasons why digital algorithms and algorithmic AI have been increasingly employed by bureaucratic bodies. And the wide adoption of AI at the time of writing this paper is limited mostly by its novelty and the relatively high cost of development and support.

At the beginning of the 21st century bureaucracies massively started integrating digital technologies into their workflows, but at that time digital tools "did not yet influence the decision-making apparatuses of these organizations" (Bullock, Huang and Kim, 2022). Since then, for a relatively short period of time bureaucratic bodies have adopted a number of digital tools. And as a result, as Mark Bovens

and Stavros Zouridis state, street-level bureaucracies have moved towards screen-level bureaucracies, and, in some cases, reached the system level bureaucracies (Bovens and Zouridis, 2002).

Twenty years later digital tools based on algorithms have become an essential part of bureaucratic workflows with very few or no ways to access the governmental and corporate bodies in any other manner. Algorithm based decision making is often employed at the entry point of accessing various services provided by authorities and corporations. So the first bureaucrat that the service user "meets" during the procedure is a preset algorithm that analyzes the data in order to meet a claim made by a human or to dismiss it. And in many cases that is the only bureaucratic actor involved in the process. Justin Bullock and Kyoung-Cheol Kim call this actor an "artificial bureaucrat" and argue that modern bureaucracy is heading towards the time when "both human and artificial bureaucrats exist and play important roles" (Bullock and Kim, 2020).

Since the digital algorithms were included in the bureaucratic practices, several new terms appeared in attempts to conceptualize their nature and role in human society.

Rapid emergence of various two- and three-word terms containing "digital", "information", "e-" as a part of collocation has recognized a new quality of traditional society elements. *Digital Government*, *e-Government*, *Digital Bureaucracy* and other similar terms are aimed at revisiting well-known concepts by adding this overall beneficial quality. For example, "digital bureaucracy" is introduced as "improvement of good governance through the work of the electronic management system to enhance the four basic good governance indicators" (Abdou, 2021). Many other researchers operating these and

similar terms implement them to describe the tools for performing the required functions more neutrally.

John Danaher introduced the term *algogracy* understood as "a system in which algorithms structure and constrain the ways in which humans act" (Danaher, 2016). He focuses on the threats that such a system can introduce to human society exploring the case when algorithmic systems can be entirely automated. Though the term itself has not become commonly used after its launch it still seems useful for reflecting the consequences of the algorithm's employment in bureaucratic systems.

Algorithmic bureaucracy as a term focuses on the particular method of performing the bureaucratic procedures rather than just describing the space where they occur. It provides a framework for understanding the impact of algorithms on the bureaucratic routines and broader context of interaction practices in human society.

The most commonly used definition of *algorithmic bureaucracy* was introduced by Thomas M. Vogl and his co-authors. According to them, *algorithmic bureaucracy* represents "a new combined organizational environment in which office workers and algorithms can work together" dealing with a higher level of complexity combining new sources of data, data analysis techniques and tools for data analysis (Vogl, 2019). In 2020 they elaborated on the term identifying five major criteria of *algorithmic bureaucracy*, including levels and ways of collaboration, procedural context, collective intelligence, feedback during decision making, and quality of outcomes. They argue that algorithmic bureaucracy is not a replacement for traditional public administration, but "a transformation of the socio-technical relationship

between workers and their tools, as well as the way that work is organized" (Vogl, 2020).

Vogel's definition and description represent the view on algorithms as one more digital tool employed in bureaucratic practices. However, there are other perspectives considering algorithms as a more complex phenomenon that would significantly change the bureaucratic practices and as a result the interaction patterns in human society.

Mariavittoria Catanzariti emphasizes that the real challenge of employing algorithms is their extraterritoriality as "algorithmic systems are ubiquitous, along with data that feed machine learning techniques" (Catanzariti, 2021). Traditionally a bureaucratic state is aimed at organizing and managing the distribution of power over and within a particular territory. Data flows processed by algorithms are not limited by any territory signifying that virtual reality is a radically different form territorial sovereignty. Jennifer Daskal argues that "data challenges territoriality doctrine at its core" (Daskal, 2015) as it is borderless and can be scattered everywhere across different countries. Implementing algorithmic bureaucratic tools that are not connected directly to a local municipality can on one hand help to avoid corruption on a lower level but on the other hand it erodes the sense of belonging to a particular neighborhood. Even with all the disadvantages of traditional bureaucracy on the *street* level it has been working for centuries as one of the building blocks for shaping and maintaining a local community.

One more factor that makes algorithms different from other digital tools for bureaucratic practices is the lack of transparency about the way they work for the public to understand. In this case it does not imply hiding some aspects of bureaucratic activities but rather

impossibility in principle to comprehend the ways high-level algorithms and AI function without advanced competency in this area. The black box problem that has been discussed for years is applied for algorithms in general and especially to AI based ones in particular. And while implementation of such algorithms by bureaucratic bodies could make decisions more efficient, "also they could disguise information inside "black boxes", preventing citizens from the knowledge on the implications they might have in their own lives" (Fink, 2017). While traditional bureaucracies used to maintain at least an image for decision-making transparency, algorithmic bureaucracies tend to keep most of their internal procedures closed causing confusion and alienation of the service users as most of them are unaware of the ways algorithms work.

Transparency in the case of algorithms can be achieved if external auditors or agencies could "access algorithms assessing their compliance with ethical, legal, and governance standards, regulations and procedures" (Ignacio, 2020). However, the current state of affairs is far from this ideal as bureaucratic bodies are not open to such audits due to various reasons such as security protection, avoiding public criticism and more. Moreover, such audits would require designing tools and procedures capable of coping with the high level of complexity. It also means the application of digital technologies, that could probably lead to the infinite loop of black boxes where the public will still remain unaware or misinformed.

Nevertheless, utilization of algorithms is rapidly becoming a *new normal* in public and corporate administration similarly to commerce, trade and other economic activities. Recognising the undeniable benefits of algorithmic bureaucracy, we claim that it is necessary to

critically approach the limitations and threats of the ubiquitous algorithms implementation.

To summarize, there is an ongoing change of perspective from seeing algorithms and algorithm-based AI as one more tool for bureaucratic practice optimization to viewing it as a vehicle for deep transformation in the public administration and corporate management. There are claims that AI and algorithms are currently reshaping the global order (Wright, 2018) or changing the way of interaction among countries (Klingler-Vidra, 2019). But within the scope of the paper we suggest exploring the impact of *algorithmic bureaucracy* on a user as an individual whose behavior is influenced by performing the numerous routine procedures.

Training an Algorithmic User

1 | *Accept cookies, agree with the terms and conditions,*

2 | *Register or sign in,*

3 | *Fill in the form (Do not forget about the required fields!),*

4 | *Submit.*

This pattern with little variations can be found on user interfaces of multiple governmental and municipal services online. Individuals who become the users of such services routinely perform step-by-step operations often without being fully aware of conducted legal actions, and/or without knowing how exactly and where the collected

data can be utilized. Besides their request of a particular bureaucratic service these individuals give their consent on collecting and processing their personal data, analyzing user behavior, being included into multiple databases and transferring other rights. In order to get access to the required service or receive necessary information users become included into the complex data flow that generates not only the data, but also the legal consent. This repeated pattern forms an unconscious habit with everyday behavior automation. That raises the question: do such services convert individuals who follow the imposed algorithms into *algorithmic users*?

As *algorithmic bureaucracy* is increasingly discussed across various domains of social sciences and humanities we believe there is a related concept of *algorithmic user* that needs to be introduced and explored. As the term is currently not present in the literature, in order to formulate the criteria for introducing it we suggest discussing three questions.

Our first question is the asymmetry in the locality of the algorithmic user and ubiquity of the algorithmic bureaucracy. It is highly unlikely that the algorithmic bureaucracy is capable of remaining 'local' in a world where the data markets are dominated by SaaS and PaaS technical solutions. Such technologies are mostly developed by national and transnational IT companies. Application of the global digital tools to the municipal data management produces an asymmetric flow of data. That enables global and nationwide stakeholders to become more capable of imposing standards and managing regulations for the local level. Moreover, it creates the unavoidable presence of such stakeholders in every local transaction and limits the individual in her/his ability to find local, autonomous solutions for their

small-scale, territory-related problems. This ubiquity makes a user ready to perform algorithmic actions required by a service with no regard to a particular territory and/or a time period.

The second question is whether the *algorithmic* way of organizing services with a step-by-step sequence of required actions is influencing the way individuals and groups now expect to have services provided. In other words, whether massive implementation of algorithms is constantly training users to follow particular patterns and to pursue them as a new standard for bureaucratic procedures and likely in a broader context. For defining this type of behavior, the attribute *algorithmic* is more important than, for example, *digital* because it emphasizes the sequential type of actions, and not the environment where they occur.

The third question and the biggest concern is whether the power of algorithms influences the routine behavior of a user/ citizen/ customer (Using, 2017) making him/her perform actions not just without fully understanding of the consequences but without even noticing. In our opinion this mechanism of involvement is in a way similar to microtransactions extensively implemented in the video game industry, where a user performs small impulse purchases inside games (Caetano, 2017). But in the discussed environment a user pays by providing his/her data and transferring the rights to bureaucratic bodies. The interface of e-government platforms is designed of the same elements as the ones of online stores, online media, network games and other services. Ubiquity and habituality of online forms masks legal actions as conventional, insignificant, and even annoying. Routinely pushing the "Agree" button, an *algorithmic user* develops a habit to give consent without legal advice or thorough analysis of the consequences

and to follow a path (called "user path" or "user flow" in IT) embedded into the interface of a platform.

This discussion results in suggesting the following definition:

An algorithmic user is an individual routinely and habitually performing required sequences of actions to comply with the rules and regulations imposed by ubiquitous online services.

While an *algorithmic user* conveniently matches the behavioral expectations of bureaucratic bodies it raises an important question: How is this type of behavior changing the way of interaction within the bureaucratic context?

Describing the user behavior types in terms of their relationship to bureaucratic procedures we suggest applying the classification proposed by John Clayton Thomas who specifies three roles of *public* or, more specifically, *members of the public* in *public management*: citizen, customer, and partner (Thomas, 2017). For the purpose of this paper the term "*user"* can be considered a synonym to *"member of the public"* to represent an individual, who utilizes the bureaucratic services. The three roles and the interaction models introduced by Thomas can be applicable for analysis of the technologically mediated bureaucracy-user interaction. Observing the impact on user behavior made by the spread of algorithmic bureaucracy all over the world it is worth exploring the changes resulting from employing algorithms for each of the discussed interaction models.

The most common role, according to Thomas, is a *customer* when users "seek a discrete product or service, usually for its personal value to them" (Thomas, 2017). The *customer* role/model is based on

"individualism and the pursuit of self-interest" (Roberts, 2004). This is a classical approach when the administrative procedures are provided as goods or services, sometimes for a fee, similar to the ones from private businesses. Most cases of the individual-to-bureaucratic body interaction fit this model as *customers* come for the particular services for themselves or their family members. The proportions of residents who perform customer-like behavior by submitting "a request for service or a complaint" are as high as 60 to 70 percent or more (Hirlinger, 1992).

Even without introducing any digital tools, processing several types of official claims submitted by *customers* in written form is clearly algorithmic to a great degree. These types of routine requests and complaints involve step-by-step sequences that can be divided into micro actions, presented as workflow diagrams and transformed into algorithms quite easily. The procedures normally start with filling up official forms, continue with paying standard fees and submitting the documents into a particular administrative window and conclude with waiting for a specified period of time to receive a standard document as an outcome. With respect to possible variations this series of steps resembles a classical example of non-digital algorithmic sequence of actions. That is why the transformation of *customer* procedures into the digital algorithm format is the logical first step for the governmental and corporate bureaucracy digitalization.

An *algorithmic user* with his/her habit of performing sequential actions routinely matches the *customer* model of interaction in bureaucratic context perfectly. Having extensive experience in following similar user paths on multiple commercial platforms and applications, an *algorithmic user* expects smooth and predictable transition from one step to another while dealing with governmental and

corporate bureaucratic procedures online. In many cases completing *customer* bureaucratic procedures without involving humans can be very convenient as it saves time and effort if a *customer* is competent in using algorithm-based services. We argue that future algorithm advancement and wider artificial intelligence employment for the *customer* bureaucratic procedures will be growing as this model meets the interests of both users and bureaucratic bodies. It will increasingly produce *algorithmic users* ready to perform their part in an algorithm without interacting with human bureaucrats. With respect to all the benefits of the *customer* model we argue it to be the most dangerous model in terms of its consequences for an individual and human society. An *algorithmic user* proceeding along the algorithmic path from start to finish like a lab rat inside the Skinner box has limited choices and is forced to follow the pattern without questioning it.

Another role model according to J.C. Thomas's classification is a *citizen* that defines the situation when "public managers invite citizens to contribute their ideas on an issue, and share at least some decision-making authority with them" (Thomas, 2017). The proportion of administrative procedures where this role model is applicable is significantly lower in the bureaucratic workflow compared to the ones where a user acts as a *customer*. The *citizen* model is currently applicable almost exclusively for collective actions related to public interest unlike the *customer* model aimed at a private interest.

Public involvement of the users based on the *citizen* model usually intends to legitimize making debatable decisions via open discussions and/or voting for a particular choice. Bureaucratic procedures on group decision making are quite complex to organize and potentially problematic. They usually cannot be presented as step-by-step sequences with predictable outcomes. That is especially the case if

a decision-making process involves open discussions as algorithms are currently not the most efficient way to manage them. Therefore organizing such discussion-based activities requires constant moderation by humans. Though there is a potential for advanced AI technology to replace human moderators in future, currently this type of interaction based on the *citizen* model continues to be complicated and expensive to design and manage.

Algorithmization within the *citizen* model is applicable mostly for the final step of public decision making that is usually selection from the suggested list of several options. Related bureaucratic procedures ensure public involvement with fairly simple actions such as answering questions or choosing variants in an interactive form. An algorithmic *citizen* is significantly less common in the bureaucratic context than an algorithmic *customer*. But as public decision making is often quite important for all the stakeholders the overall expectations for bureaucratic procedures are typically higher.

As their main purpose is to ensure legitimization of a particular publically chosen variant, it is crucial that they are transparent and trustworthy. The potential situation when algorithms are somehow altering the results of public decision making or manipulating the public opinion in other unethical ways makes the entire model of interaction defective or obsolete. To be seen as an effective tool, a bureaucratic procedure based on the *citizen* model needs to be audited by independent actors in order to prove that an instrument for legitimization is legitimate.

The implementation of digital algorithms for the *citizen* model interaction arguably has a strong potential to grow with the spread of direct democracy involving citizens in regular public decision making. In

this case an *algorithmic user* will form a habit of making choices for public decision making with digital tools. The *citizen* model is basically a combination of a non-algorithmic discussion part and an algorithmic voting part that is ideally based on the first one and requires close public control. As we believe, employing this model involves cognitive presence and informative decision making that could compensate for the pressing behavioral patterns of algorithms.

The third role introduced by J.C. Thomas is a *partner* based on the idea of "co-production" for specific services where "assistance is essential or would be helpful from the public" (Thomas, 2017). The *partner* role means that a user is not just following the procedures but is participating in developing them. That quite uncommon role in bureaucratic context would change the dynamics of individual-to-bureaucracy interaction significantly. Instead of an inferior-to-superior traditional way the relationship would become equal-to-equal for particular situations. The *partner* role is only emerging and is still *terra incognita* in terms of specific bureaucratic procedures necessary to manage the *partner* interaction model effectively.

It is currently unclear what is the potential for user behavior algorithmization within the *partner* model as there are only experimental attempts to introduce administrative practices based on this model. However, as John Alford states, in order to make *partner* role/model work, tasks for the public need "to be simplified as much as possible" as "the easier the task, the higher the likelihood citizens will be able to assist" (Alford, 2009). Such decomposition of complex tasks would probably give opportunities for algorithmization of at least some elements of activities based on a *partner* model. However, we argue that those algorithms would require a high level of flexibility and an *algorithmic user* would have to be competent and creative enough

to participate in co-production. The *partner* model will require active cognitive and emotional involvement and proactive creative approach to procedure performance. Though it is currently unlikely that the *partner* model will become a dominant or even a commonly implemented one it has the strongest potential to overcome the disadvantages of bureaucratic procedure algorithmization or at least to compensate for them.

To summarize the discussion all three user roles/models can potentially employ algorithms for changing interaction within the bureaucratic context. But the impact on the user behavior would arguably be quite different, namely, passive following a behavioral pattern for *customer* model, cognitive involvement in public decision making for *citizen* model and proactive creativity for *partner* model.

Though people currently have limited knowledge about long-term consequences of algorithmic bureaucracy spread, we suggest exploring the changed role of empathy within this context as one of the important factors potentially changing human society.

Administrative Empathy vs Bureaucratic Algorithms

Introducing the ideal state of bureaucracy, Weber quoted Goethe to describe a structure that implies "specialists without spirit, sensualists without heart; this nullity imagines that it has attained a level of civilization never before achieved" (Weber; 1930). This state is often referred to as a *bureaucratic machine* perceived as "a complex decision-making tool in public organizations, which seeks to control and

protect the public interest by providing little room for personal discretion" (Farazmand; 2020). The bureaucratic machine metaphor has been one of the most recognized public images of bureaucracy for centuries but only with the introduction of algorithms is it getting to an extreme point where human specialists are being replaced by genuinely *heartless* and *spiritless* algorithmic tools that represent pure functions.

As J. Ignacio Criado and his coauthors stated, algorithms "have the potential to transform critical dimensions of public sector organizations and people working in them" (Criado, 2020). We argue that one of the most significant differences of algorithm-mediated interaction is the lack of empathy involved in the bureaucratic process.

Before introducing digital tools even with a significant level of administrative procedure algorithmization, none of the bureaucratic systems could be truly "lifeless" or humanless because bureaucratic processes almost always implied some amount of interaction with human employees, especially at the local level. On the one hand it made the system vulnerable to possible corruption and human errors, but on the other hand the bureaucratic service could be "customized" with small negotiations and alterations on demand. As a bureaucratic procedure is becoming increasingly automatic with the use of algorithms, sooner or later a user will have to deal with an algorithm only operating inside the machine without any human feelings and any empathy.

The ongoing development of algorithmic bureaucracy is changing the balance of *administrative empathy* defined by Sofia Ranchordás as acknowledgement "that citizens have different skills and needs, and this requires the redesign of pre-filled application forms, government platforms, algorithms, as well as assistance" (Ranchordás, 2022). One of the most important features of *administrative empathy*

is the recognition that "mistakes made in good faith can be forgiven under limited circumstances, and vulnerable individuals are given second chances to exercise their rights" (Ranchordás, 2022). With algorithms performing decision-making automatically, *administrative empathy* is becoming rare.

From one hand elimination of most humans in the bureaucratic process could significantly decrease "personal subjugation, nepotism, cruelty, emotional vicissitudes, and capricious judgment" (Bennis, 2017), but on the other hand shifting balance of *administrative empathy* with automation of decision-making in governments and corporations could cause an individual to feel isolated, misunderstood and sometimes helpless. Being a unique human feature, administrative empathy provides some empowerment to an administrative service user making him/her believe that an individual has some control over decision making through possible communication with another person. In the case of an ultimate algorithmic procedure the process of individual-to-bureaucracy interaction is a channeled sequence of entering data and giving consents without any chance to emotionally influence the process. Humans inside this system are rejected as non-rational beings. Ironically, asking an algorithmic user to prove that he/she is not a robot algorithmic bureaucracy in a sense makes a human act robotically.

Dealing with new interfaces of the bureaucratic services requires new skills from individuals. Routinely repeating a sequence of operations while accessing a service an individual becomes a skilled *algorithmic user*. Similarly to Edtech applications implementing algorithms, governmental and municipal web services perform an educational function of training individuals to follow and memorize particular patterns. However unlike most EdTech and commercial systems

bureaucratic tools are not adaptive, as their goal is not to develop individuals. They simply train humans in the most ultimate behaviorist manner. Such systems place their users into the environment with strict 'playing by the rules' relations based on rational premises. There is no right to make a mistake and no room for human emotions or individual characteristics.

To summarize an algorithmic service optimizes human behavior in order to adjust to a rational machine algorithm. The ongoing disappearance of administrative empathy from bureaucratic procedures can potentially have a significant impact on how such procedures are perceived and accepted.

Discussion: Ways Out of the Iron Cage

In order to overcome the negative consequences of the increasing algorithmization of bureaucracy we suggest several potential scenarios for solutions. Some of them are already being developed and included into the bureaucratic services.

The first and the most common solution is feedback tools and research of customer satisfaction. There are multiple research papers published on this topic (Kim, 2005; Ali, 2017; Li and Shang, 2020). The limitation of this approach is its recursive nature: the users answer survey questions, fill in more forms, submit answers, and give their consent. This type of feedback does not involve empathy and constructs one more layer of algorithmic procedures.

The second scenario could be an independent community-driven platform for reviewing and evaluating bureaucratic platforms and procedures. This solution requires public awareness and understanding the issues and limitations of the algorithmic bureaucracy and its services. Currently civil society organizations are developing initiatives on monitoring and evaluating public services, but the ubiquity of algorithmic bureaucracy makes these voices unheard.

The third scenario would be the diversification of models for interaction within bureaucratic context by developing activities based on *citizen* and especially *partner* models in order to compensate for the disadvantages of the *customer* model.

In our opinion the most radical scenario could be the right of an individual to construct and redesign bureaucratic procedures, adapting them to the individual needs and characteristics, involving both digital and non-digital interactions following the principles of *partner* interaction model. This approach could raise the user-service relations to a different level of involvement. The most significant limitation is that development of such highly adaptive, user-centered services requires highly sophisticated and resource consuming solutions.

The big question of the algorithmic bureaucracy is whether 'user friendly' or even empathic bureaucratic procedures can be feasible in the sociotechnical system that seeks optimisation and rationality.

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