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Biopolitics of NATO's RTO-TR-HFM-154: Between Data Models of Human Bodies and Embodied Experience(s) of War

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Abstract

This Master's thesis investigates the process of biopolitical construction of the numeric human body models performed within the NATO's Research and Technology Organization Technical Report on Human Factors and Medicine No.154 (RTO-TR-HFM-154), addressing the ambition of the document to constitute military troops as a singular comprehensive object of governance (Scheel, 2020). Situated within the Science and Technology Studies (STS) sensitivity and the biopolitical theory of Michael Foucault (1976), the research examines the very processes of reduction of human bodies into abstract numeric/calculatable objects, and the material consequences this mode of governance entails for the lived experiences of actual soldiers at warzone(s). Key findings suggest that RTO-TR-HFM-154 does not engage with soldiers' bodies as complex, sensing, heterogeneous, culturally and contextually situated; instead the document substitutes actual corporeal bodies with numeric models, – calculative entities and technoscientific artefacts whose physiology could be parameterized, modeled, standardized, and coordinated across the national boundaries of the NATO's States. Calculative nutrition within the script(s) of RTO-TR-HFM-154 is enacted as a standardized tool of knowledge and governance (Asdal & Reinertsen, 2022; Frohlich, 2017; Latour, 2005), – soldiers are nourished not as contingent human beings, but as numeric functionally-compatible units, whose adherence to the RTO-TR-HFM-154's script(s) (Akrich,1992) eventually dictates their survival chances. Observed logic of technoscientific standardization that materially defines boundaries of belonging of the solder's body by rendering it administratively (in)visible, highlights how care and calculations are mutually constitutive of the RTO-TR-HFM-154's script(s), – while care justifies the abstractification and standardization of the bodies, calculations authorizes its operational application. Nevertheless, the complexity of human bodies and the contingent environments of military conflicts significantly exceed the predictive capacity of the RTO-TR-HFM-154's data models. This Master's thesis demonstrates the limitations and encompassing instability of the RTO-TR-HFM-154's governance logic, arguing that this is not a case-specific, but instead structural phenomenon, – governance through standardization inherently tends to produce exclusions, omissions, and qualified forms of situated vulnerabilities.

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List of Abbreviations

AI	Artificial Intelligence
DGE	German Nutrition Society
DHH	Division of Human Health
EURRECA	EURopean micronutrient RECommendations Aligned
FAO	Food and Agriculture Organization of the United Nations
FDG	US Food and Drug Administration
IAEA	International Atomic Energy Agency
MNDM	Military Nutrition Data Matrix
MREs	Meals, Ready-To-Eat
NATO	North Atlantic Treaty Organization
NHRES	Nutritional and Health-Related Environmental Studies
NRF	NATO's Response Forces
PAL	Physical Activity Level
RQ	Research Question
RTO-TR-HFM-154	NATO Research and Technology Organization Technical Report on Human Factors and Medicine No. 154
RTG	Research Task Group
SI	International System of Units
STANAG 2937 MED	NATO Standardization Agreement No. 2937: Survival, Emergency and Individual Combat Rations − Nutritional Values and Packaging Report
SQ	Sub-Question
STS	Science and Technology Studies
UDF	Ukrainian Defence Forces
WHO	World Health Organization

1. Introduction

On March 17, 1976 at the College de France, Michel Foucault delivered a lecture that would shake the very foundations of political thought. Drawing on the conventional conception of a power theory, the scholar attempted to trace the evolution of the classic theory of sovereignty — out of the basics of Machiavellian doctrines detailing the Sovereign's attribute to exercise *"the power of life and death"* over subjected, up to the formation of (what he refers to as) the biopolitics of the human race. One year later the analytical trajectory of this lecture would be crystallized in the philosopher's fundamental work *«Right of Death and Power over Life»* (Foucault, 1976); the work that intended to shed the light over the profound metamorphosis of power catalyzed by the technological advances of modernity.

At the basis of Foucaultian arguments lied the analysis of the progressive reorientation of the State(s) from the conveyance of the individualizing mode of power seizure, – where subjected were understood *as a man-as-body* (e.g. inherent to the Medieval-times), – up to the massifying mode, within which subjected to power groups of population(s) become conceptualized as *a man-as-living-being*, and therefore *a man-as-a-species*, immanent to the post-modern States. Given shift was facilitated through the introduction and following accelerated development of the new technologies capable of making biological processes measurable, and eventually computable; through translating human life into calculability, these technologies allow to reduce the complexity of human body into measurable, – and therefore predictable and governable, – numeric abstraction(s), enabling State(s) to address *the multiplicity of men* (Foucault, 1976, p. 242), and suggesting a legitimate way of constituting population(s) as a singular comprehensive object of governance (Scheel, 2020).

With skyrocketing growth in numbers of new technologies of this kind observable over the past few decades, – from the overarching variety of Artificial Intelligence (AI) models, to data-driven predictive modeling and automatized health monitoring systems, – this mode of governance keeps finding its applicability in the wide spectrum of societal dimensions and governance systems. A few among many of such mechanisms through which postmodern States seek to constitute and regulate human bodies, have achieved such an impressive global outreach as the paradigm of the information architecture based food politics (Frohlich, 2017; Musiani, 2014; Shapin, 2016; Shangguan et al., 2019). Appropriated by the modern State(s) dominant nutrition science epistemology of translating food-products into calculative entities, – e.g. measurable in calories, micro-/macro- nutrients etc. – today continues to entail significant material consequences for the global governmental practices of worldwide

food production, regulation, distribution, and eventually consumption. While food-label(s) within a given context arise as an informational infrastructure that tends to shape a particular version of *the peoplehood* (Lie, 2004), the STS perspective invites the question of: Who exactly are the people imagined behind the nutrition-label(s) as meditative-mean(s) of such governance (Akrich, 1992)? As for this Master's thesis, my intention was to narrow the focus of the given question to the domain, where the inscriptions of subjects (human bodies) into nutrition-label(s) possess a life-or-death significance, more specifically – the military context. This scope, therefore, is constraining outlined inquiry to: *Who exactly are people, whose body State(s) defines as ones ought to be exposed to different technologies and practices of killing* (Prokosch, 1995)?

The North Atlantic Treaty Organization (NATO) as a key mutual-defense alliance of the Western countries, today remains to be one of the most technologically advanced multinational military coalitions in the world. The NATO's Standardization Agreement (STANAG) (NATO Standardization Office, 2022) is the key cooperation framework of the Alliance, which officially proclaims standardization as a sole effective strategy enabling the NATO's Member States to build a strength of the Alliance that jointly transcends the power of the individual Member States. NATO's standardization efforts encompass diverse aspects of strategic military cooperation between the States, citing: *«from ammunition sizes to rail gauges to the words that troops use to communicate with each other»* (NATO, 2022; NATO Standardization Office, 2022). What triggers particular interest with these regards, is the fact that besides a number of attempts, the NATO's Member States never managed to reach a joint-agreement and ratify one unified military nutrition scheme for the Alliance's troops. Nutrition Science and Food Standards for Military Operations Technical Report (2010) produced by the special Task Group RTG-154 for the Research and Technology Organisation (RTO-TR-HFM-154) of NATO is the only regulatory document of the Alliance, which outlines the requirements for the nutritional value of the NATO's combat rations, so-called MREs (Meal, Ready-to-Eat). Remarkable is that a closer look at this document explicitly demonstrates that RTO-TR-HFM-154's Working Group was from the outset to a lesser extent oriented at harmonizing the nutrition composition of the NATO's MREs between the Member States, but instead aimed at harmonizing the body that nutrition is meant to act upon.

The RTO-TR-HFM-154 does not engage with bodies of the soldiers as complex, fully-living, heterogeneous, culturally/contextually situated and sensing, but instead it substitutes the actual corporeal bodies with a numeric models, – a calculative abstract entities and technoscientific artefacts whose physiology should be parameterized, modeled,

standardized, and coordinated across the national boundaries of the States participated in the RTO-TR-HFM-154's Working Group. Situating soldiers as calculative actors, through transforming physiological processes into performative indicators allows RTO-TR-HFM-154 to make them administrable, and legible to bureaucracies, – this process fully relies upon the systematic epistemic abstraction, operational scripts (Akrich, 1992), and selective care (Puig de la Bellacasa, 2012), which turn to be effective at generating both strategic coordination and deeply performative hierarchies of the bodily normativity. This Master's thesis engages with the RTO-TR-HFM-154's data-constructs of human bodies as the key object of research, aiming at understand the very processes of reduction of human body into numeric abstractions/calculatable objects, and the material consequences this mode of governance entails for the living-experiences of an actual soldiers at warzone(s).

This Master's thesis contributes to the wider STS and military science discourse through demonstrating the boundaries and limitations of technoscientific governance in complex, contingent and heterogeneous environment(s) of military conflicts. Key findings and analysis of this Master's thesis research traced how the human bodies are constructed, stabilized, and maintained through the interplay of practices of data-modeling, standardization, and international coordination, and as a result ultimately become transformed into governable and administrable objects, which simultaneously enable, regulate, and expose soldiers within the lived realities of the war environment(s). The study foregrounds co-constructive nature (Michael, 2016) of relationship between the care and calculability, and presents how care (Puig de la Bellacasa, 2012), contextualized within the sphere of the military nutrition governance (Mol, 2008), stops being neither ethical nor medical practice, but instead becomes synchronously political and epistemic technology.

2. State of the Art

2.1. STS Perspective on Nutrition(s)

Consideration of the different ways nutrition science constructs multiple-realities falls under the meticulous scope of the Science and Technology Studies (STS). Despite the concept of "nutrition" being rather of a modern invention (first introduced in the late nineteenth century), by today it has set the solid ground for the multidisciplinary field of contemporary nutrition science (Roberfroid, 2011) as such, and transformed the very way human body is being understood and framed within a wide spectrum of scientific disciplines.

Annamarie Mol (2012) became one of the most influential STS scholars approaching the scientific conception of nutrition through the material-semiotic perspective to delineate different ways it becomes enacted, and embodied within different contexts and practices. Centered around dieting practices of the Netherlands, Mol's (2012) argument emphasized the ways different Dutch dieting techniques are ontologically inconstant in the sense that they are failing to mobilize a various presentations of a single reality, but instead taken separately each of the them autonomously enacts and engages into its own reality *sui generius* (Mol, 2012, p.380; Mol, 2002). Based upon the postulate that the reality is made up of multiple, and is enriched with simultaneously and independently coexisting versions of it, Annamarie Mol (2012) seeks to examine how the conception of nutrition contributes and shapes the practices that determined different ways of being. Aiming to access the empirical inquiry on the realities assembled by the assertions of dominant nutrition science paradigm, and (within the latter) to understand how materialities and flesh (human bodies) come in different configurations once enacted in those realities, Annamarie Mol (2012, p.380-381) introduced the concept of *ontonorms*. The methodological instrument of ontonorms allowed the scholar to carefully combine the essence of the unstable ontologies (Woolgar & Pawluch, 1985; Thompson, 2005) and pre-given normative judgements incorporated into the nutritionist practices and narratives. Sensitized by the ontonorms prism, Annamarie Mol (2012) explored how nutrition science epistemology of translating the products into the calculative entities (e.g. measurable in calories) aligned with a normatively-constructed assumption of their "right"/"optimal"/"healthy" amount performs rather different type of reality, than for example another (similar at the first sight) practice of segregation (in the Mol's work, "colour-codings") of the food into different categories based upon the set of its macro- or micro- nutrients (e.g. carbohydrates, fats, proteins), nutrigenomics, glycemic indexes, or other qualities suggested by the nutrition science (Marcus, 2013; Roberfroid, 2011). Scholar stated that these different ways of scientific conceptualization of the food-entities enact food as an edible substance taken as so-called "input variables" that lately get correlated with a set of factors to generate a statistically valid outcome (Mol, 2012,p.384), instrumental in the production of the power claims. Yet, different translation(s) of the food into the calculative entities, (as demonstrated in research) produce substantially different people's perception, understanding and experience of the food – (using the previous example) calories-counts techniques enact and portray food as a body-fuel, when the so-called "colour-coding" techniques enact food as a set of nutrients allowing both of the further segregation of it into the smaller-categories, as well as enabling the abbreviation and categorization of the food-entities (e.g. to label it into dichotomous-categories "healthy/unhealthy", which determined equally as much by the scientific claims as by the sociocultural contexts).

As demonstrated by Annamarie Mol (2012), these types of framings when combined tend to attach subjects (human bodies) to new epistemologies (nutritions) and technologies (dieting techniques), which these days are applied to shape and govern food-regulations worldwide (Rose, 2007). This new paradigm inaugurated the so-called “information-turn in food-politics” (Frohlich, 2017; Castells, 1996). As this type of politics, – engendered by the constructed information provision, – expanded globally, it redirected the power of information to transform political alliances and reassemble the economic market (Frohlich, 2017; Castells, 1996; Hilgartner, 2000; Porter, 1996). Frohlich (2017) describes this informational turn in food politics as *“[the] institutional shift away from regulating the object itself towards regulating the mediated interaction”* (p.150).

2.2. Labeling Food-Entities: Regulating Mediated Interactions

The worldwide naturalization of the information architecture of food-politics continues to have significant material consequences for the practices of food regulations, production, evaluation, distribution and consumption on different levels (Jauho et al., 2014; Shangguan et al., 2019). With the expansion of the new food-politics paradigm (as elaborated in the previous subsection), the food-labeling devices were introduced to shape the wide informational environment for food representation as an indirect means of its regulation.

Within the STS discourse, the food-labels has been conceptualized and deconstructed under the variety of theoretical prims: Bruno Latour (2005) referees to the nutrition-labels as the objects providing “source of competences” (pp. 210-211), which within the settings of knowledge society ought to shape knowledgeability of publics; Tsoukas (1997) envisions labels as a meditative means of the information transition between experts, governing bodies and consumers, and problematizes the established ignorance of the fact that presented within the latter information is already a translation/interpretation of the expert’s intake on nutritions; Sally Eden (2011) states food-labels to be an information device, and therefore boundary objects (Bowker & Star, 1999) that tight together different worlds of constructed realities; Michel Callon (1998) conceptualizes nutrition-labels as “calculating tools”, which are fully-based upon the calculative rationality of nutrition science and perform “calculativeness” for the sake of the mediated power exercise (Frohlich, 2017, p.148); for Star (2010) and Guthman (2011) labels are the networks of the meaning-making organization, brought to the place by the actors to structure the relations established between the nutrition facts box and information claims performed by its content, therefore standardizing the circulated discourse; Shapin (2016) takes the step further and refers to food-labels as instruments designed to produce system of standardized subjectivities.

Addressed together, the variety of suggested conceptions emphasize the STS intake on nutrition labeling as merely descriptive, but rather performative by its essence regulatory devices, implying that *"food as information can be objectified, abstracted, and decontextualized such that it circulates more easily, and can be used to coordinate and link together heterogeneous markets in ways that cultural knowledge cannot"* (Frohlich, 2017, p.150). Once the food-label, as a medium-mean of centralizing nutrition-information, gained political mandate and power, the information provision under the standards of labeling practices fostered the new information infrastructure.

2.3. Nutrition Labels as Information Infrastructure(s)

Developed by Geoffrey Bowker and Susan Star (Bowker & Star, 1999; Bowker et al., 2010; Star, 1999) theorization of information as an infrastructure suggests a rather distinct STS angle of understanding nutrition labels. Geoffrey Bowker and Susan Star (1999) studied standardization and classification as processes of spatio-temporal segmentation of our realities. According to their arguments, operable classificatory principles are always consistent – they segment the world into mutually exclusive categories in order to complete an idealized classification system, which means to fully cover the reality it describes. Scholars conceptualize standards as derivatives from such a segmentation, which is defined as *"any set of agreed-upon rules for the production of (textual or material) objects"*. The key function of the standards, according to Bowker and Star (1999) is to put the reality into heterogeneous metrics and establish the system allowing the world to work together through the set of different cultural and social contexts (p.13).

Given theoretical prism introduced by Bowker and Star was adapted by the Korean scholar Xaq Frohlich (2017) to analyze the regime of food regulation established by the US Food and Drug Administration (FDA) after the system of food-labels was implemented as a mean of standardizing food-entities as information in the United States of America back in 1969. The application of the information infrastructure lens to the FDA's food-politics allowed the researcher to uncover the material assemblages behind the established system of food-labels, and trace the process of how governance by infrastructure (Musiani, 2014) is being performed through the such sociotechnical assemblages. Specifically, the scholar emphasized the means by which nutrition science (mandated by the FDA as regulatory agency, which is central architect in established entanglement) within given process performs the systematic co-production (Jasanoff, 2004a; Jasanoff, 2004b) of public understanding of diet, nutritions, and health (Frohlich, 2017).

At the same time, while information displayed at a food-label acts as a mediative entity between medium (nutrition scientists) and recipient (publics), it significantly reduces the essence of what a certain food-entity actually is, by narrowing it to the facts that could be fitted into the label. Consequently, this produces, what Mudry (2009) and Scrinis (2008) define as, food reductionism, where *"foods [are] less and less food, and more and more designed composites of food materials"* (Frohlich, 2017, p. 159). By the end, reduced within such settings image of certain food as a shared within a collective imaginary object (Marres & Lezayn, 2011) keeps binding together the socio-material network established around it, therefore reshaping and governing the political agenda and determining what could be considered as a legitimate health statement (Latour, 2005; Latour 1996; Michael, 2016; Frohlich, 2017).

While information as a mediative-actor exercises its power indirectly (Bowker & Star, 1999), according to Xaq Frohlich (2017) for the case of FDA's food-politics, it has an influential ontological consequences for both our individual, as well as collective relationships to food (Mol, 2012), because it shapes our experience of different food-entities, simultaneously expanding the generally widespread climate of informationism already inherent to neoliberal model(s) of governance (Mirowski, 2001). The architecture authority of such kind is always relational (Ewick & Silbey, 2003), and inevitably entails its own distinct politics (Winner,1980; Mol, 2002) and technopolitical regime (Hecht, 2001). Within such settings nutrition-label becomes a platform of contradictory agendas with a discriminatory character in many of its manifestations, which according to STS tradition (Johnson (Latour), 1988; Akrich, 1992; Winner; 1980) forces us to to pose the only reasonable question: Who is imagined behind, – and therefore inscribed into, – the nutrition-labels?

2.4. How Do Data Practices Make People?

Some might suggest that the answer to the question of how data practices make/enact people (and, for the context of the given Master's thesis – their bodies) could exist only in the multiple (Mol, 2012; Mol, 2002; Cakici et al., 2020). The multiple ways data practices constitute a distinct version of peoplehood (Lie, 2004) were addressed at a series of STS research, among which is the one conducted in the framework ARITHMUS project leaded by Evelyn Ruppert, Baki Cakici, and Stephan Scheel (2020). Concluding the findings of ARITHMUS, scholars argue that there are an endless variety of ways data practices can constitute population(s) as object(s) of governance — implying that different practices tend to enact people in their specific ways (Cakici et al., 2020, p.208). As the story unfolds:

> *“* [These] *enactments are not necessarily the intended products of the practices of actors but rather as the mutable, and in many cases contested, momentary outcomes of the coming together, negotiation, and constant reconfiguration of data infrastructures, technological devices, political concerns, techniques of government, including their adjustments, improvisations, and innovations”* (Cakici et al., 2020, p. 202).

The quote elaborates on the five key characteristics of the process of the enactment of people through the data practices: (1) the multiple character of produced enactments that is facilitated by the very genealogy of statistics and complexity of the sociotechnical networks surrounding it; (2) the fluidity and situatedness of the produced image of the people (Haraway, 1988) — as Annamarie Mol (2002) and Every Ruppert (2011) emphasize, the “peopling” is always in the process in formation. What is more important with this regard, however, is the accent made on the (3) political (Porter, 1986; Scott, 1998; Isin, 2018; Anderson, 2006) and (4) performative (Law, 2009; Elrick & Schwartzman, 2015) dimensions of data practices, which are aiming at bringing as a reality population to be governed (Cakici et al., 2020, p.205). Further, enactment of people through the data science is always (5) sociotechnical (Latour, 1996, 2005; Callon, 1990; Law & Hassard, 1999) implying that statistical practices are located at the center within the network of entanglements of human and non-human actors (e.g. statisticians, infrastructures, materials). Lastly, as according to the John Law (2004), they are (6) contingent, in the sense that they are flexible and adjustable to the complexity and instability of the circumstances and conditions of their performance (p.38).

Madelaine Akrich (1992) suggests that one of the ways of deconstructing of technological artifacts – and therefore versions of reality produced through them – is the examination of the latter through the theoretical-prism of the script, as the way users of certain artifacts (people) are imagined *“defines a framework of action together with the actors and the space in which they are supposed to act”* (p. 208). Application of the suggested lens allows STS scholars to explore the worlds inscribed into different technologies, and a variety of roles attributed to different actors within the enacted reality (Akrich,1992). The ways imaginaries of different actors (Jasanoff & Kim, 2009) inscribed into different artifacts shape the design of technology, – produced by it technopolitical regimes (Hecht, 2001), – were addressed by the number of STS scholars, including Langdon Winner (1980), Ulrike Felt (2015a; 2015b), Chilvers & Kearnes (2015) and David Reubi (2020).

2.5. Military Data Science: The Militarization of Nutrition Epistemologies

Military science represents a specific area of interest for STS researchers, – STS scholars investigated the role of science in the creation of weapons (Thorpe, 2004; Balmer, 2002; Gusterson, 1998), social construction of military technologies (MacKenzie & Wajcman, 1999; Weber, 1997; Grint & Woolgar, 1997), responsibility, morality and values embedded in the procedures of invention and usage of military artifacts (Bridger, 2015; Schmidt, 2015). Separate sphere of STS researches devoted to the proliferation and control of recently emergent weapon of mass destruction including nuclear, chemical and biological one, together with the role of different human and non-human actors in these processes (Greenwood, 1990; Kenyon, 2000; Enia & Fields, 2014). A number of scholars investigated the role of conventional information technologies in present-day warfare (Cronin, 2001; der Derian, 2001; Denning, 1999), and approached the subjects of security and secrecy from STS perspective (Witjes & Olbrich, 2017; Balmer, 2006).

Marked increases in computational power over the past decade have also massively shifted the focus of STS researchers toward the study of Artificial Intelligence (AI) in military usage (Davis, 2019; Garcia, 2024; Goldfarb & Lindsay, 2022; Johnson, 2019). Data science indeed brought a tremendous amount of opportunities to the military domain. When the numerous of implications that data science can offer at the different types of military operations get combined with the introduction (and release to the mass-consumption) of the numerous of sensory quantifying-self devices that are capable of capturing data on everything and everyone (Meerveld & Lindelauf, 2024, p.1), the achievement of so-called “information superiority” became one of the most essential objectives of any country's Ministry of Defense (United Kingdom Ministry of Defense, 2018; Netherlands Ministry of Defense, 2019; USA Ministry of Defense, 2020). Nutrition is one of the unobvious spheres of implication of data science in the military.

Massive reliance on quantitative data for the achievement of military superiority fostered the necessity for national defence ministries and research institutions to encourage data generation (including those of the activity level of soldiers at different missions, their energy expenditure, micronutrients requirements etc.) (Meerveld & Lindelauf, 2024). Given data regarded as a valuable asset shaping the military regulation, and more broadly contributing to the increase of the interdisciplinary charter of the nutrition science as a field (Smith et al., 2013), which draw a special interest of STS scholars to the phenomenon of militarization of nutrition epistemology (Russel & Deuster, 2017; Smith et al., 2014; Zeevi, 2015; Karl et al., 2021; Child et al., 2019).

According to the Karl et al. (2021), there are three key research trajectories pursued by the contemporary nutrition science for the military use: (1) those aiming to determine the comprehensive scheme of universal nutritional demands within different spectrum of the environment(s) combats are exposed to; (2) those contributing to the expenditure of the discourse on the standards adapted within the military nutrition policies for different combinations of environment(s) and performed roles by the soldiers; and (3) those engaged into the development of strategies for individualized approach towards the nutrients delivery (p.87). These three trajectories keep guiding the military nutrition research, and determine its focus areas (Karl et al., 2021). Number of scholars were engaged into the study of the influence of the quality of diet maintained by the military personnel upon the physical performance and psychological resilience of the acting combats (Lutz et al., 2019; Kullen et al., 2019; Hruby et al., 2018; Fagnant et al, 2019). Distinct stance was taken by those researchers, who made an emphasis on the importance to determine, what is actually an adequate energy requirements for the different cohorts of warfighters to address the widespread issue of energy expenditure on the battlefield(s), and possible nutrients deficiencies commonly associated with military trainings and performed military operations (Fallowfield et al., 2014; Karl & Roberts, 2014; Murphy et al., 2018). Therefore, there are numerous of the narrowly centered research, which are gravitating around nutrition-based strategies at the military, – as an example those on the roles of protein(s) (Gwin et al., 2020; Berryman et al., 2018), and fat(s) (Margolis et al., 2016) intakes in combat's ability to meet the physical demands and environmental stresses. Further on, this discourse gains its expenditure with the discussions around the role and optimal dosage of supplementing micronutrients within the military rations, including iron (McClung et al., 2009; Yanovich et al., 2015), zinc (Hennigar & McClung, 2016), vitamin D (Armstrong, 2020), calcium (Lutz et al., 2018) and many others. What is also important, over the past decade the advancements of data generation techniques (e.g. through the continuous improvement of the wearable devices) are constantly shifting the debate from the one-size-fits-all approach towards the more individualized approaches for informing nutrition policies of the militaries (Russel & Deuster, 2017). Once enabled by the technoscientific advances (e.g. wearable sensors), and facilitated by the promises brought by the big-data techniques, the commonly pursued goal became: *"to develop valid and actionable precision nutrition interventions, for which scientists must collect, analyse, and interpret multiple complex and dynamic data streams (i.e. "big data") to identify factors that discriminate responders from non-responders"* (Karl et al., 2021, p. 94). This quote emphasizes the proclaimed necessity of pursuing information superiority as a key strategic objective in the continuous military buildup competition.

3. Case-study: RTO-TR-HFM-154

3.1. Contexting the Case of RTO-TR-HFM-154

The defense architecture of the European Union (EU) continues to confront its most significant crisis since the end of the Cold War due to the outbreak of Russian military aggression against Ukraine in 2022, which resulted in the continuous full-scale war at the heart of the European continent. As a key mutual-defense alliance of the Western countries, the North Atlantic Treaty Organization (NATO) was compelled to respond to the unjustified military aggression of Russia by supporting Ukraine's fundamental right to self-defense (NATO, 2024). This prompted the Alliance to revamp a number of its key principles and procedures under the shadow of unprecedentedly technologically-driven configuration of warfare, which nowadays continues to shape constantly evolving security threats. The key principles of the Alliance's cooperation framework are based upon the NATO's Standardization Agreement (STANAG). Standardization officially-proclaimed to be the only efficient approach providing the possibility and capacity for the Member States to enhance the strength of the Alliance beyond the individual capabilities of its member-countries (NATO Standardization Office, 2022). What sparks particular attention during the review of STANAG is NATO's intake on the nutrition standards for military operations – specifically, the absence of one unified military nutrition scheme. When considered within the wider context of NATO's extensive standardization efforts – *"from ammunition sizes to rail gauges to the words that troops use to communicate with each other"* (NATO, 2022; NATO Standardization Office, 2022) – this absence remarkably stands out as an anomaly, particularly in a system that seeks to standardize every single aspect of military forces across 32 NATO's Member States.

Nutrition Science and Food Standards for Military Operations Technical Report (2010) produced by the special Task Group RTG-154 for the Research and Technology Organisation (RTO-TR-HFM-154) of NATO is the only regulatory document of the Alliance, which outlines the requirements for the nutritional value of the NATO's combat rations, so-called MREs (Meal, Ready-to-Eat). Authors of this policy document conceptualize RTO-TR-HFM-154 as space for expansion of the discussion started in STANAG 2937 MED. The STANAG 2937 MED (abbreviated for Survival, Emergency and Individual Combat Rations − Nutritional Values and Packaging) document is predecessor of RTO-TR-HFM-154 in which the NATO's Working Group made a first attempt to establishment of one unified military nutrition scheme for the NATO's military forces, yet *"STANAG 2937 MED had not been fully ratified by all NATO countries*" (1-1, RTO-TR-HFM-154). Nevertheless, the

debates initiated in STANAG 2937 MED metamorphosed significantly in the scope on the pages of RTO-TR-HFM-154: beginning with the goal of determining the possible standards, which could be universally feasible for different groups of rations of NATO's Response Forces (NRF), moving towards the identification of the common areas of understanding of the possible interoperable combat feeding technologies, and ultimately culminating in a shift of the discourse towards the more comprehensive pursuit of negotiated interoperability. As stated in the document: *"the RTO work is focused on exploring the feasibility of a standard NRF* [NATO's Response Forces] *ration and not replacing any country's existing, or planned individual or group ration."* (2-2, RTO-TR-HFM-154, emphasis added).

Documents by type of the RTO-TR-HFM-154 designed to make something governable, for the case of RTO-TR-HFM-154, — human resources at military. With a primarily technical scope, the discussion of the RTO-TR-HFM-154 is structured around two key entities, – the Military Nutrition Data Matrix (abbreviated as MNDM), and the numeric model of a solder's body (in this thesis abbreviated as RTO-TR-HFM-154's data-constructs of human bodies); both were assembled and introduced on the pages of RTO-TR-HFM-154 by the Working Group of the twelve of the Alliance's Member States (RTO-TR-HFM-154, 2010, p.107). As a policy document, therefore RTO-TR-HFM-154 becomes a site for a series of new entities to emerge, and to be made governable with the aim of resolving certain political issues. The central issue of RTO-TR-HFM-154 (as stated earlier) is the absence of one unified military nutrition scheme for all the NATO's military troops, and the need to achieve the so-called "negotiated interoperability" among the NATO's Member States with these regards (1-1, RTO-TR-HFM-154). The RTO-TR-HFM-154's data-constructs of human bodies on the pages of the document are constituted and instrumentalized to translate this central issue of the document into a number-issue; through rendering a complex and potentially contentious phenomenon (solder's body, and its nutritional needs) statistically/numerically measurable, these data-constructs make it governable. This approach reflects a mode of governance in which populations are transformed into measurable and analyzable entities via statistical and data practices, allowing power to be exercised over collective life rather than individuals. Michel Foucault (1976, 2009) conceptualized this mode of governance as a biopolitics of the modern State(s). Considered this way, data modeling of the physiological processes became a legitimate way of constituting population as a singular comprehensible object of governance (Scheel, 2020; Foucault, 1976), and for the case of RTO-TR-HFM-154 this could mean that every of the twelve of the NATO's Member States brought into the RTO-TR-HFM-154's data-constructs of human bodies as a reality their populations to be governed (Cakici et al., 2020, p.205). This allows one to hypothesise that the central issue, which the very existence of RTO-TR-HFM-154 seeks to address, roots in the fact that each

of the NATO's Member States imagines, conceptualizes, and governs its population biopolitically-wise in a distinct way; when these different sociotechnical imaginaries were brought to the discussion table in STANAG 2937 MED, they did not manage to converge into the common ground.

The key ambition of this Master's thesis is to deconstruct the world-making practices of the RTO-TR-HFM-154 by analytically examining how exactly the RTO-TR-HFM-154's data-constructs of human bodies mediate the governance enacted by the NATO's Member States over the lives of soldiers as a collective. According to key assumptions of this thesis, these data-constructs are a narrative-device. As such they meant to concise the story/ narrative of RTO-TR-HFM-154 to resolve the (outlined above) issue, which they are acting upon; the numeric form allows them to gain an agency as a numeric tool of knowledge and biopolitical governance within and beyond the world constituted by NATO's Nutrition Science and Food Standards for Military Operations Technical Report (RTO-TR-HFM-154). World-making practices of RTO-TR-HFM-154 generally, and the RTO-TR-HFM-154's data-constructs of human bodies more specifically, are therefore the object of this Master's thesis research.

The wide spectrum of factors multilayering around RTO-TR-HFM-154's data-constructs of human bodies reflect their inherently sociotechnical character (Latour,1996, 2005; Callon, 1990; Law & Hassard, 1999). The statistical and data practices through which they have been originally produced are not only situated at the center of a complex network of entanglements of human and non-human actors (e.g. statisticians, infrastructures, materials), but are also grounded in the predetermined and "blackboxed" nutrition science epistemologies (Latour, 1987; Reite, 2013). These epistemologies facilitated the practices of transforming the food-entities into numeric models of calculative nutritions. Sociocultural and political dimensions of constructed data-models come on top of the listed layers. All these dimensions are intensifying the complexity of the very phenomena of the RTO-TR-HFM-154's data-constructs of human bodies, and widening the gap between these data-modes and those, who they originally ought to represent – the actual people at war battlefields. Accounting for this complexity, the outlined objective of this Master's thesis was intentionally narrowed down to examine specific elements of the RTO-TR-HFM-154's world-making practices: the scripts (SQ1) (Akrich, 1992), the care-practices (SQ2) (Puig de la Bellacasa, 2017) within the foundation of RTO-TR-HFM-154's data-constructs of human bodies, and the inconsistencies they produce (SQ3) (Latour, 1996, 2005; Callon, 1990). The concentration on these constituents of RTO-TR-HFM-154's data-constructs of human bodies is intended to make the research feasible for the ambition and requirements of the Master's

thesis format; it enables me to narrow down the objective of this Master's thesis to the intention of shedding the light upon different ways of how the data-constructs of human-body, – assembled through, by, and within the RTO-TR-HFM-154, – contribute to a specific world-making practices, – the practices, which not only construct and shape, but more importantly distort and neglect the complexities of the lived realities of the people they are meant to represent, especially when those are the realities of a war battlefields.

3.2. Key Research Question(s)

Science and Technology Studies (STS) offer multiple trajectories to approach the RTO-TR-HFM-154´s world-making practices as an object of research; relevant STS perspectives encompass a wide spectrum themes, including but are not limited to the epistemology of calculative nutrition (Mol, 2012; Roberfroid, 2011), information infrastructure as a means of population governance (Frohlich, 2017; Castells, 1996; Bowker & Star, 1999), the ways data make people (Law, 2009; Cakici et al., 2020; Haraway, 1988), data models of human bodies as symbolic representations (Anderson, 2006; Elrick & Schwartzman, 2015; Ruppert, 2011) and instrument(s) of biopolitical governance (Scheel, 2020; Foucault, 1976). As the intention of this Master's thesis is to address the world-making of RTO-TR-HFM-154 through the examination of the data-constructs of human bodies, which are brought into being by this document, of the crucial importance is to map and understand the very constitution of these data models, as this is exactly what enables their agency as a meditative means of biopolitics (Fouchalt,1976, 2009; Cakici et al., 2020).

According to the STS postulates, any enactment of peoplehood through the data practices always has multiple characters, which are determined by the very genealogy of statistics and complexity of the sociotechnical networks surrounding it (Latour, 1996). These enactments unavoidably imply the fluidity and situatedness of the produced image of people (Ruppert, 2011; Haraway, 1988). As Annamarie Mol (2002) and Every Ruppert (2011) emphasized, the *peopling* is always in the process of constant formation; this process is contingent in the sense of that it is flexible and adjustable to the complexity and instability of the circumstances and conditions under which peoplehood performance through the data practices is taking place (Law, 2004, p.38). Deepening this complexity, the circumstances of the constitution of the RTO-TR-HFM-154's data-constructs of human bodies imply the inheritance of them of a number of additional layers, including inscribed into them biopolitical regulations (Fouchalt, 2009), sociotechnical imaginaries and visions of the variety of the NATO's Member States (Jasanoff & Kim, 2009; Jasanoff, 2015), specifics of their situatedness and instrumentalization within the RTO-TR-HFM-154 (e.g. the alignment with

the strategic goals and priorities of both NATO and national policies of the Member States of the Alliance) and other such elements. As a result, each of these layers determines the shape/composition of the RTO-TR-HFM-154's data-constructs of human bodies as they appear on the pages of this document. Given this underlying density, complexity and multiplicity of the entanglements around the RTO-TR-HFM-154's data-constructs of human bodies, a full STS “unlayering” of them neither feels to be feasible for the Master’s thesis research, nor corresponds to the chosen scope of it; instead this Master’s thesis focuses on analytically mapping the very shape of the RTO-TR-HFM-154's data-constructs of human bodies.

Mapping the constitution of the RTO-TR-HFM-154's data-constructs of human bodies alongside with the main rationalities underlying it enables us to understand why exact this types of the soldier's physical compositions, – but the others – were suggested by the NATO's Member States as those, whose body meant to be exposed to the different technologies and practices of killing (Prokosch, 1995), leading to the key research question:

RQ: *What are the imagined data-constructs of the human-bodies incorporated into the design of RTO-TR-HFM-154 nutrition regime, or (phrased otherwise) – who are these people, whose body NATO´s States envision to be exposed to the different technologies and practices of killing*?

This research question implies the “unlayering” of the genealogy of RTO-TR-HFM-154's data-constructs of human bodies in three analytical dimensions: (1) *the scripts* (Akrich, 1992) and (2) *the care-practices* (Puig de la Bellacasa, 2017) inscribed into the foundation of RTO-TR-HFM-154's data-constructs of human bodies, and (3) the key *discrepancies and frictions* between these technoscientific artefacts and the living-bodies of soldiers. These three dimensions translate into three sub-questions of this Master’s thesis, each of which assists and complements the central research question.

SQ1: *What is the script enacted within the foundation of the RTO-TR-HFM-154's data-constructs of human-bodies?*

Madeleine Akrich's (1992) theoretical framework of *the script* emphasizes that the shape and design of any technoscientific artefact is always determined by the way its designers were imagining the users: *“like a film script, technical objects define the framework of actions together with the actors and the space in which they are supposed to act.”* (p.208). The data-constructs of human bodies in the case of RTO-TR-HFM-154 could be conceptualized

as numeric models of the imagined users, – the soldiers, who were envisioned by the RTO-TR-HFM-154's Working Group to be exposed to the suggested by the document nutrition regime. Deconstruction of *the script* inscribed into them, therefore, enables me to uncover which factors were taken into account by the designers of the RTO-TR-HFM-154's data-constructs, including what is the space at which imagined soldiers' bodies were envisioned to operate, which environments and stressors they were meant to be exposed to, and what are the other elements, which were taken into account during the constitution of the RTO-TR-HFM-154's data constructs of human bodies, and influenced/determined the very shape of this artifact as such. This way deconstruction of *the script* (Akrich, 1992) behind the RTO-TR-HFM-154's data constructs of human bodies, – equalized to the deconstruction of the versions of reality produced *through*, *by*, and *within* the RTO-TR-HFM-154, – sheds the light over the ways biopolitical governability is being achieved through the visions, imaginaries and world-making practices, inscribed into the numeric models as a means of political regulations (Fouchalt,1976, 2009).

Notably, given the performative (Law, 2009; Elrick & Schwartzman, 2015) and deeply political (Scott, 1998; Anderson, 2006; Isin, 2018) dimensions of any data practices, these visions could not be disentangled from *the care-practices* of those, who are in a power to assemble, structure and establish such an artifact (Puig de la Bellacasa, 2017), – RTO-TR-HFM-154's Working Group, which consisted of the representatives of twelve different NATO's Member States. This leads us to the second sub-question of this Master's thesis:

SQ2: *Which care-practices shape and justify the biopolitical constructs of peoplehood in RTO-TR-HFM-154?*

The RTO-TR-HFM-154's data constructs of human bodies reflect *the care-practices* (Puig de la Bellacasa, 2017). They enact the prioritization of certain types of the soldiers' bodies, presumably those, which are deemed capable of meeting both the NATO's as well as its Member States' strategic needs, and reflect their visions of the human body's capacities required to for meeting these military objectives. When certain types of the human bodies are prioritized in such a manner, the other ones become automatically excluded; as emphasized by María Puig de la Bellacasa (2017), – the act of caring for one inherently involves the exclusion from this care of the others. Situated within the military context, this means that through the care-practices inscribed into its data-constructs, the RTO-TR-HFM-154's Working Group practically facilitates the higher survival rates on the war battlefields for one type of the human bodies, simultaneously predetermining the lower

survival chances for the others. This highlights the crucial role of care within the biopolitical governability of human bodies, allowing us to situate the care consolidated within the RTO-TR-HFM-154's data-constructs of human bodies within the wider sphere of the world-making practices of RTO-TR-HFM-154, and therefore more comprehensively address them as an object of research.

The key discrepancies and frictions (Latour, 1996; Callon, 1990) between the RTO-TR-HFM-154's data constructs of human bodies and living-bodies of actual soldiers in military operations settings are addressed through the third sub-question of this Master's thesis:

SQ3: *What are the key discrepancies and frictions between the RTO-TR-HFM-154's data constructs of human bodies and living-bodies of actual soldiers?*

The fact of the absence of one unified military nutrition scheme and inability of the twelve NATO's Member States to achieve an agreement on that, was problematized in the STANAG 2937 MED, which resulted in the need of RTO-TR-HFM-154. The RTO-TR-HFM-154 responded to this issue by establishing a numeric, standardized model of the human body, which was intended to become a common ground for an agreement between the twelve of NATO's Member States. Nevertheless, the key hypothesis of this Master's thesis proceeds from the expectation of a number of discrepancies, and misalignments, which are likely to emerge on the ground, when such a standardized data models meet the physiological variability, metabolic instability and situational conditions of an actual living-body of a soldier at the war battlefield(s). These potential discrepancies and frictions are intended to be considered in the framework of this Master's thesis research, as they testify the interplay of different scripts, care-practices and biopolitical perspectives constitutive of the RTO-TR-HFM-154's data constructs of human bodies.

4. Key Concepts and Theories

The RTO-TR-HFM-154's data-constructs of the human-bodies is the key object of consideration and examination within this Master's thesis research. This section of the thesis introduces a comprehensive theoretical STS prism, which enables the holistic examination of the outlined phenomena within the scope facilitated by the key RQ, and derivative SQs. Designed theoretical-prism consists of several interrelated layers of STS concepts, each offering a distinct yet complementary analytical standpoint for engagement with RTO-TR-HFM-154's data-constructs of the human-bodies.

At the starting stage, this is important to envision and comprehend the data-constructs of human bodies inhabiting RTO-TR-HFM-154 as biopolitical categories (statistical constructs) assembled with the aim of making certain segments of population governable (Foucault, 1976). Subsequently, there is the need to understand how these biopolitical categories within the RTO-TR-HFM-154 are simultaneously the products of *the script*, and the determinants of the composition of *the script* upon which they are acting (Akrich, 1992). Beyond that, the next stage of theoretical reasoning involves exposing how the world(s) brought into being through the *care practices* of those in power – who assemble, structure, and establish RTO-TR-HFM-154's data-constructs of the human-bodies as a technoscientific artefact(s) (Puig de la Bellacasa, 2012) – differ from the world(s) that practically emerge by the (dis)placement of this artefact (Akrich, 1992).

4.1. Biopolitics — Governance Through Reality-Making

This subsection introduces the concept and theoretical prism of biopolitics authored by Michel Foucault (1976), along with detailing on analytical relevance and utility of this theory for the consideration of the RTO-TR-HFM-154's data-constructs of the human-bodies as an object of STS research.

4.1.1.Biopolitics as Concept and Theoretical Framework

During the lecture given on the 17th of March 1976 at the College de France, Michel Foucault traced the evolution of the classical theory of sovereignty — starting from the analysis of the classics Sovereign's attribute to exercise power of life and deaths over subjected (following the Machiavellian doctrines), up to the assemblage of what philosopher refers to as a *biopolitics of the human race*. Later this concept was laid into his fundamental work *«Right of Death and Power over Life»* (Foucault, 1976). Within this work the author traced the metamorphoses of the governance as it shifted from operating upon the classic disciplinary techniques of power exercised by the State to the new shapes empowered and driven by the introduction of the technologies capable of addressing the *multiplicity of men* (Foucault, 1976, p. 242). According to the key argument of the text, the introduction of the technologies, which made the measurement of biological processes possible, became the main catalyst of the revolutionary changes in the conventional practices of population governance. At the foundational level, these technologies enabled the transition from the individualizing mode of power exercised by the State (which implied the perception of the subject as a *man-as-body*) into the essentially massifying one (which conceptualizes subject a *man-as-living-being*, and therefore *man-as-species*). As an aftermath beyond that point, the measurement of biological processes (e.g. mortality or birth rates, life-expectancy,

disease incidences etc.) via statistics and data practices, became a legitimate way of constituting population as a singular comprehensible object of governance (Scheel, 2020; Foucault, 1976). Given mode of governance, which is based upon the conveyance of the populations into the measurable and analyzable entities – via statistics, and data practices –, and implies the power exercised over *the collective life* in the Foucaultian (2009) conceptualization of it, is what this Master's thesis conceptualizes and refers to as *biopolitics* of the modern States (Foucault, 1976).

The policy documents by type of RTO-TR-HFM-154 are the means of modern biopolitics. The RTO-TR-HFM-154 constructs *man-as-living-being*, and therefore *collective life* (Foucault, 2007), on its pages through the practices of data-driven statistical modeling of the bodies of military servants of the NATO's States. The conceptual framework of biopolitics provides an effective theoretical-instrument, which enables me to approach and shed the light upon the world-making practices of the numbers embedded into the RTO-TR-HFM-154's data-constructs of the human-bodies, by offering a comprehensive scheme for tracking a process of how certain segment of the NATO State's population – military troops –, become turned into the numeric entities with the objective to be made subjected to concrete mode and practices of governance (Scheel, 2020; Foucault, 2007; Mbembe, 2001). Of particular utilitarian value with this respect is the capacity of biopolitics as an analytical frame to sensitize us to how within the process of construction of a *man-as-living-being* on the pages of RTO-TR-HFM-154 through the mechanisms of statistics and data-modeling, the very act of measuring and documenting any type of the biological processes within the bodies of the servants of the military troops results in the simultaneous creation of these troops, as well as constitution of the reality they meant to be exposed to on the war battlefields. These acts of measurement, quantification, and documentation (registered on the pages of RTO-TR-HFM-154) are technologies utilized to produce a particular reality of "the military body", through rendering it actionable, and governable (Mbembe, 2001; Mol, 2012).

The postulates of the dominant nutrition science epistemologies (which is based upon the reduction of food into measurable metabolic units like calories, and macro-micro nutrients – carbohydrates, fats, protein) and conventional statistical methods of the measurement of the physiological processes within the human body are assigned with the key role in the process of converting solders bodies into the numeric entities within the RTO-TR-HFM-154. According to the STS principles, any act of measurement is never neutral, it is essentially performative, – measurement practices of any kind unavoidably end up constructing the reality, which they intended to describe (Latour, 1987; Barad, 2007). As such the very act of

a reality-construction begins at the stage of the constitution of categories, which ought to be instrumentalized for the specific measurement; these categories tend to determine the outcome of this measurement from the outset (Bowker and Star, 1999). None of the biopolitical categories (e.g. for the case of RTO-TR-HFM-154 – nutritions, metabolic density, magnesium, protein, calories etc.) are “naturally given”; in contrast all of them are statistical constructs that frame how bodies of the soldiers are understood from an endless variety of angles, depending on the aims of certain measurement at place. As for the case study of this Master’s thesis, the value of the instrumentalization of biopolitics as a theoretical-prism is manifested exactly in the ability of the given concept to trace very process of construction of the reality, which is taking place on the pages of RTO-TR-HFM-154 through the assemblage of data-constructs of human bodies starting from the stage of the negotiation, assemblage, and introduction of the key categories upon which given reality ought to operate. The list of these categories within the RTO-TR-HFM-154 includes both the military context ones (e.g. *battlefield stressors*, *severe environmental conditions* (1-2, RTO-TR-HFM-154)), and (as mentioned above) those suggested by the contemporary nutrition science paradigm (e.g. macro/micronutrients, minerals, – sodium, calcium, carbohydrates proteins etc.). According to the arguments of Michael Foucault (2009), after the establishment of the categories follows the performance of the measurements dictated by those categories. These measurements enable governmental entities to detect patterns and trends, therefore empowering them to target specific segments and groups of population, which might require intervention and regulation based upon so-called “*statistical realities*”.

The RTO-TR-HFM-154's Working Group explicitly delineates the objective of the document, namely “*to identify and understand* [the instrumental role of] *rations and nutrition within the context of joint, multinational operations and the broader impacts* [of it] *on human performance and mission success”* (ES - 1,RTO-TR-HFM-154). Therefore, the case of RTO-TR-HFM-154 exemplifies the Michael Foucault’s argument that biopolitical practices (e.g. production of the statistically-mediated version of a soldier's body) could grant modern States the power to intervene to save lives *«by eliminating accidents, the random elements, and deficiencies»* (Foucault, 1976, p. 248), situated within the military context.

While of a particular importance for the case study of this Master’s thesis is to understand RTO-TR-HFM-154 as a space of interaction between the political agenda(s), military guideline(s), nutrition science and the politics of the practical implementation of its epistemologies for the governance of *man-as-living-being* (Foucault, 2007; Guthman & Brown, 2016; Pollock, 2015; Stephenson, 2011; Raman & Tutton, 2010), the key central component of the biopolitics to consider in the scope of the conducted research is the

information infrastructure/architecture behind the foundation of RTO-TR-HFM-154, which should enable us to plot *«the relations among power processes, knowledge practices, and modes of subjectivation»* (Lemke 2011, p.119).

4.1.2. Information Infrastructure as a Meditative Mechanism of Biopolitical Governance

The information infrastructure/architecture as a classification system behind the basis of RTO-TR-HFM-154 ensures the operability, and stability of the reality constructed within this document; it does not simply (as might be assumed at the first glance) structures and organizes the nutrition science epistemologies inside the document, instead information infrastructure (as a non-human actor within the established network (Latour, 1996)) actively mediates the process of the biopolitical governance established *through*, *by*, and *within* the RTO-TR-HFM-154 by setting the very conditions under which the bodies of the soldiers become governable.

Geoffrey Bowker and Susan Star (1999) conceptualized information infrastructures as political artifacts. According to the scholars, classification and standardization executed through the information infrastructures are the processes of spatio-temporal segmentation of the realities, which are centered around the boundaries of the established categories. Different ways of how different actors balance between meanings inscribed into these categories, and how the boundaries of these categories are constantly remaining negotiable within the institutionalization of categorical work, according to them, should remain at the center of research for anyone seeking to understand the power delegated to information infrastructure (Bowker & Star, 1999). Given theory suggests that any information infrastructure is *per se* a so-called *boundary infrastructure*. This implies that the meanings attributed to categories assembling one of the other information infrastructure sustain constantly unstable and open for the mediation and negotiations; yet, the operable classificatory principles of information infrastructures stay always consistent – they segment the world into mutually exclusive categories in order to complete “an ideal classification system”, which should seek to fully cover the reality it is intended to describe. Within this interpretation, standards – which are defined as *«any set of agreed-upon rules for the production of (textual or material) objects»* (Bowker & Star, 1999, p.13) – are conceptualized as derivatives from such a segmentation of realities through information infrastructure. The key function of standards in that system is to put reality into heterogeneous metrics and establish the system allowing the world to work together through a set of different cultural and social contexts (Bowker & Star, 1999, p.13). Consequently, information infrastructure by

means of acting as simultaneously classification and standardization system enables the placing of any phenomena into the established network (Roth, 2005), where the existence of given phenomena is defined by (what Douglas refers to as) a *«matter of place»* (1966, p. 36).

The *man-as-living-being* mode of governance (Foucault, 2007) exercised through the RTO-TR-HFM-154 is enabled by the information infrastructure/architecture of the document. This information infrastructure/architecture not only determines the shape of the data-constructs of the human-bodies, but actively mediates the process of the biopolitical governance established through, by, and within the RTO-TR-HFM-154 by setting the very conditions under which the bodies of the soldiers become governable. These conditions became embedded into the key categories that determined how biological processes were measured for the constitution of the RTO-TR-HFM-154's data-constructs of the human-bodies. This makes central for the scope of this Master´s thesis to understand how RTO-TR-HFM-154's data-constructs of human bodies were initially assembled through the biopolitical categories, and how these categories act upon the very phenomena of human bodies; this includes how the boundaries of the RTO-TR-HFM-154's central categories have been negotiated.

The theoretical-lens of information infrastructure is instrumental in such analysis. Conceptualization of the data-architecture behind the foundation of RTO-TR-HFM-154 as an information infrastructure through which biopolitical governance is being performed sensitizes us to the following attributes *per se* inherent to such:

I. Information infrastructures are always *«built on an installed base»* (Star, 1999). As for the designed case-study of the RTO-TR-HFM-154's data-constructs of the human-bodies, this allow us to acknowledge that the data-constructs of human-bodies of RTO-TR-HFM-154 were built upon the pre-existing nutrition science epistemologies and data-landscapes; this implies the landscapes consisted of classification schemes, which segment food-entities according to the conventional nutrition science categories – for example micro- (vitamins, minerals etc.), and macro- nutrients (proteins, carbohydrates etc.)). Beyond this (rather) technical perspective, Susan Star (1999) importantly emphasized that these installed bases always encompass the sociocultural context within which certain artifacts were produced. At the case of RTO-TR-HFM-154 this means that the data environment established within this document was determined by the peculiarities of biopolitical climates, imaginaries and sociopolitical peculiarities of each of the twelve NATO's

countries, which were involved into the assemblage of the RTO-TR-HFM-154's data-constructs of the human-bodies. Consideration of this dual-nature of the installed base of the RTO-TR-HFM-154's information infrastructure is key not only for the understanding of the underlying causes, which determined the key differences between the data-constructs of human-bodies assembled by different NATO States, but also for the exploration of the entanglement and interplay of the variety of care-practices (SQ2), which inform the script (SQ1) assembled and negotiated within the RTO-TR-HFM-154.

II. The power of infrastructures always lie within the underlying invisibility of them (Bowker et al., 2010), or as put by Xaq Frohlich (2017) the taken-for-grantedness of the established systems. According to Bruno Latour (1999), once the process of the naturalization of infrastructure is completed, the infrastructure transforms into the silent background of everyday life, consequently becoming a black-box. Suggested by this theory prism, highlights the so-called «practical politics» of any data infrastructure, – as the one of the RTO-TR-HFM-154, – and fosters the necessary level of reflectivity required for “opening the black-box” (after Latour,1999) through lowering the analysis intended by this Master´s thesis *«down to* [the] *level of details»* (Bowker & Star, 1999, p. 44).

III. Information infrastructures/architectures gain their importance beyond the objects, which are meant to be represented through them, but from the wider systems of standards and practices they embody. Little to be added to Bruno Latour (1987) with this regards, who emphasized that these days institutions invest far more effort and resources into the development and establishment of the standards, than into the manufacturing of the objects, which these standards meant to govern. Within this Master's thesis research, this insight suggested by the infrastructure theory narrows our focus down to the institutions involved in the constitution of the information infrastructure of the RTO-TR-HFM-154. This provides the necessary STS sensitivity towards the power structures behind the process of the constitutions of the RTO-TR-HFM-154's data-constructs of the human-bodies at both macro, and micro levels. More to that, the inherent orientation of infrastructure theory towards the process of the metamorphoses of the key objects represented through numbers, equips me with a sensitivity to analytically trace on the pages of the document how the focus of the RTO-TR-HFM-154's Working Group was gradually shifting from the material human body under consideration to abstract sets of numbers, which while meant to represent the solder´s body, risk neglecting the natural complexity of it.

IV. While *«infrastructure is something that emerges for people in practice, connected to activities and structures»* (Star & Ruhleder, 1996, p. 112), the chosen theoretical framework contributes another insight valuable for the examination of case of the RTO-TR-HFM-154's data-constructs of the human-bodies. More specifically, it conceptualizes the information infrastructure on which these data-constructs of the human-bodies are built as performative, – meaning as such, which only emerge within practices and material work performed inside the network of human, and non-human actors, which constitute it (Jasanoff, 2004b; Latour, 1996); this material work, according to the Bowker et. al. (2010) consists of the ways *«people, routines, forms, and classification systems are integral to information handling»* (p. 103).

Concluding the above, the theoretical prism of biopolitics allows us to conceptualize the enacted within the RTO-TR-HFM-154 numeric representations of human-bodies as entities brought into being through the statistical measurements and pre-given nutrition science epistemologies. The key function of these representations is to make the bodies of the NATO's military personnel governable through their numerical shape. Within the RTO-TR-HFM-154 therefore, diverse biological processes are translated into measurable and actionable categories designed to enable NATO’s intervention in regulating bodies of their soldiers during the specific set of envisioned military operations. Given categories, as elaborated above and stated by key principles of STS, are not “naturally given”. On the contrary these categories are enacted, mediated, stabilized, and naturalized through the information infrastructure established within and through the RTO-TR-HFM-154, – the infrastructure, which enables the very process of biopolitical governance. Information infrastructure as an underlying base of biopolitics illuminates the hypothetical isolation of categories upon which it operates. Accordingly, for the case of this Master's thesis, the integration of the perspectives of the theoretical prisms of both information infrastructure and biopolitics allows us to analytically envision the RTO-TR-HFM-154's data-constructs of the human-bodies as not as simply neutral reflections of human physiology of the soldiers performing military operations on the battlefields, but rather as negotiated and taken-for-granted data-constructs shaped by epistemic, political, and institutional contingencies.

4.2. Script

4.2.1.Theoretical Approach of (De-)Scription

Description of technological objects is a red-thread in the work of Madeleine Akrich (1992). Drawing on Bruno Latour's (1987; 1993) Actor-Network Theory (ANT), Madeleine Akrich theoreticized on different ways technoscientific objects tend to define actants (human and non-human actors) and relationships between those within the complex networks facilitated around the technoscientific objects. She emphasized the importance of observing how the technoscientific objects tend to distribute the agency and causes within this process, therefore slightly shifting the analytical focus suggested by ANT from the established object itself to the process of its initial construction. Of particular importance for the scholar was the role of so-called “designers” of the artifacts within this process of construction: *“the choices made by designers take forms of decisions about what should be delegated to whom or what, this means that technical objects contain and produce a specific geography of responsibilities”* (Akrich,1992, p.207). Designers of technoscientific artefacts define the models of both users as well as non-users of an object in a specific manner, – they endow them with relevant qualities, motives, competences etc. This allows the derivative morality and economy of the object to evolve itself in a particular (preconditioned by the formerly assigned characteristics) way. This morality and economy is unavoidably built upon the hypotheses of the designers about the entities that constitute the world into which the object imagined to be inserted (Akrich,1992, pp. 207-208). The concept of *the script* was therefore introduced by Madeleine Akrich to conceptualize this process; she claims that *“like a film script, technical objects define the framework of actions together with the actors and the space in which they are supposed to act.”* (1992, p.208). This concept is fundamental for the examination of the RTO-TR-HFM-154 under the angle set by the research questions of this Master´s thesis for a number of reasons.

Dominant ambition of the given Master's thesis is, when following Madeleine Akrich (1992), to uncover the links between technical choices, – specifically the science-based rationalities of the RTO-TR-HFM-154's Working Group, which laid into the foundation of the data-constructs of the human-bodies, users representations (the RTO-TR-HFM-154's data-constructs of the human-bodies as such), and the actual use of technology exemplified in given case by the consumption by the soldiers of the NATO's military troops of the Meals-Ready-to-Eat (MREs) produced according to the RTO-TR-HFM-154 as a main regulatory document. The RTO-TR-HFM-154's data-constructs of the human-bodies as a key research object remain central within such analytical investigation. With this regards, the

script theory of Madeleine Akrich (1992) enables me to conceptualize RTO-TR-HFM-154 as the space, where negotiations on the construction of NATO's military nutrition regime scheme has taken place, and became translated into a concrete technoscientific artefacts – RTO-TR-HFM-154's data-constructs of the human-bodies, and (constituted upon them) Meals-Ready-to-Eat (MREs).

The RTO-TR-HFM-154 is the space where the script(s) or the scenario(s) for NATO's MREs are being created, negotiated, and documented (through the assemblage of the RTO-TR-HFM-154's data-constructs of the human-bodies). These script(s)/scenario(s) are always a complex compromise between the number of entities involved in the construction of the RTO-TR-HFM-154's data-constructs of the human-bodies, and consequently MREs as technoscientific artefacts. According to the Akrich's theory (1992), the main function of the script is to predict not only the spectrum of stresses the object ought to bear, but more importantly to portray both users and non-users of this object, thereby defining the degree to which this artefact could be employed in a manner that confronts the norms it designed to represent. Within given STS paradigm, the fruitful way to approach the RTO-TR-HFM-154's data-constructs of the human-bodies as an object of research under the scope set by this Master's thesis involves not only to uncover the script(s) upon which those are constituted, but what's more to search for the landscape of the conditions, which these script(s) meant to predict. Madeleine Akrich (1992) argues that this could be achieved through the observation of the boundaries of an object of one's consideration; she refers to the boundaries as to the lines of demarcation, which could be traced by researchers within (elaborated earlier) geography of delegation established by the technoscientific object. Methodologically, this implies to trace the patterns of adjustment between the object and the environment it was put into. As Akrich phrases it, – citing: *"to find circumstances in which the inside and the outside of objects are not well matched; to find disagreement, negotiation, and the potential for breakdown"* (p.207).

Meals Ready-to-Eat (MREs), as objects of strategic military importance, are designed for highly specific forms and conditions of use. Grounded in the script theory of Madeleine Akrich (1992), the RTO-TR-HFM-154's data-constructs of the human-bodies overtake the role of the main mechanism of adjustments and mediation between MREs and the actual realities encountered in the war battlefields. Consequently, the RTO-TR-HFM-154's data-constructs of the human-bodies act as direct indicators of (what Madeleine Akrich conceptualizes as) the plasticity of the object (MREs), measuring the degree to which the circumstances initially assumed by the designers (the RTO-TR-HFM-154's Working Group) are related to (or rather are matching with) those existing in practice.

The RTO-TR-HFM-154's data-constructs of the human-bodies are the projected users of the designers (RTO-TR-HFM-154's Working Group) of Meals Ready-to-Eat (MREs) and authors of the document. They act as the links which bind together the RTO-TR-HFM-154's Working Group as the artefact's designers with the users, – soldiers of the NATO's Alliance. Researching the models of projected users and identifying the gap between them and actual users is the only way to uncover *"the world inscribed into the object and the world described by its displacement"* (p.209), according to Madeleine Akrich (1992). Consequently, she proposes the concept of the *description* to study *"the mechanisms that allow the relation between a form and meaning constituted by and constitutive of the technical object to come into being"* (Akrich, 1992, p.209). The notion of description is fundamental for the case study of the RTO-TR-HFM-154's data-constructs of the human-bodies, as it tailors into the comprehensive whole the entire theoretical prism of this Master's thesis. Specifically, it enables the examination of what essentially imagined by the RTO-TR-HFM-154's Working Group data-constructs of the human-bodies are, and methodologically track the stages of their construction. At the first stage of this process the notion of description might allow me to comprehend how biopolitical categories, which constitute the RTO-TR-HFM-154's data-constructs of the human-bodies become first operationalized within this document, acting simultaneously as the products of the script, and the determinants of its composition, – the process conceptualized by Sheila Jasanoff as *the co-production* (2004b). And as a next stage, understand how the world(s) inscribed into these data-constructs (which determined the very shape of them as such) is/are different from the world(s) described by their (dis)placement (Akrich, 1992, p.209).

4.2.2.The Construction of (Non-)Users

Technoscientific objects define human and non-human actors with which they interact. They tolerate some users, and tend to exclude the others, – sometimes they exclude those, who initially were expected by the designers of the artefact to be able to engage with the considered object(s). According to Madeleine Akrich (1992), this interaction capacity of any technoscientific device is partially determined by the technically delegated prescriptions of an object inscribed by developers into the given artefact, and partially by the ontological politics of the artefact itself, as well as of the network established around it. This way of conceptualization allows Akrich's theory to keep balances between falling into neither social constructivism, nor technological determinism (p.206), both of which tend to be often criticized within the STS discourse. At the same time, as emphasized by the scholar, different technoscientific artefacts have different degrees of constraints over those who are using them. As for the assessment of this degree for the specific devices, Akrich (1992)

suggests one to pose the question of who otherwise from engaging with the object would be left outside of economic relations (p.214).

The RTO-TR-HFM-154's data-constructs of the human-bodies allow the experts of the NATO's States to define the space and actors, with whom the RTO-TR-HFM-154's MREs will be interacting in the “real world” settings; apart from obtaining the access to these actors, they are pushing them into the specific roles, which they assign them with (Akrich,1992, p.214). When operating principles of any technoscientific artifacts are based upon the anticipation, by anticipating certain users, they unavoidably produce the non-users (as a separate category). The data-constructs of human bodies in case of RTO-TR-HFM-154 are depicted based upon the mechanisms of abstraction and simplification (Akrich, 1992, p.220). These data-constructs are essentially statistical models that frame the bodies of the NATO's soldiers as those are perceived by the RTO-TR-HFM-154's Working Group. They were designed and introduced for a concrete purpose and encode very particular set of assumptions, – for example assumptions regarding the energy expenditure, nutritional requirements, and metabolic rates of the soldier's body, the conditions within which the body of this soldier ought to operate, and stressors to which it is expected to be exposed to. Therefore, through the data-constructs of human bodies RTO-TR-HFM-154's Working Group impose constraints on NATO's military troops not only by defining the space in which NATO's MREs interact with soldiers in real-world battlefield conditions, but more importantly by demarcating what type of the human bodies will be granted higher survival chances, then the others. This instance of the RTO-TR-HFM-154's data-construct of human bodies (Akrich, 1992) demonstrates how script not only defines the users, and non-users of an artefact, but performs standardization and naturalization of a certain type of sociopolitical relations and inclusion-exclusion landscape, and as long as *"the circumstances in which the device is used do not diverge too radically from those predicted by the designers, it is likely that the script will become a major element for interpreting interaction between the object and its users"* (Akrich, 1992, p.216).

The script theory of Madeleine Akrich (1992) consequently enables me to identify which types of human bodies were practically imagined behind the RTO-TR-HFM-154's data-construct of human bodies, – who exactly this technoscientific artefact depicts as user(s), and who renders effectively excluded as non-user(s). Accordingly, the mapping of both within the script behind the RTO-TR-HFM-154's data-construct of human bodies allow me to not only trace the sociopolitical assumptions and imaginaries entangled into this technoscientific artefact, but to delineate and comprehend the inclusion – exclusion logics, which RTO-TR-HFM-154's data-construct of human bodies enact by their very existence.

4.3. Matter of Fact - Matter of Concern - Matter of Care

Bruno Latour (2004) argued that understanding of the different ways realities get assembled within the networks of human and non-human actors surrounding technoscientific artefacts requires the shift in the mode of thinking: from the perception of the phenomenon as “the matter of fact” to acknowledgement of the complexity of sociotechnical networks, which calls for “the matter of concern” vision. The matter of concern prism presupposes that the complexity of the network cannot be simply reduced to it just being a matter of fact, but requires the more detailed consideration concerning all the possible perspectives of its complexity. Deepening this post-ANT account with the feminist sensitivity, Maria Puig de la Bellacasa (2012) expanded the discussion initiated by Bruno Latour by highlighting the importance of care in the relationships that constitute our realities and surrounding world(s), – therefore bringing on the table “the matter of care” mode of thinking.

The theoretical framework of the script (as elaborated above) suggests that the mechanisms of adjustments, or “the mechanisms of the failure to adjust” as phrased by Madeleine Akrich (1992), between the users imagined by the designers and the users in practice *“become particularly clear when they work by exclusion, whether or not this exclusion is deliberate”* (Akrich,1992, p.209). Notwithstanding the intentions of the designers of technoscientific artefact(s), any device tends to ignore *“the wide range of users to which objects may be put”* (Akrich, 1992, p.208). Maria Puig de la Bellacasa´s (2012) “matter of care” mode of thinking allows me to comprehend and approach these exclusions through the sensitivity towards the so-called “process of moral delegation” incorporated into the artefact, – in the case of this Master's thesis the RTO-TR-HFM-154's data-construct of human bodies. Notably, the perspective of the matter of care has a potential to shed light not solely on how the RTO-TR-HFM-154's data-construct of human bodies define the bodies of the soldiers, but also shape the ethical landscape of inclusion and exclusion within the document.

According to Maria Puig de la Bellacasa (2012), applying “thinking with care” means to reflect over the questions of *“who is doing care?”*, and *“who is being harmed or excluded by this caring?”*(p. 86). Scholar frames care as an ethico-political issue, and as a fundamentally political practice of creating and (afterwards) sustaining the created world(s). Sequentially, the conceptualization of the matters of care as an ethico-political issue fosters Maria Puig de la Bellacasa's (2012) argument that the care practices are structurally embedded within the broader material and sociopolitical arrangements. This perspective implies that in STS terms the “practices of doing-care” should not be reduced to mere sentiments or moral postulates,

but rather ought to be researched in relation to the materiality of the technoscientific objects, and power-structures intertwined with them.

As for the case of the RTO-TR-HFM-154's data-construct of human bodies, placing it within the framework of the matters or care requires reflecting on who is doing care through the constitution of data-constructs of human-bodies within this policy document, who is prioritized in this caring, and who is being excluded as a result (Puig de la Bellacasa, 2012, p.86). While “nothing comes without its world” as the title of the Maria Puig de la Bellacasa's (2012) text points out, the material politics of the artifact do bring “their world(s)” into the realities they constitute. Consideration of the RTO-TR-HFM-154's data-construct of human bodies as such artefacts makes evident the distinct biopolitical care practices (Foucault, 1976) of each of the twelve NATO's Member States, which were involved in their construction. This Master's thesis argues that these differing approaches to biopolitical care executed though the script (Akrich,1992) behind the RTO-TR-HFM-154's data-construct of human bodies were highly likely a key factor preventing the NATO's Member States from achieving the agreement on one standardized and unified NATO's military nutrition scheme, the goal initially pursued in STANAG 2937 MED as a pre-ancestor to RTO-TR-HFM-154 (1-1, RTO-TR-HFM-154). This perspective, therefore, allows us to envision care practices (Puig de la Bellacasa, 2012) of the States as inseparable from their biopolitics (Foucault, 1976), or rather biopolitics as “an act of taking care” about the specific populations of each of the country as such.

More to that, when “thinking with care” implies the cultivation of a sensibility towards of how things hold together – or, following Maria Puig de la Bellacasa (2012) “becoming together”, – then the care practices *“open up the possibility of mutual becoming, or co-transformation: here, to "care for" the other means also to change in relation to the other, to adapt oneself in light of the other”* (Michael, 2016, p.131). Advancing the analysis of the case of the RTO-TR-HFM-154's data-construct of human bodies with the given arguments, one could argue that these data-constructs as a technoscientific artefact could not be disentangled from the care-practices of those twelve Member States involved into their assemblage, – the actors, who are in a power to assemble, structure and establish given artifacts as such. Viewed under this light, the RTO-TR-HFM-154's data-construct of human bodies, just like the RTO-TR-HFM-154 as whole, emerge as a product of compromise, which inherited a shared values and care-practices of the twelve of the NATO's Member States, – the values and care-practices, which are echoed within the national biopolitics of these States, and become practically operationalized through the RTO-TR-HFM-154 as a policy document, and

therefore transferred to the military battlefields to shape the experiences of the real bodies of the military servants within the real-life settings.

5. Material(s) and Method(s)

The design of the research field and methodological framework of the case study of RTO-TR-HFM-154's data-constructs of human bodies builds upon the method of multisided ethnography (Marcus, 1995). The multisided ethnography of the RTO-TR-HFM-154's data-constructs of human bodies in the framework of this Master's thesis encompasses three key interrelated sites: (I) the RTO-TR-HFM-154 document itself as a space of research; (II) a nutrition science division within an international organization alike NATO, which produces comparable data-constructs of human bodies grounded in dominant nutrition science epistemologies; and (II) a site of a real-world context/settings, where the constituted within the RTO-TR-HFM-154's data-constructs of human bodies are intended to operate.

Consideration of the very process of how the RTO-TR-HFM-154's data-constructs of human bodies were constituted as a technoscientific artefacts, – together with the negotiations, which were accompanying this process on the pages of RTO-TR-HFM-154 – is a starting point of the research. This starting point enables us to understand how these numeric models of human bodies came into being as biopolitical categories on the pages of RTO-TR-HFM-154, aiming in making the bodies of the military servants governable (Foucault, 1976). As a next step, the research involves gaining access to the context of the politico-scientific practices of the nutrition science experts of international organizations by type of NATO, whose work implies the construction of similar human body models. This will allow me to expand and deepen the understanding of the practices and rationalities underpinning the origin and designation of the RTO-TR-HFM-154's data-constructs of human bodies. Advancing the analysis further, an equally important objective of the research is to trace the script (Akrich, 1992) and care practices (Puig de la Bellacasa, 2017) embedded inside the foundation of these data-constructs. Acknowledging that *"we cannot be satisfied methodologically with the designer's or user's view alone; we have to go back and forth continually between the designer and the user, between the designer's projected user and the real user, between, the world inscribed in the object and the world described by its displacement"* (Akrich, 1992, p.208-209), the exploration of both the script and care practices imply the mapping of the real-world effects produced by the data-driven human-models constituted on the pages of the RTO-TR-HFM-154, and different ways in which they are appropriated by those exposed to them. Accordingly to the outlined objectives, under the umbrella of the methodological framework of multi-sited ethnographic

framework (Marcus, 1995), the research of the case of RTO-TR-HFM-154's data-constructs of human bodies integrates two key methods of data collection: (I) the practice-oriented method of document analysis (Asdal & Reinertsen, 2022) applied for the investigation of RTO-TR-HFM-154 as a site, and (II) two groups of semi-structured qualitative interviews – one with nutrition science experts employed by international organizations alike NATO, who are engaged in the construction of similar numeric models of human bodies, and another one with soldiers of the Ukrainian Defence Forces (UDF), who are directly subjected to the nutrition regime facilitated by the RTO-TR-HFM-154's data-constructs of human bodies.

5.1. Multi-Sited Ethnography as the Methodological Foundation of the Designed Research

The methodological framework of the research of the case study of RTO-TR-HFM-154's data-constructs of human bodies is based on the approach of multi-sited ethnography as conceptualized by George Marcus (1995). The methodology of multi-sited ethnography is employed in this Master's thesis to investigate the process of constitution of the RTO-TR-HFM-154's data-constructs of the human body as well as the trajectories of their circulation as they travel across different sites, – from negotiations accompanying their construction on the pages of RTO-TR-HFM-154, ultimately to their very enactment on the war battlefields. Adapting methodological prism of the multi-sited ethnography (Marcus, 1995) enables me not only to follow these technoscientific and political artefacts as they travel across those sites, but also in the wider STS sense to follow: (I) the circulation of the knowledge practices and institutional/bureaucratic logics that shape them, as well as more importantly (II) the real-world outcomes and effects that the standardization performed through the establishment of such a numeric models of human-body manufacturers for those, who are those subjected to the nutrition regimes constituted through them in an actual war battlefields.

George Marcus (1995) introduced the method of multi-sited ethnography in response to the reconstitution of the world-system and sites of cultural production triggered by globalization. The multi-sited ethnography in contrast to the classical single-sited model of ethnography allows to trace the *"circulation of cultural meanings, objects, and identities in diffuse time-space"* (Marcus, 1995, p. 96). As a methodological strategy, multi-sited ethnography implies that the object of study should be defined though the variety of modes and techniques, which scholar conceptualizes as *"practices of construction through movement and of tracing within different settings of a complex cultural phenomenon given an initial, baseline conceptual identity"* (Marcus, 1995, p. 106). Scholar defined six key research trajectories and objects attributed to multi-sited ethnography as a research method: (1)

following the people, (2) following the thing, (3) following the metaphor, (4) following the plot, story or allegory, (5) following the biography, and, lastly (6) following the conflict. The scope and research design of this Master's thesis adapts the research trajectory of following the data-constructs of human bodies as the metaphor within, through, and beyond the world of RTO-TR-HFM-154.

5.2. Data Constructs of Human Bodies as a Metaphor to Follow

The RTO-TR-HFM-154's data-constructs of human bodies are not simply neutral representations of physiology of the soldier's body, but rather as epistemic artefacts that actively shape what they claim to describe. According to George Marcus (1995), these data-constructs could be understood as conceptual devices, which do not merely depict the actual phenomenon, – bodies of NATO's soldiers –, but prescribe specific characteristics to them. As with any statistical models of this kind, they are attempting to portray the physiology of human organisms as measurable, quantifiable, and standardizable. Therefore, through putting them into place, the RTO-TR-HFM-154's Working Group is engaging in (what Marcus,1995 conceptualizes as) a metaphoric reduction; this metaphoric reduction of human physiology performed through the RTO-TR-HFM-154's data-constructs of human bodies is an effort to align the complexity of an actual human bodies with the dominant logic of datafication (Hoeyer et al., 2019; Micheli et al., 2020) and governance through statistics (Foucault, 1976; Johns, 2021). Through this metaphoric reduction, the RTO-TR-HFM-154's data-constructs of human bodies consequently become a metaphor capable of traveling across a wide range of different contexts. This is the logic and methodological framing that allow me to treat the data-constructs of human bodies of RTO-TR-HFM-154 as conceptual devices, and therefore, the metaphor (Marcus,1995).

The "following the metaphor" research strategy of the multi-sited ethnography is applied for the case study of this Master's thesis to map how the RTO-TR-HFM-154's data-constructs of human bodies mediate both the meanings of human physiology and the relationship between the scientific abstraction of soldiers' bodies and institutional actions regulating them. This approach enables the analysis of how these constructs travel across the outlined contexts and penetrate diverse networks. According to George Marcus (1995), the "following the metaphor" is *"especially potent for suturing locations of cultural production that had not been obviously connected and, consequently, for creating empirically argued new envisionings of social landscapes"* (p. 109). Since the RTO-TR-HFM-154's data-constructs of human bodies is a product of a joint-work of the experts of twelve different NATO's Member States, they could be seen as the product of distinct locations of cultural production (Marcus, 1995), later assembled into one standardized model of soldier's body. They have

functionality as legitimized mechanisms coordinating multiple expertises (e.g. conventional nutrition and military science epistemologies), standardizing authorities (e.g. NATO's Standardization Office), local/national legitimizing bodies of the NATO's Member States (e.g. National Ministries of Defence), as well as NATO's military units in operational contexts. Applied in this manner, the strategy of "following the metaphor" enables me to the study of how data-constructs, while traveling across these sites, are both mediated by and mediate relations between scientific abstractions and institutional actions, thereby revealing the biopolitical rationalities and epistemic assumptions embedded into them. This directly addresses the key RQ of this research targeting the very shape of RTO-TR-HFM-154's data-constructs of human bodies, and rationalities which determined it. On top of that, it explicitly appeals to the SQ3, which inquires on discrepancies and frictions, which accompanied the process of the constitution of the RTO-TR-HFM-154's data constructs of human bodies, as well as encompasses SQ1 and SQ2 enabling the examination of how these data-constructs are simultaneously shaped by pre-inscribed scripts (Akrich, 1992) and care practices (Puig de la Bellacasa, 2017), while actively shaping broader institutional and global governmental logics.

At the level of a practical application, "following the metaphor" strategy implies tracing how the data-constructs of human bodies, introduced and operationalized in RTO-TR-HFM-154 as a shared conceptual framing, circulate across the discourse facilitated by the document, – specifically within (I) the policy text itself, (II) expert practices, and (III) the war battlefields. The methods of practice-oriented document analysis (Asdal & Reinertsen, 2022) and qualitative interview are the key instruments of the "following the metaphor" research strategy in this Master's thesis, providing the means to observe the circulation and enactment of the RTO-TR-HFM-154's data-constructs of human bodies across the identified sites.

5.3. RTO-TR-HFM-154 as a Site: Practice-Oriented Document Analysis

Documents are acting instruments/tools: they are putting issues into movement, they are bringing ideas into being, they are materializing something, they are convincing readers in something, they are conceiving something, and "*enable actions to take place elsewhere"* (Asdal & Reinertsen, 2022, p.40). They are assembled and utilized by someone for a particular reason(s), creating a space for certain actions to take place. Documents by type of the RTO-TR-HFM-154 designed to make something governable. According to Kristin Asdal and Hilde Reinertsen (2022), policy documents tend to penetrate and reconstitute a wide spectrum of concrete governmental-practices; they always remain to be an indispensable piece of their native contexts and environments, – their primatial functionality is to serve as a

bridge to that world, which is beyond themselves (Asdal & Reinertsen, 2022). Conceptualization of such a kind constitutes the RTO-TR-HFM-154, as a separate site (Marcus, 1995), which inhabits its own world to be studied,– a site where nutrition science epistemologies and military policy making practices converge, generating a collision of visions, narratives, and negotiations; a site where the RTO-TR-HFM-154's data-constructs of human bodies gain an agency, which extends beyond the pages of the document; a site where the priorities of the involved actors become interwoven and crystallized, enabling the production and deployment of new interventions as a biopolitical exercise aligned with the NATO's strategic objectives. Conceptualizing the RTO-TR-HFM-154 in this way, – as both site and an active actor – aligns with a practice-oriented method of document analysis of Kristin Asdal and Hilde Reinertsen (2022), which is integrated into the methodological basis of the research project of this Master's thesis as a component of multisited ethnography of George Marcus (1995).

As outlined, the RTO-TR-HFM-154 document as a site of practice and intervention does not represent a description of the world; rather through an entangling a variety of human and non-human actors into a coherent narrative, it actively constitutes and orders a world of its own, – the world, which is distinct from the one, which it purports to describe. The data-constructs of human bodies are the central figure within this world. They occupy the central position within the agglomeration of actors and narratives of the RTO-TR-HFM-154, structure the discussion inside the document, summarize key arguments and positions of the twelve of NATO's Member States, and make a concluding statement. By this means, they enable the establishment of RTO-TR-HFM-154 as an instrument/tool of biopolitical governance of the NATO's military personnel (Foucault, 1976).

Similarly to the RTO-TR-HFM-154's data-constructs of human bodies in the case study of this Master's thesis, cod-fish as a non-human actor was the object of research and ethnographic following in one of the studies of Kristin Asdal (2015). With this study STS scholar demonstrated how a practice-oriented method of document analysis can be practically applied for the STS research as an element of multisited ethnography. Asdal (2015) applied this method to follow the cod-fish as an object through the set of the policy documents and strategy plans, tracing and showing how the cod-fish as a non-human actor acts on its own, producing the ontology of a new kind within the commodification process. She applied a double-layered approach: (I) at the first stage, Kristin Asdal was focused on following of what happens to the cod-fish inside the document, and (II) at the second stage of the research she stepped beyond, and followed what actually happens to the document itself as it later was getting mobilized within the market discourse. The way practice-oriented document analysis was applied by Kristin Asdal's (2015) in presented research serves as a

practical methodological guideline for the case study of this Master's thesis: to ethnographically follow the RTO-TR-HFM-154's data-constructs of human bodies not only on the pages of the RTO-TR-HFM-154, but also beyond the pages of this document.

Speaking practically, the application of the Asdal and Reinertsen´s (2022) method of a practice-oriented document analysis for the case of RTO-TR-HFM-154 implies a close reading the document, – including appendixes, tables, footnotes, statistical and graphical figures, images and other supplementary materials – and systematic coding of all instances and contexts, where data-constructs of human bodies *come into being* on its pages. Authors of this method suggest examination of documents through the prism of six conceptions: document sites, document tools, document work, document texts, document issues, and document movement. These conceptions could be combined flexibly depending on the scope and objectives of the research. As for the case of RTO-TR-HFM-154, the conceptual and methodological framework of such includes the framing of the given document as a site, as a text (narrative), and as an issue:

- *Document as a site prism* allows to envision the RTO-TR-HFM-154 as a site-specific document; this prism situates RTO-TR-HFM-154 within the wider site of military nutrition discourse, where different forms of expertise, epistemologies, politics and subjectivities materialize and enact a distinct version of the reality through, within, and by the means of this document. The RTO-TR-HFM-154 does not simply describe the bodies of the soldiers by its data-constructs, rather it assembles, places and orders them as a central figure inside this site. Key questions guiding the analysis of RTO-TR-HFM-154 through this prism therefore include: *What does the RTO-TR-HFM-154 outline about the bodies of the soldiers? What does it do with, or to them? How do the data-constructs emerge and circulate within, and beyond this document? What are the practices unfolding around these constructs?*

- *Document as a text prism* allows mapping and analyzing the narrative, which the text of RTO-TR-HFM-154 is creating around the data-constructs of human bodies. The text of the documents, as Asdal and Reinertsen (2022) emphasize, always has authors and readers (audiences); it represents specific visions, and builds certain lines of argumentation, and by doing that, text inevitably tends to assign different meaning to different situations. This prism is particularly instrumental for addressing the narrative around the RTO-TR-HFM-154's data-constructs of human bodies, as well as identify the possible rationalities behind them. Key questions guiding the analysis of RTO-TR-HFM-154 through this prism therefore include: *Which story does the document tell around the RTO-TR-HFM-154's data-constructs of human bodies?*

Who is addressed, or excluded in that story? Who are the intended recipients of this story? What is emphasized, implied, or hidden? How does it seek to convince its readers? How do layout, figures, statistics, references, and illustrations contribute to the narrative and authority of the text? (Asdal & Reinertsen, 2022, p.153).

- *Document as an issue prism* allows to examine the RTO-TR-HFM-154's data-constructs of human bodies as both a solution to a particular issue and an active agent in shaping that issue. Policy documents by type of RTO-TR-HFM-154 are based upon certain issues, which their very existence is an attempt to address, yet in doing so they define, structure and transform these issues. This perspective, therefore, might shed light upon how the data-constructs of human bodies act as instruments/tools within these processes. Key questions guiding the analysis of RTO-TR-HFM-154 through this prism therefore include: *What issue(s) are the RTO-TR-HFM-154's data-constructs designed to address? How do they approach and act upon that/those issue(s), and what outcomes this eventually produces? How does the document simultaneously constitute and act upon the problem it aims to resolve?*

Given three conceptual prisms, along with the spectrum of assisting questions they suggest, guided my ethnographic engagement with the RTO-TR-HFM-154 as a site, where the RTO-TR-HFM-154's data-constructs of human bodies are situated. The practical algorithm of conducting the document ethnography of the RTO-TR-HFM-154 through the practice-oriented method implied the processing of this document in three sequential reading rounds, – each corresponding to one of the selected analytical prisms. During this process, the key focus was held on the RTO-TR-HFM-154's data-constructs of human bodies as a metaphor, which was followed by me through the text of the document; specifically, as they get featured and enacted within the text. Every of the reading rounds employed systematic colour-coding of the text, with the specific colour allocated to each of the prisms to ensure consistent differentiation. The colour-coded pieces of the text were annotated with references to the (outlined above) guiding question(s) of each of the prisms, and where appropriate, accompanied with the notes on my personal reflections of mine, as a digital alternative to the conventional ethnographic diary. This allowed the structured STS examination of the multiple dimensions of RTO-TR-HFM-154, and the way the meaning and enactments of the data-constructs of human bodies travel through them. The thematic inductive coding of the colour-coded text of RTO-TR-HFM-154 was conducted as a next step of data analysis. This step is elaborated in a more detailed manner at the end of this chapter,

providing a comprehensive account of how the RTO-TR-HFM-154's data-constructs of human bodies were traced both within and beyond the document.

Concluding the above, a practice-oriented method of document (Asdal & Reinertsen, 2022) as a research strategy of multi-sited ethnography enables me to conceptualise and approach RTO-TR-HFM-154 as a site, where the metaphor of data-constructs of human bodies can be followed (Marcus, 1995). Application of this method requires a shift from simply asking what the RTO-TR-HFM-154 as a document communicates about the nutrition requirements, constitution and physiology of the bodies of the soldiers, toward adapting the attitude of questioning what world is enacted by the RTO-TR-HFM-154's data-constructs of human bodies within, through, and beyond this document. This demands moving beyond the textual interpretation to perceiving the RTO-TR-HFM-154 as a site where diverse forms of expertise, epistemologies, politics, and subjectivities are materialized, – in compliance with methodological strategy of multi-sited ethnography of George Marcus (1995), and Asdal and Reinertsen's (2022) practice-oriented document analysis as its component. As this section of the Master's thesis demonstrates, combined together these frameworks provide a practical approach for engaging with the RTO-TR-HFM-154 both as a site of research and as an instrument through which data-constructs of human bodies are embedded within, and connected to, broader administrative, political, and scientific discourses and apparatuses.

5.4. Qualitative Semi-Structured Interviews

The next phase of the fieldwork integrated the qualitative semi-structured interviews, as a method to follow the RTO-TR-HFM-154's data-constructs of human bodies as they get enacted beyond the pages of the document in two key contexts, specifically: (I) international organizations by type of NATO, and (II) actual war settings. Accordingly, two groups of interviews were conducted: the first with nutrition science experts from the Nutritional and Health-Related Environmental Studies Section (NHRESS) of the Division of Human Health (DHH) of the International Atomic Energy Agency (IAEA), and the second with soldiers from active military units of the Ukrainian Defence Forces (UDF), who are directly exposed to the nutrition regime constructed through the RTO-TR-HFM-154.

5.4.1.International Organisations as a Research Site: Interviewing Nutrition Science Experts

Semi-structured qualitative interviews were first conducted with nutrition science experts from the Nutritional and Health-Related Environmental Studies Section (NHRESS) of the Division of Human Health (DHH) at the International Atomic Energy Agency (IAEA). These

interviews allowed me to address the context of international organization as a site in the framework of multi-sited ethnography methodology (Marcus, 1995), and consequently to research the sociotechnical assumptions, imaginaries, nutrition science rationalities, and decision-making processes that may have informed the work of the RTO-TR-HFM-154's Working Group during the process of assemblage of the RTO-TR-HFM-154's data-constructs of human bodies.

A total of five expert-interviews were planned at the outset; by the type these were semi-structured expert-interviews. The semi-structured format of these interviews equipped me with the possibility to combine pre-planned open questions with the follow-ups, when necessary (Jensen & Laurie, 2016). Such flexibility was of significant instrumental value for the research, as it provided the necessary freedom for the thought, insights, reflections and narratives of the interviewees to flow, as well as an opportunity for them to elaborate on complex topics in more nuanced and deep manner, when necessary. More importantly, the semi-structured form of the interviews allowed a new unpredicted themes, topics and ideas to pop-up during the discussion (Jensen & Laurie, 2016), which greatly enriched and benefited the conducted research. The structure of the questionnaire for the expert interviews was divided into two phases, comprising six thematic blocks: four for the first phase, and two for the second. The first phase followed a conventional structure, guiding the interviewed nutrition science experts through a series of blocks narrowed from more broader discussion topics, – such as the concept of the information infrastructure of food labeling, the politics of calculative nutrition, and their own professional practices of numeric models production, – towards more specific considerations of the potential rationalities underlying the design of the data-constructs of human bodies assembled within the RTO-TR-HFM-154. As for the second phase, it mainly focused on the numeric content of the document. At this stage, physical copy of the data-tables of the RTO-TR-HFM-154's Military Nutrition Data Matrix (MNDM) was first introduced to the expert interviewees. The Military Nutrition Data Matrix (MNDM) in RTO-TR-HFM-154 summarizes the document's data-constructs of human bodies through sets of tables. The key idea of this interviewing phase was to provide to the experts the very first impressions about the numeric data within the RTO-TR-HFM-154, and invite them "to think together" through this data; experts were asked to reflect upon the key rationalities and technical choices that might have laid into the foundation of RTO-TR-HFM-154's data-constructs of human bodies. This phase, therefore, was aiming to foster a joint process of critical engagement with the numbers of RTO-TR-HFM-154. This was not assumed by the research design that any of the interviewed nutrition science experts were familiar with the content of the RTO-TR-HFM-154 prior to the interviews.

All recruited expert-interviewees at the time of fieldwork held professional positions in the Nutritional and Health-Related Environmental Studies Section (NHRESS) of the Division of Human Health (DHH) of International Atomic Energy Agency (IAEA), with roles involving applied nutrition science research projects in the framework of the IAEA's Coordinated Research Activities and Technical Cooperation Programmes. There are two key reasons for my decision to recruit this specific group of experts: (I) the first one is based on the assumption that both the IAEA, and NATO are international organizations of a similar type, – operating through the standardization processes, expert committees, and assembled databases for the production of the policy documents for the populations governance (e.g. by type of RTO-TR-HFM-154); the second one (II) access to these experts was facilitated by my previous interning at the IAEA's Division of Human Health (DHH), which allowed me to establish professional networks and ease the interviewee recruitment process. My familiarity with the Coordinated Research Projects (CRPs) of IAEA's DHH allowed me to gain insights into the organizational practices that produce nutrition data matrices and data-driven human models as research outputs; these data matrices hold instrumental value for the IAEA by translating biological processes into quantifiable, standardized data for global application.

Collectively, four expert interviews were conducted, to protect the identities of the participants, their names are anonymized throughout this Master's thesis: (I) the first interviewee-participant (in this thesis refereed as "Participant A") at the time on interview held a position of a Senior Nutrition Specialist at the NHRESS/DHH/IAEA; (II) the second interviewee-participant ("Participant B") at the time on interview held a position of the Associate Nutrition and Environmental Office at the NHRESS/DHH/IAEA; (III) the third interviewee-participant ("Participant C") held a position of the Nutrition Scientist at the NHRESS/DHH/IAEA; and (IV) the fourth interviewee-participant ("Participant D") at the time on interview held a position of the Nutrition Specialist at the NHRESS/DHH/IAEA. The knowledge, expertise, and reflexivity gained from the interviews with identified nutrition science experts and researchers of IAEA turned to be highly relevant for understanding the assemblage, negotiation, and construction of the RTO-TR-HFM-154's data-constructs of human bodies, as well as the broader world they create within, around, and beyond the RTO-TR-HFM-154 document. Specifically, they allowed me to uncover the epistemological foundations, rationalities, possible sociotechnical imaginaries, and normative assumptions underlying the RTO-TR-HFM-154's data-constructs of human bodies as technoscientific artefact.

5.4.2. Ukrainian Frontline(s) as a Research Site: Semi-Structured Interviews with Soldiers of UDF

At the third stage of the ethnographic fieldwork, a group of interviews were conducted with the soldiers from the Ukrainian Defence Forces (UDF), who were at the time of the fieldwork acting military servants at the war zone frontlines of eastern Ukraine. Since the full-scale Russian military invasion of Ukraine in 2022, several NATO's Member States have provided military assistance to Ukraine. This military assistance in most cases includes the supply of NATO's standard military rations, so-called Meals Ready-To-Eat (MREs). These MREs according to NATO's standards are produced based on the RTO-TR-HFM-154 as a regulatory policy document. As a result, soldiers from various units of the UDF became exposed to the nutrition regime of NATO's MREs, which was designed based on the RTO-TR-HFM-154's data-constructs of human bodies. The interviews with the soldiers of the UDF, who were exposed to the nutrition regime of NATO's MREs, were integrated into the research strategy of multi-sited ethnography (Marcus, 1995) within this Master's thesis to follow the RTO-TR-HFM-154's data-constructs of human bodies as they move and receive the agency beyond the pages of the document.

One of the key arguments of this Master's thesis suggest that the soldiers of the UDF, who unwillingly became exposed to the nutrition regime of NATO's MREs, experience the material consequences of RTO-TR-HFM-154's data-constructs of human bodies, at the battlefields of the Russian-Ukrainian war. These lived-experiences offer unique insights into how epistemological foundations, rationalities, sociotechnical imaginaries, care-practices, and normative assumptions inscribed in RTO-TR-HFM-154's data-constructs of human bodies are manifesting themselves in practice under battlefield conditions. More importantly, they shed light on how exactly these data constructs, – claimed within the RTO-TR-HFM-154 to stand for an average / standardized soldier's body – either align with, or conflict against the diversity of real bodies of different soldiers with their physiological and nutritional needs, as well as the demands of the battlefield. Therefore, interviews with soldiers intended to identify the possible misalignments between RTO-TR-HFM-154's data-constructs of human bodies as technoscientific object and its environment, – the circumstances "*in which the inside and the outside of the objects are not well matched; the disagreements, negotiations, and the potential for breakdown"* (Akrich, 1992, p.207). These interviews were foreseen to identify these points of misalignment and, therefore deepening our understanding of the possible rationalities within the design of the RTO-TR-HFM-154's data-constructs of human bodies.

The method of semi-structured interviews was therefore applied to capture unique experiences of the Ukrainian soldiers with the NATO's MREs designed according to RTO-TR-HFM-154. The key objective of this method was to approach the interviewees as "experiencing subjects" (Silverman, 2006, p.118) and to carefully attend to their lived realities (Coffey & Atkinson, 1996). The questionnaire for the interviews was designed according to this objective: it included a set of questions specifically targeted at identifying the mismatches, and exclusions facilitated by the NATO's MREs on the war battlefields, as well as the blocks of questions addressed at the design of nutrition regimes across different frontline zones, the organization of field kitchens, and the design of NATO's MREs as it experiences personally by the interviewed soldiers.

Three soldiers of the UDF were interviewed in the framework of this Master's thesis research. At the time of fieldwork, all three interview participants were active soldiers deployed on the frontlines of the Russian-Ukrainian war. At the first stage, the recruitment of interviewees was conducted through my personal network of relatives and friends, afterwards the snowball sampling strategy was applied: interviewees were asked to recommend colleagues who might also be willing to take part in this research. To protect the identities of the participants, their names are anonymized throughout this Master's thesis: (I) the first interviewee-participant (in this thesis refereed as "Military Participant A") at the time of interview was an active military servant at the UDF, at the age of 35 with 10 years of a military service experience, originally coming from Kyiv, Ukraine; (II) the second interviewee-participant ("Military Participant B") at the time of interview was an active military servant at the UDF, at the age of 46 with 2 years of a military service experience, originally coming from Bilya Tserkva, Kyiv Region, Ukraine; and (III) the third interviewee-participant ("Military Participant C") at the time of interview was an active military servant at the 12th Special Forces Brigade "Azov" of the UDF, at the age of 51 with 9 years of a military service experience, originally coming from Kyiv, Ukraine.

Semi-structured interviews with soldiers of UDF greatly contributed to the development of my comprehensive understanding of how RTO-TR-HFM-154's data-constructs of human bodies meet the "reality out there", and are being encountered, and challenged, on the ground by actual soldiers. This allowed me to not only reflect over what practically happens, when a standardized numeric model of the human body meets a historically, culturally, and physiologically specific human body of the soldier in the complex circumstances of the war, but more importantly to draw a line between the biopolitical statistically-driven ideal of the body of the military servant (documented in RTO-TR-HFM-154 though the data-constructs of human bodies) and the embodied realities.

5.5. Method(s) Used in Data Analysis

The thematic inductive coding technique was applied to analyze the data obtained and generated through both the practice-oriented document analysis of RTO-TR-HFM-154 (Asdal & Reinertsen, 2022) and two types of interviews, conducted as compounds of the multis-sited ethnography strategy (Marcus, 1995) of following the metaphor of data-conducts of human bodies through the selected sites.

As the method of data analysis, the technique of thematic inductive coding involves attaching categories to the data in order to establish the holistic network of themes and patterns traced in the research project (Rivas, 2018). Within the designed case-study, it was applied for the analysis of both my ethnographic diary and transcripts of the interviews, which together constitute the main data sources of the case study. Data obtained from the examination of RTO-TR-HFM-154 were subjected for the analysis first; the data generated through two types of the interviews were analysed at the next stage. What is important to emphasise is the fact that despite the research design encompassing three distinct data domains (document analysis, expert interviews, and soldier interviews), during the analysis each of them was treated as analytically separate. After the initial coding of RTO-TR-HFM-154 and interview transcripts, the retrieved codes were grouped together into categories for each data source, enabling a comprehensive interpretation of the findings, simultaneously leaving the space for the unexpected findings to emerge. During the next stage of data analysis, the categories identified as dominant became framed as key themes, which allowed me to reduce the original volume of the data down to a reasonable volume. This stage required theoretical sensitivity to the case-study topic, which was developed through my engagement with theoretical concepts and the literature review. At the next stage, the coded data were fragmented into segments with accompanying written memos. Similar codes extracted from these segments were grouped together into analytical categories for further interpretation (Rivas, 2018). These identified categories were then operationalized and subjected to comparison in the later stages of the analysis.

Concept maps, constructed on the basis of detected categories and themes, became the final product of the analysis. Given maps are composed of the retrieved codes, concepts and comparisons, and possess instrumental values for developing the explanation capable of addressing the complexity of the designed case study of the RTO-TR-HFM-154's data-constructs of human bodies in relation to each of the research questions of this Master's thesis (Jensen & Laurie, 2016, p.251).

6. Empirical Findings

This chapter of the Master's thesis presents the key findings of the research and situates them within the wider Science and Technology Studies (STS) discourse, – it discusses the numeric composition of the RTO-TR-HFM-154's data-constructs of human bodies, the way these numbers reflect culturally and politically shaped decisions, and act as a mediative means between the scientific assumptions of the RTO-TR-HFM-154's Working Group and bodies of actual soldiers, therefore fulfilling their biopolitical functions. The chapter further highlights contradictory or unexpected results of the research, and discusses their broader possible implications for the field of STS.

6.1. RTO-TR-HFM-154

The NATO's Nutrition Science and Food Standards for Military Operations Technical Report (2010) – RTO-TR-HFM-154 –, as a document in which data-constructs of human bodies are situated, and which enables their existence and agency, is the empirics, which was studied in this Master's thesis. The RTO-TR-HFM-154's data-constructs of human bodies encode the informational infrastructure embedded into the document, which derives from a wider discourses (e.g. of calculative nutritions, biomedical research, military science), and associated world-making practices, which are the key research object of this Master's thesis. This chapter of the thesis elaborates on the key findings of the ethnography of the RTO-TR-HFM-154 as a policy document, mapping how its data-constructs of human bodies travel across the pages, mediating scientific and institutional practices, and exercise biopolitical authority over the bodies of an actual soldiers.

6.1.1. Power and Authority of RTO-TR-HFM-154: Instrumentalization of the RTO-TR-HFM-154's Data Constructs of Human Bodies as a Numeric Tool of Knowledge

The RTO-TR-HFM-154 was assembled within the collective efforts of multiple scientific and political institutions, specializing in military nutrition research, whose representatives were part of the Working Group (e.g. Human Nutrition and Health Division of the Wageningen University (Netherlands), US Army Research Institute of Environmental Medicine etc.). The document appears to be purely technical at the first glance, – it documents the efforts of these institutions to collect and generate, through scientific literature reviews, the knowledge about a certain fragment of the empirical world. Specifically, about the nutrient requirements of the specific type of human bodies operated under the specific conditions, stressors and

environments of military service. The lion's share of the document delineates scenarios, – speculated by the RTO-TR-HFM-154's Working Group, – which soldiers expected to encounter on different types of battlefields, alongside with the arguments for which scientific rationality could best address them. The RTO-TR-HFM-154's data-constructs of human bodies materialise the cumulative product of these scenarios and scientific rationales. Within the composition of RTO-TR-HFM-154, the data-constructs of human bodies can be conceptualized as "little tools of knowledge" (Becker and Clark, 2001), which overtake the role of traditional scientific constructs, and thereby grant power and authority to the document. The power of RTO-TR-HFM-154, therefore, originates from the ways in which this document mobilizes scientific knowledge claims to perform the acts of governance, – specifically, through the RTO-TR-HFM-154's data-constructs of human bodies. Accordingly, the authority of the RTO-TR-HFM-154 as a document does not stem directly from the knowledge claims it appeals to, but from embedding them into the data-constructs of human bodies, as a tool, which becomes authorized as an instrument of knowledge, and constitute the scientific legitimacy underpinning the document's governing capacity.

As was already advocated in this Master's thesis, the policy document by type of RTO-TR-HFM-154 are the means of governance; they are sites, where new entities are being introduced and made governable with the aim to address certain political objectives, and resolve certain issue(s). The RTO-TR-HFM-154's data-constructs of human bodies are constructed and instrumentalized on the pages of RTO-TR-HFM-154 to transform the key issue of this document into (what Kristin Asdal (2015) refers to as) a number-issue, thereby rendering contentious phenomena governable. The numbers of the RTO-TR-HFM-154's data-constructs of human bodies are a narrative-device, as a narrative-device they meant to concise the story/narrative of RTO-TR-HFM-154 with the aim of resolving the issue, which the document ought to address. These numbers make RTO-TR-HFM-154's data-constructs of human bodies a numeric tool of knowledge, thereby positioning the RTO-TR-HFM-154 document itself as an instrument of governance in wider political processes, and attaching it to the wider administrative, political and scientific apparatus.

6.1.2. What Issue is the RTO-TR-HFM-154's Data Constructs of Human Bodies a Solution for?

The NATO's Technical Report on Nutrition Science and Food Standards for Military Operations (RTO-TR-HFM-154) is essentially an issue-expert document (Asdal, 2015). Centered around the data-constructs of human bodies and the numbers of the Military Nutrition Data Matrix (MNDM), the RTO-TR-HFM-154 is written in a matter-of-factual

language by the group of actors, who position themselves as experts of “the issue”, – nutrition scientists and researchers, food-technologists, military commanders, NATO’s chief-investigators, diplomatic representatives of the NATO’s Member States among others. When the issue at stake shapes the very content and structure of the document, and therefore, the RTO-TR-HFM-154’s data-constructs of human bodies, it invites the key question, – what issue is this document and derived technoscientific artefact designed to resolve?

The RTO-TR-HFM-154 begins its narrative with the introduction to the readers of the key objectives of the NATO’s Human Factors and Medicine (HFM) Commission, which determined the construction of the standardized combat dieting rations. As stated in the one-page executive summary at the very beginning of the document, the primary objective of the RTO-TR-HFM-154’s Working Group was to develop science-based standards and recommendations for the composition and design of combat rations that would support NATO's doctrine and missions-profiles by delivering a dieting model and nutrition-scheme intended to optimize the performance of the NATO's military personnel. The efforts of the Research Task Group (RTG) of RTO-TR-HFM-154 were eventually mobilized to: “*identify and understand rations and nutrition within the context of joint, multinational operations and the broader impacts* [of them] *on human performance and mission success”* (ES - 1, RTO-TR-HFM-154). The key issue addressed by the RTO-TR-HFM-154 is stated at the very first paragraph of this text. This paragraph elaborates on the origin of the discussion initiated within the RTO-TR-HFM-154, as one emerged from the prior failure of the ratification by all involved NATO's Member States of the previous standardized military nutrition model – STANAG 2937 MED (Survival, Emergency and Individual Combat Rations: Nutritional Values and Packaging) (RTO-TR-HFM-154, 1-1). The metamorphosis and progression of this key issue are best traceable through the second chapter of the RTO-TR-HFM-154, which contains detailed transcripts and minutes of the expert meetings, which accompanied the development of the RTO-TR-HFM-154’s data-constructs of human bodies. The pursuit of “interoperability” emerges as a red-thread running through the entire document, – it evolves across the sequence of tasks defined by the RTG during each of the expert meetings (ET-059 - RTG-154). As documented within the RTO-TR-HFM-154, these tasks were shifting from (1) determining the possible feasible standards for different groups of rations of NATO's Response Forces (NRF); to (2) identifying the common areas of understanding regarding the possible interoperable combat-feeding technological solutions; and ultimately concluded with the statement that (3) *“the RTO work is focused on exploring the feasibility of a standard NRF ration and <u>not replacing any country's existing, or planned individual or group ration</u>.”* (2-2, RTO-TR-HFM-154, emphasis added).

As follows from this executive summary of RTO-TR-HFM-154, the document was primarily aimed at addressing the issue of the absence of one universal combat ration suitable for all NATO's forces; in context of this issue the RTO-TR-HFM-154 functions as a space for negotiations of the different visions, preferences and controversies of the NATO's Member States regarding shared objectives and common ambitions. Consequently, the key issue of the document became an inability of NATO's Member States to achieve an agreement on the “one-fit-all standard model” of military rations for the NRF.

6.1.3. The Narrative of the RTO-TR-HFM-154’s Data Constructs of Human Bodies

The RTO-TR-HFM-154 as a policy document absorbs multiple contexts, which equally as strengthening an issue, could generate competing or contradictory issue-formations within the same text (Asdal & Reinertsen, 2022, p.119). This is an active process that could be observed during my ethnographic engagement with RTO-TR-HFM-154, through tracing the ways of how the RTO-TR-HFM-154’s data-constructs of human bodies acquire their agency as a “technology of numbers”. Acting as such, within the document they worked in concert with the text to share the RTO-TR-HFM-154’s rhetoric and to generate its central narrative.

6.1.3.1. Staging of the Key Narrative: Scene(s), Setting(s), Decoration(s) and the Main Character of RTO-TR-HFM-154

The first chapters of the RTO-TR-HFM-154 begin with the introduction and interpretation of the key definitions, with which the document operates. The RTO-TR-HFM-154 defines the aggregation of the standardized numeric models of those, who RTG envisioned/imagined as “soldiers”, as the NATO’s Response Force (NRF), – “*where there is “soldier” in the text of this report, this term is used to describe all armed forces personnel (Army, Navy, AirForce or Marines) deployed by the NRF”* (1-2, RTO-TR-HFM-154). At the outset, RTO-TR-HFM-154 positions the key circumstantial factors identified by the RTG as decisive in the construction of the data-constructs of human bodies. These factors include: (I) the physical environment at which soldiers are expected to operate, (II) the types of military operations they ought to perform, (III) the stressors they are highly likely to encounter, and (IV) the time-framework of their exposure to these settings and conditions. The document therefore, sets the scene and arranges the contextual “decorations” starting from the very first chapters, immersing the audience into its “world” and framing the narrative around its central themes and the logic behind the data-constructs of human bodies.

The narrative of the RTO-TR-HFM-154's data-constructs of human bodies suggests that the soldiers of NATO's NRF are expected to be able to sustain themselves operating solely under the military nutrition regime prescribed by the MNDM for a minimum 30 days. When it comes to the spaces and battlefield environments, within which these soldiers are expected to operate at/in, the document outlines not only the possible environmental factors, but also the potential circumstances of an actual physical-spaces:

> *"combat rations are designed to withstand multiple handling and to be used in severe conditions in all combinations of temperature, humidity and terrain; it is designed to provide an integrated and fully interoperable sea, land and air capability operating under the command"* (1-2, RTO-TR-HFM-154; emphasis added).

Next, the document describes the types of military missions and operations, which NATO's soldiers are expected to be able to physically perform while being exposed to the nutrition regime assembled based upon the models of the RTO-TR-HFM-154's data-constructs of human bodies. These military missions and operations include (I) crisis-response missions (e.g. counter terrorism, embargo-operations, peacekeeping etc.), (II) humanitarian operations, and (III) non-combatant military evacuation operations. Moving forward, RTO-TR-HFM-154 delineates the key practical objectives of the nutrition framework of its military rations assembled according to the data constructs of soldiers' physiology. The document's evaluation criteria defines the effectiveness of these nutritional compositions in relation to the health of the soldiers across three key dimensions, – physical performance, mental state, and cognitive function in an operational environment(s) (1-2, RTO-TR-HFM-154). Collectively, these parameters are identified by the RTG as the dominant contributors to what the document defines as maintenance of the good health of the soldiers.

The complexity of the data-constructs of human bodies as a key subject and main character of the document is the central focus of RTO-TR-HFM-154. The discussion gravitating around the RTO-TR-HFM-154's data-constructs of human bodies begins with the outline of the key issues and controversies associated with the process of early development and conceptualization of NATO's standard soldier prototype. RTO-TR-HFM-154's Section "Development of Standards for NRF Combat Rations" emphasizes that NATO's military rations must meet "the specific national tastes" of the troops of Member States of the Alliance, – an aspect, which was neglected within the earlier attempts of the RTO-TR-HFM-154's Working Group to establish a standardized numeric model of solder's

body and its nutritional requirements in the framework of STANAG 2937 MED. Within this section of the document, the RTG also acknowledges the importance of considering sensory, non-nutritional characteristics of the military rations, previously marginalized within the discourse. This acknowledgement leads to the central priority of the RTO-TR-HFM-154, – to ensure the "interoperability" among the diverse designs of the national rations of the NATO's Member States. Consequently, the RTO-TR-HFM-154 became framed as a collective effort of NATO's Member States to address a spectrum of challenges and controversies associated with the interoperability of national military nutrition models. Search for the solution to achieve this objective within the RTO-TR-HFM-154 begins with the initiative of RTG to negotiate the optimal nutritional values and content of the rations with the aim of determining the common nutritional requirements for the NRF. This process was designed in three stages. At the first stage, the RTO-TR-HFM-154's Working Group identified the set of non-nutritional characteristics as a groundwork for new standards: these standards were built upon the *"consideration to cross-cultural food and dietary preferences and aversions, religious, social and gender influences and consumer perceptions, expectations and attitudes"* (1-3, RTO-TR-HFM-15). At the second stage, rationales for these standards were developed with the aim to ascertain new recommendations on acceptable non-nutritional components of the individual military rations, including energy density, feeding concepts, and sensory characteristics. During the concluding third stage, the existing national military ration samples from different NATO's Member States were compared against the negotiated and defined set of non-nutritional characteristics. As such, through this structured approach, the RTO-TR-HFM-154 established a comprehensive framework for the construction of the numerical data models of the soldier body, deemed as a key necessity for resolving the interoperability issue.

6.1.3.2. The Ultimate Way Data Make People: Who Were Initially Imagined Behind the RTO-TR-HFM-154's Data Constructs of Human Bodies?

According to the Annex J of RTO-TR-HFM-154 there are a number of assumptions, which determined the design of the RTO-TR-HFM-154's data-constructs of human bodies. These assumptions are divided into four groups of categories, collectively determining the constitution of the standard human model assembled by the RTG. These groups include: (I) general assumptions regarding the physiology of the soldier's body; (II) assumptions regarding the age, gender, and body size of the standard NATO's soldier; (III) assumptions regarding the level of physical activity, and lastly (IV) the environmental conditions in which soldiers are expected to operate. These assumptions collectively construct what Lie (2004) termed as "the portrait of the peoplehood" assembled by the RTO-TR-HFM-154's Working

Group, which consequently underpinned the shape of the RTO-TR-HFM-154's data-constructs of human bodies and determined the numeric standards constructed for the nutrient composition of the NATO's MREs.

The Annex J is concise and explicit in first stating that all the soldiers, who are deployed by NATO's Response Forces (NRF) are envisioned to be healthy, physically fit and adequately/sufficiently nourished prior to the military service. Subsequent assumptions outlined in this Annex focus on demographic parameters of the soldiers, – more specifically, the age, gender, and the body size; as such RTG assumes the NRF soldiers to be dominantly male within specific ranges of age and body size:

> *"This man is 19 to 50 years old, with a body weight of 79 kg and height of 175 cm. We assume that the number of men aged 18 to 30 years old equals the number of men in the age category 30 to 50 years"* (J-10, Annex J, RTO-TR-HFM-154).

The next group of RTG assumptions gravitates around the physical activity levels (PAL) of the soldiers. Due to the absence of specific prior data measuring the activity level of the NRF peronelle, as well as corresponding energy expenditure, the RTO-TR-HFM-154 categorizes assumed activities of the soldiers into two types, each aligned with different operational scenarios as envisioned by the RTO-TR-HFM-154's Working Group, – (I) normal/standard operations, and (II) special forces operations. During the following phase of the construction of the RTO-TR-HFM-154's data-constructs of human bodies, scenarios for both of these categories were invented by drawing comparisons with civilian nutrition standards. As such, for normal/standard operations, activities were assumed to be comparable to: *"garrison training, firemen activities, urban police keeping, peacekeeping forces, and construction work"* (J-10, Annex J, RTO-TR-HFM-154). Based on the presented rationale, soldiers of this category were therefore assigned with the lowest PAL, and consequently their micro- and macro- nutrient supplements were aligned with general population standards. By contrast, the category of the soldiers for the special forces operations implied the exposure to so-called "worse case scenarios" of the military battles, characterized by the highest PAL, pre-supposingly continuing up to 30 days period, of the NATO's assault missions. Remarkable of this category was the fact that it accounts for the duration of the soldiers' sleep during the missions, marking the first instance in the RTO-TR-HFM-154 where sleeping time was included as a factor in the construction of the data models: *"there may be as much as 20 hours per day of physical activity, with an average of four hours per day of sleep"* (J-11, Annex J, RTO-TR-HFM-154). As follows from the text of the document in, this

rationale to include sleeping hours as a factor was dictated by the recommendations of the German Nutrition Society (DGE, 2000).

The Annex J of the RTO-TR-HFM-154, reveals that the RTG's assumptions as well include the environments in which NATO's soldiers were expected to operate as one among key factors, which determined the shape and composition of the RTO-TR-HFM-154's data-constructs of human bodies. For the standardization of the environments the classification scheme developed by Askew (1995) was adapted. This classification scheme suggests the following division of environment by the temperature conditions: (I) the cold environment includes the temperature of <0°C (alternatively <32°F); (II) the hot environment includes the temperature of >30°C (alternatively >86°F); (III) the high-altitude environment includes the elevation of >3,050m (alternatively >10,000ft).

6.1.3.3. Military Nutrition Data Matrix as a Predecessor of RTO-TR-HFM-154's Data Constructs of Human Bodies

The data-constructs of human bodies constitute a central figure of RTO-TR-HFM-154. Within the structure of the document, they are largely derived from the numbers of the NATO's Military Nutrition Data Matrix (MNDM), presented as a numeric outcome of negotiations between the NATO's Member States contributing to the document. The MNDM has a shape of a set of spreadsheets containing detailed information on both the nutritional and non-nutritional composition of food-items intended for inclusion into the dieting regimes of human models assembled on the pages on RTO-TR-HFM-154.

There are three key types of military rations included in MNDM; these include General Purpose Rations (GPR), Special Purpose Rations (SPR), and Supplements:

I. General Purpose Rations (GPR) are conceptualized as the standard, all-purpose meal-provision for NATO's military forces; they are not tailored for specific operational conditions but ought to supply personnel with a balanced diet during the routine and non-specialized military missions and operations.
II. Special Purpose Rations (SPR) are conceptualized as a targeted meal-provision designed purposely to be utilized for combat personnel during specific military missions and operations (whether short-, or long-term ones), or alternatively under specific environmental conditions.
III. Supplements, within the framework of the document, are treated as a distinct category of food provision, separate from GPR, and SPR; they consist of additional

items and components recommended by RTG to complement these rations and ensure that the overall dietary regime of the soldiers is nutritionally complete.

The design of MNMD is based on two key sets of characteristics, determined by the RTO-TR-HFM-154's Working Group through the successive cycles of consultation and negotiation, – nutritional, and non-nutritional attributes; each type of national rations of the NATO's Member States was asset against these two categories in the process of the data-construct formation. Nutritional characteristics were initially segmented into three categories: energy, macronutrients (carbohydrates, fats and proteins), and minerals (specifically sodium, calcium, and iron). The MNDM's design provided to the representatives of the involved Member States the liberty to include the vitamin levels of their national rations under the category "others". Additionally, the participants were requested to concise and consolidate the reported values into a macronutrients distribution ratio, which implied the proportional contribution of each of the macronutrients to the complete energy value of the ration. As the Annex D of RTO-TR-HFM-154 states:

> *"Food nutrients provide energy, promote growth and repair of tissue, or regulate metabolic body function. Carbohydrates, proteins, and fats are essential to human health in relatively large amounts, when compared to the micronutrients (minerals and vitamins)."* (D-3, Annex D, RTO-TR-HFM-154)

Non-nutritional characteristics were assessed through a more complex, multi-level structure of assessment criteria. At the first level, they were divided into two categories: factors with a direct impact on the nutritional value of the ration, and factors of an operational nature that enhance the functionality of the ration. At the second level, each subgroup was assigned with specific evaluation variables. As for those correlated with the nutrition related factors, these evaluation variables encompassed the shelf-life of food-products, menu division (distribution of nutrients across the meals included into the 24-hours time-framework, e.g. breakfast, lunch, dinner structure), duration of use (the approximate maximum accredited time-framework of uninterrupted consumption of ration), food components, and accessories. As for those assessment factors correlated with the functional dimension of the ration, the evaluation variables encompassed water requirements (for reconstitution of dry food-items of the military rations), weight, volume and packing of the ration, requirements for preparation of the content, the inclusion of the portative food heater(s), and container shipping data. All of these listed variables consequently took the shape of the numbers within the NATO's MNDM, and in turn, became integrated into the RTO-TR-HFM-154's data-constructs of human bodies.

The numerical values of MNDM were adopted after the Systeme International d'Unites (SI), employing the measurement units of meters(m) and/or centimeters(cm) for length, kilogram (kg) and/or grams(g) for mass, Celsius (°C) for temperature, and minutes (min) and/or seconds(sec) for time. NATO's Member States using alternative measurement system (e.g. the USA) were granted with certain degrees of liberty and flexibility, allowing them to report values in both native and SI units, for example 70°F, alongside the 21.1°C. The measurement of the energy value was unified to kilocalories (kcal), reflecting the globally recognized unit for quantifying the energy density of the food products, as specified in RTO-TR-HFM-154. Certain measurements conventions were further tight to the instructions on the data collection provided the Member States, as for example the macronutrients distribution ratio, which represents the proportional contribution of each macronutrient to the total energy content of the ration:

> *"Indicate the actual average: Protein provided by the supplement measured in grams (g). Proteins are complex organic compounds formed from amino acids that are essential for growth and repair of muscles, tissue, vital structural and working substances in cells and hormone synthesis. Protein provides approximately 4 kcals energy per gram."* (D-6, Annex D, RTO-TR-HFM-154)

At the initial stage of the Matrix assemblage, data collection was conducted through the Data Collection Survey, which was distributed to the Member States of NATO as blank data collection excel worksheets (as specified in 3-2) for completion by expert representatives. Member States were requested to provide the data on each individual combat-ration prototype used in the country's armed forces. This process is explicitly described in Chapter 3 of RTO-TR-HFM-154 – "Data Collection, Definitions, and Matrix Development", – as well as the Annex D, – "Data Collection Survey and Data Element Definitions".

6.1.3.4. Baseline Agreement(s) of RTO-TR-HFM-154's Working Group

The evolution of the numeric representation of the human-body underlying the RTO-TR-HFM-154's MNDM could be traced throughout the entire document alongside every numerical specification. The essence and results of negotiation and logic, which were driving the rationales for most significant metamorphoses of the numbers are best observable within the reports of RTO-TR-HFM-154's Working Groups meetings, – especially ET-058 and RTG-154 –, where the chain of negotiations is explicitly noted down. This subchapter of the Master's thesis elaborates on the baseline agreements set by the RTO-TR-HFM-154's Working Groups prior to an actual work of the data-construct assemblage.

6.1.3.4.1. Segmentation of World Regions – Restructuring of Nutrient Composition(s)

There were a number of decisions made by the RTO-TR-HFM-154's Working Group prior to the ratification of the collective scientific recommendations of RTG. At this stage, the twelve participating NATO's Member States contributed national versions of their military rations, which were structured according to geographical grouping. The end product of this division included the following segmentation: (I) Nordic Countries (Denmark, Sweden, Norway, Finland, and Iceland); (II) DACH Region (Germany, Austria, Switzerland); (III) USA, Australia and New Zealand, which were covered separately by the recommendations of US Institute of Medicine (IoM), and lastly (IV) the rest of the countries (e.g. France, Spain, Netherlands etc.) have been approached through the prism of World Health Organization (WHO) standards. The scientific literature review was conducted respectively to the set countries distribution.

Nevertheless, irrespective of the world-regions segmentation, at this stage the spectrum of nutrients and minerals initially determined as essential was significantly expanded for all of the countries. Apart and beyond the initially planned focus on limited macronutrients (carbohydrates, fats and proteins), and minerals (sodium, calcium, and iron), the provisionally agreed framework (adapted before the scientific literature review) incorporated a spectrum of vitamins (riboflavin, thiamin, folic acid, B_6 , B_{12} , A, C,D,E), and additional minerals (zinc, selenium, sodium, potassium, copper, and magnesium).

6.1.3.4.2. Adaptation of the Baseline Terminology: EURRECA, NIV, and the Schofield Equation

The first collectively agreed task of the RTO-TR-HFM-154's Working Group was establishment of a standardized joint vision of the population constituting their military troops. The EURopean micronutrient RECommendations Aligned (abbreviated EURRECA) was adapted for that purpose. EURRECA, a European Commission funded initiative, had an objective to compare and harmonize nationally defined macronutrient recommendations and differences across European countries, both within and outside the EU. Drawing on the rationale outlined in Ashwell et al. (2008), the results of EURRECA are widely utilized as an evidence-based toolkit for the construction of a generalized population model.

Nutrient Intake Values (NIVs) became a second fundamental terminology adapted by the RTO-TR-HFM-154's Working Group. Specifically, RTO-TR-HFM-154 employed NIVs as an umbrella term after King et al. (2007), which encompasses four types of nutrition recommendations: (I) individual nutrient level (INL); (II) average nutrition requirement (ANR),

(III) adequate intake (AI), and (IV) acceptable macronutrient distribution range (AMDR) (J-6, Annex J, RTO-TR-HFM-154).

As a final point, the Schofield equation was employed within the RTO-TR-HFM-154 for assemblage of the numbers for energy requirements, as one of the key categories determining the shape of the RTO-TR-HFM-154's data-constructs of human bodies. Schofield equation allowed the RTO-TR-HFM-154's RTG to tailor the basic nutrition recommendations according to the age, gender, and a body size of the soldiers envisioned/imagined as NRF personnel.

6.1.3.5. Examples of Metamorphoses of Numbers Underpinning RTO-TR-HFM-154's Data Constructs of Human Bodies – State-of-the-Science Review of RTG

State of science review constituted one of key stages of construction of RTO-TR-HFM-154's numeric models of the human body. Conducted on the basis of scientific studies, which involved soldiers, athletes, sportsmen, and mountaineers, and additionally supplemented with the recommendations of the NATO's Committee on Military Nutrition Research, this review informed the most major shifts in the RTG's conceptualization of the soldier's body, as documented in the body-part text of the RTO-TR-HFM-154. This subchapter discusses those shifts as discovered during the ethnographic fieldwork, avoiding focusing solely on the scenarios envisioned by the RTO-TR-HFM-154's Working Group for their military personnel, which (as stated above) include the expected physical labor performed by the soldiers and operational environments, – instead the scope of this chapter is the scientific rationale that underpinned the responses of the RTO-TR-HFM-154's Working Group to these speculated scenarios.

6.1.3.5.1. Basic Scientific Assumptions Behind RTO-TR-HFM-154's Data Constructs of Human Bodies

The RTO-TR-HFM-154 introduces a set of initial science-based assumptions of RTG, which facilitated the very first preliminary prototypes of the RTO-TR-HFM-154's data-constructs of human bodies.

At the first stage, the agreed image of the human body's needs under combat-related physical and psychological demands was developed through the first rounds of discussions by the RTO-TR-HFM-154's Working Group. During these rounds the Working Group established a set of science-based rationale and statements to guide the constitution of the numeric models of the soldier's body. Such initial assumptions indicated that soldiers are

expected to experience a rise in core body temperature during physical excretion due to the metabolic heat production, accompanied by an increase in general cardiac output of their bodies to support sweat-gland activity and increase blood flow to active tissues and muscles. These physiological conditions were recognized by the RTG to elevate the requirement of the soldier's body for the water intake, primarily to compensate for minerals losses, which are part of the sweat composition. As agreed in RTO-TR-HFM-154, these minerals include iron, sodium, and zinc (after Burke, 2001; Casa, 1999). Water intake was defined as vital for maintaining fluid balance within the body. The second essential requirement of the human body under the intense physical military labor identified by the RTO-TR-HFM-154's Working Group was the increased need for carbohydrates, and proteins. The protein intake was identified as essential for efficient muscle synthesis and recovery of the soldiers. The increase of carbohydrates intake was required to cover the energy demands of the soldier's body under the intense physical activity, given the fact that the storage capacity of carbohydrates within the human-body is naturally limited.

At the second stage, RTO-TR-HFM-154's Working Group formulated and documented a set of imaginaries and assumptions regarding the environmental conditions under which soldiers were expected to operate. These scenario-specific considerations regarding the physiological demands of hot and cold environments were discussed, negotiated and articulated at the Annex J of the RTO-TR-HFM-154. Generally speaking, the greater emphasis was placed by the document on the effects and implications of hot environments than the cold ones. As for the performance of military missions by the NATO's personnel in the hot environments, the central challenge, which the RTO-TR-HFM-154 Working Group put into the priority to address, was a limited capacity of the human cardiovascular system to cover the demands of muscles and skin-glands simultaneously. The risks of a failure to account for these physiological features of a human body had a high chance to result in the metabolic inefficiency and conditions of hyperthermia, as evidenced by Burke (2001) and Casa (1999), to whom RTO-TR-HFM-154 appeals. Contrarily, the treatment of the cold environments was more limited. The RTO-TR-HFM-154 contains a simple acknowledgement of the fact that thermoregulatory response of the body in cold environment has to be taken into account, at the same time emphasizing that the thermoregulatory tolerance and response of the body in cold conditions is very highly individualized, – influenced by age, sex, body composition, and (unique for each body) capacity of acclimatization (Young et al., 1996). Therefore, it generally cannot be covered universally as it was initially assumed by the RTO-TR-HFM-154´s Working Group. As a result, the document concludes that the thermoregulatory mechanisms of heat production of the human body in cold environments,

which is largely generated through physical exercise, should be excluded as a factor in the construction of the data-constructs of human bodies.

A significant part of RTO-TR-HFM-154 is also devoted to the high-altitude environments. Among the list of physiological effects of the high-altitude environments on the human body, the document foregrounds the hypoxia, – the decrease of the oxygenation of the blood as a bodily response to the decrease of the oxygen-pressure in high-altitude atmosphere, – as a dominant factor behind the altitude-related illnesses. Acute mountain sickness (AMS) is used as an example within the document. The RTO-TR-HFM-154's Working Group expects the soldiers of the NRF to experience the symptoms of AMS after a several hours of being exposed to the high-altitude environments; the expected symptoms within RTO-TR-HFM-154 are limited with nausea, headache, vomiting, malaise, and whole-body-weakness, – a more severe effect, such as anorexia, is also assumed. According to the scenarios imagined by RTG, soldiers of NRF are expected to go through the process of acclimatization after a certain period of time of exposure to the high-altitude environments through a set of physiological changes inside their bodies. The list of such accounted changes include the increased level of hemoglobin and hematocrit within the blood of the soldier's body, which is meant to improve the oxygen transport as a response to oxidative stress. Oxidative stress, combined with ultraviolet radiation and hypoxia, is expected by the RTG to result in the intensification of the free-radicals production within the body of a soldier causing lipid per-oxidation (Simon-Schnass, 1996). Consequently, the document suggests that antioxidant nutrients such as vitamin C and E, betacarotene, zink, copper, and selenium may be required to be included into the NATO's MREs for the cold and high-altitude environments in a greater amounts with the aim to mitigate lipid peroxidation (J-13, Annex J, RTO-TR-HFM-154).

6.1.3.5.2. Mathematics of Energy Requirements: Catalyzing Changes in RTG's Conceptualization(s) of the Soldier’s Body

The Schofield equation was employed by the RTO-TR-HFM-154's Working Group to calculate the basal metabolic rate (BMR) of the bodies of imagined soldiers. The BMR refers to the basal metabolic activities of the body tissues and cells together with the approximate energy needed for the organism to adequately sustain blood circulation of the body, respiration, as well as other renal and gastrointestinal processes (Schofield, 1985). Throughout the process of building rationale for different energy needs of each type of assumed soldier’s body under varying conditions, the RTO-TR-HFM-154 consistently appeals to the standard (suggested by Schofield equation) norm of the body of a

civilian-person, which further gets multiplied by the certain amount of times depending on the envisioned PAL of the NATO's soldiers performing different types of operations under different conditions (e.g. for age-interval 18–30: BMR (15.057*79[kg] + 692.2) * PAL(1.6) = 3,034). As such, the previously set by the RTO-TR-HFM-154's Working Group standards get repeatedly layered with a number of new assumptions throughout the document's narrative.

The following shifts in the design of the RTO-TR-HFM-154's data-constructs of human bodies were catalyzed by the adaptation of the Schofield equation, as an alternative calculation method:

I. The pre- science literature review numeric prototype of the soldier´s body (based of IoM equation): *"Assuming an equal distribution of people in the age categories* [19–30, and 30–50 years]*, the basic energy requirement we estimate for the NRF man aged 19 to 50 years amounts to 2,868 kcal per day (12.0MJ/d). With regard to the assumptions that the weight of the NRF soldiers was 79 kilograms, if we had assumed that a NRF soldier weights 5 kilograms more, his energy needs would have increased by only 143 kcal to 3,011 kcal per day."* (J-14, Annex J, RTO-TR-HFM-154).

II. The post- science literature review numeric prototype of the soldier´s body (based of Schofield equation): *"According to Schofield, the estimated energy requirements are 3,792 kcal per day for men aged 18 to 30 years and 3,476 kcal per day for men of 30 to 60 years old. Thus, our estimate of energy requirement for NRF personnel during normal operations becomes 3,595 kcal per day (15.1MJ/d). This estimate is in accordance with the expenditure which were found in eight studies in soldiers, using the doubly labeled water method, performing activities with a comparable PAL"* (J-15, Annex J, RTO-TR-HFM-154).

These citations from the Annex J of RTO-TR-HFM-154 illustrate how the discussed adaptation of the Schofield equation, which accounts for a broader range of factors compared to the IoM, – previously utilized for such calculations in a framework of STANAG 2937 MED, – facilitates significant metamorphoses of the numbers constitutive of RTO-TR-HFM-154's data-constructs of solders' bodies. These metamorphoses evolve and deepen further through the pages of RTO-TR-HFM-154 as the discussions and negotiations between the expert representatives of the NATO's Member States and RTG advance, keep adding new layers to the imagined scenarios, progressively introducing additional factors into the initially defined operational spaces and conditions for soldiers' bodies, particularly after the second revision. An important aspect of this process is that the inclusion of new variables often necessitates the adjustment of others. Given the extensive number of such

examples in RTO-TR-HFM-154 and limitations of the format of the Master's thesis, this chapter is focused on one example to illustrate this process: the inclusion of sleep deprivation as additional stressor for the soldier's body, and how this changes the influence of the Schofield equation in shaping the RTO-TR-HFM-154's data-constructs of human bodies

When RTO-TR-HFM-154's Working Group decided to incorporate sleep deprivation as an additional factor to be inscribed into the data-constructs of human bodies, it triggered corresponding adjustments in the energy calculations after Schonfield equation to account for its physiological impact: *"According to Schofield, this PAL goes with an energy requirement of [...]. However, energy requirements during these operations are not only increased due to higher physical activity, but also due to sleep deprivation."* (J-15, Annex J, RTO-TR-HFM-154, emphasis added). Consequently, the RTO-TR-HFM-154 introduces the data-constructs of the soldiers' bodies tailored specifically for this group, – soldiers of the special forces missions (SFM). This new category is being assigned with a higher degree of complexity in contrast to the previously modeled scenarios and numeric prototypes of the bodies corresponding to them, as the soldiers on the SFM servants are imagined to face a wider spectrum of military missions, activity levels, durations, and geographic conditions. The data constructs of these SFM soldiers estimate energy expenditures ranging from 3,463 to 6,663 kcal per 24 hours, depending on age, yet – strikingly – without the stringent consideration of other facts that previously receive substantial attention and space for discussion in previously hypothesized scenarios negotiated in RTO-TR-HFM-154. Moreover, despite the scenarios for SFM account for highly unpredictable circumstances and conditions, the energy requirements for given cohort of soldiers remain relatively conditional, – the RTO-TR-HFM-154's RTG compares them to the demands of Tour de France cyclists (with approximate 6,000 to 8,000 kcal of daily energy expenditure); the other stress factors were omitted in the corresponding discussion.

6.1.3.5.3. The Role of Speculated Environments in Modelling of Soldiers' Energy and Micronutrient/Macronutrient Needs

Negotiations around the environmental conditions repeatedly compelled the RTO-TR-HFM-154's Working Group to revise its scenarios, and therefore the design of the numeric models of the human body. Controversies tended to accompany each of the suggested environmental conditions, and generate debate among the Member States.

Considering the hot environments, several experts of the RTG supported the line of argument articulated in Baker-Fulco et al. (2001), stating that soldiers' metabolic rates

should be expected to increase, – in comparison to the moderate temperatures , – due to the physiological factors such as the intensified sweat gland activity, elevated anaerobic metabolism, and increased body temperature, potentially rising the energy expenditure of the NRF soldiers from 2.5% up to 10% depending on rest time. Others, referring to the findings of Tharion et al. (2005), countered that environmental heat stress has very little effect on the energy expenditure of the military personnel. The RTO-TR-HFM-154 presents the arguments of the both positions, acknowledging the controversy between them, – the document eventually places the energy requirements of the soldiers' bodies in the heat within the diapason between 3,595 and 4,905 kcal per day, depending on the type of military missions (as presented above).

The discussion of the RTG around the cold environment prompted even more radical adjustments of the numbers of the RTO-TR-HFM-154's data-constructs of human bodies, as the RTO-TR-HFM-154's Working Group specified the set of details activities, which they imagined implied by the missions and operations undertaken by the NRF. Such activities include moving in the snow, maneuvering, or wearing heavier warmer clothing:

> *"Energy needs are elevated during military operations in a cold environment due to the increase in metabolic heat production to maintain body core temperature and the increased costs of moving in snow-, or ice- covered terrain and of wearing heavy clothing equipment. The weight of the cloth may increase energy by 8% over the temperate clothing. Metabolic costs are further increased with 15% as a result of the hobbying effects of cold weather, multi-layered clothing, and cold-weather footwear; with maneuvering for prolonged periods (longer than two hours) with heavy foot gear over snow, or ice-covered terrain, energy needs are increased to 62 kcal per kilogram body weight."* (J16 - J17, Annex J, RTO-TR-HFM-154. emphasis added)

Based on scenarios speculated by the Working Group, the RTG suggested to adjust the numbers determined for the operations performed in cold conditions in the way that the energy measure for the data models of human bodies to be set at 20.5 MegaJoule/per day as a commonly-agreed parameter (in accordance with measures of SI, where 1 MJ equals approximately 239 kcal; thus, 20.5 MJ7/d corresponds to around 4,900 kcal/day). Using this reference point, the RTO-TR-HFM-154's Working Group requantified the optimal daily energy intake for soldiers exposed to the cold conditions, consequently extending the range of initially constituted interval for 3,630 to 7,116 kcal/day.

The high-altitude environment facilitates the discussion documented in RTO-TR-HFM-154 further. The RTG defines a high altitude environment as evaluations above 3,050 meters. According to the document, the calculations performed for the constitution of the data-constructs of human bodies under such conditions have to account for the weight and body size of the soldiers, the specialized equipment and clothing, which soldiers expect to wear, the range of envisioned physical activities and other imagined derivative factors. The RTO-TR-HFM-154 expect that the exposure to the high altitude environments could increase the metabolic rate of the solder's body by approximately 7 – 17% during the first days of exposure, with a slight decrease after acclimatization (Tharion et al., 2005; Hoyt & Honig, 1996). Given the substantial existing research and body of scientific publications on the mountaineers, the discussion of the soldiers' physique within high-altitude environments was especially intense. As new evidence was introduced the energy requirements estimates were shifting from 50–55 kcal/kg body weight of the soldier up to 60 kcal/kg. These numbers came through a few cycles of negotiations, – each triggered by the RTG's reference to the different studies with often contradictory results. As for example, the RTG referred to (I) Hoyt et al. (1994), who reported 4,740 kcal/ day, according to the research conducted at the 4,392 m altitude over 6 male combats through the time-frame of 6 days; (II) Reynolds et al. (1996), who stated that energy expenditure of the mountains climbers is 5,394 kcal/day, which was tested using the doubly-labeled method on the sample of 7 climbers; (II) and Pulfrey & Jones (1996), who calculated 4,633 kcal/day as an average energy expenditure of mixed (male/female) sample under similar high-altitude conditions and doubly-labeled method. Consequently, the RTO-TR-HFM-154's Working Group concludes to adopt the 4,740 kcal/per as (19.8MJ/d) as the reference energy requirement for NATO's NRF personnel, following the estimates of Hoyt et al (1994).

6.1.3.5.4. Macronutrients and Minerals: Adapting Dietary Needs to Re-Imagined Soldiers and Environmental Circumstances

The macro-/macro-nutrient and mineral compositions of the RTO-TR-HFM-154's MNDM, which underpins design of the data-constructs of human bodies were assembled in two main phases:

I. the macronutrients recommendations assembled by New Zealand and Australia were adapted by the RTO-TR-HFM-154's Working Group as a baseline intended for further adjustment and localization to national contexts of the Member States;
II. the resulting numbers and figures of a first negotiation round were compared with values reported in relevant scientific publications to be checked on a subject of major differences and inconsistencies.

The document additionally notes at the outset that the decision of the RTO-TR-HFM-154's Working Group was to express macronutrients within the Matrix both as absolute intake (grams), and in the percentage of total dietary energy intake.

According to the RTO-TR-HFM-154, the first adaptation of the civilian norms of macronutrients to the military dieting recommendation scheme of New Zealand and Australia (National Health and Medical Research Council of Australia (2005)) was necessary to lower the risks of the NRF soldiers to develop major diseases by type of cardiovascular disease, diabetes etc., likely to be triggered by the battlefield environment and stressors (National Health and Medical Research Council, 2005; Ministry of Health, 2003). Afterwards, the RTO-TR-HFM-154's Working Group further readapted these values together with the energy distribution scheme, according to the scientific-evidence suggested by different research. As a result the initially suggested numbers sky-rocketed, – from initially assumed 404g to 584g of carbohydrates, from 80g to 140g of fats (with added specifications of 16–40g unsaturated fats, and 40g of saturated fats (National Health and Medical Research Council, 2005)), and from 135g to 225g of protein (J-19, Annex J, RTO-TR-HFM-154). These adjustments were based on the rationale, and scientific evidence drawn from the selected set of related food-policy documents and scientific publications widely cited within the RTO-TR-HFM-154. These documents include guidelines of the WHO (Food and Agricultural Organization of the United Nations, World Health Organization, United Nations University, 2004; Food and Agricultural Organization of the United Nations, World Health Organization, 1997), and the IoM (Food and Nutrition Board - Institute of Medicine, 2005), as well as more specific reports previously delivered to the RTO-TR-HFM-154´s Working Group by the segregated groups of countries, for example national reports of the DACH countries (e.g. German Nutrition Society, 2000), and Nordic countries (e.g. Nordic Council of Ministers, 2004).

6.2. Findings of the Interviews

The fieldwork of this Master's thesis research integrated two types of the interviews, which ought to assist me in stepping beyond the discursive composition of the document as one site/location of cultural production, and meet the world created by RTO-TR-HFM-154 outside of its pages (Harding and Myers,1994; Marcus, 1995). The first group of interviews was undertaken with the nutrition science experts of NHRESS/DHH/IAEA, and the second one with soldiers serving in active military units of UDF who had been exposed to the nutrition regime of RTO-TR-HFM-154's MREs. Together, these interviews allowed me to follow the lifeworlds of the RTO-TR-HFM-154's data-constructs of human bodies as situated subjects and their agencies through the identification of connections, associations and networks,

which they establish among different sites (Marcus, 1995, p.96), – the discussions of RTO-TR-HFM-154's Working Group, expert communities, and war battlefields.

6.2.1. Expert Interviews – Illuminating the Politics of Method

The first round of interviews was conducted with the nutrition science experts and researchers employed by the NHRESS/DHH/IAEA, an international organization operating under principles comparable to NATO. The interviews of this group took place between December 2023 and January 2024. Altogether, four nutrition science experts were interviewed. This subsection of the Master's thesis guides the readers through the key insights and findings that emerged from these expert interviews.

6.2.1.1. Numbers of Calculative Nutrition as a Concept: Situating RTO-TR-HFM-154 in the Wider Context of Food-Politics and the Technopolitical Regime of Nutrition Labeling Infrastructure

As initially intended, the expert interviews began with the block of introductory questions regarding the interviewees' personal experiences with food labels, as well as their professional perspectives on the prevailing science paradigm and the food politics it informs.

6.2.1.1.1. Different Ways Nutrition Science Experts Structure Personal Consuming Behavior and Practices Around Food-Labels

The interviewed nutrition science experts and researchers predominantly reported that they do not rely on nutrition labels in their daily life practices. A few noted that they occasionally consult labels when purchasing some unfamiliar food products, though this is an exception rather than part of their routine dietary practices. Most of the interview participants indicated that they tend to primarily consume non-processed food, which, according to their accounts, reduces the necessity of checking up the product composition as part of informed decision-making. All of the expert interviewees acknowledged that professional involvement with food and nutrition fosters a distinct perspective on food composition and nutrition as such. One interviewee described in detail the personal algorithm she follows when "scans" food labels to guide consumer decisions. She stated that the way one reads the label should be tailored to their individual needs and dietary goals. As for the case of this expert, motivated by the aim of maintaining good health, she always begins her engagement with labels by checking whether the food product contains more than three grams of fiber; afterwards she considers carbohydrate content, noting that the abundance of processed foods makes it easy nowadays to consume excess carbohydrates unwillingly. Next, she

evaluates the protein content of the product, and finally checks for the presence of added sugars.

When discussing the composition of the nutrition labels, experts assigned varying degrees of importance and value to the information presented there. Some interview participants reported focusing on the macronutrients content and energy distribution (carbohydrates, fats, fiber, and protein) of the products, while others emphasized micronutrient content. As an example, among the latter group of experts, one assigned a special attention to vitamin D content:

> *"We do not necessarily think about the macronutrients in our diet, we just think about the proteins, the carbohydrates, the fats, but certain micronutrients, for example vitamin D. Vitamin D is a nutrient that is not found in a lot of foods by nature, but has been fortified in different type of foods, this is very important just because a big proportion of a population is vitamin D deficient – our primary source of it, which is sun exposure, is fully dependent on our geographical location."* (interview transcript – participant A).

6.2.1.1.2. Origin of the Information Infrastructure(s) of Food-Labels

Legislative factors turned to be referred to the most, when experts were asked why the design and content of the food labels differ across countries and world regions. Mostly, they explained that variations in design and information incorporated into labels stem from major differences in public health policies and regulatory frameworks. Several experts emphasized that political agendas and industry interests have also an influence in shaping the food labels in different ways.

6.2.1.1.2.1. National Food and Public Health Policies

The expert interviewees frequently appealed to examples of national nutrition labelling systems of different countries to illustrate their arguments about the current shape of the global information infrastructure underpinning food labeling and regulation policies. The designs of food labelling of the United States and the European Union emerged during the interviews as the most frequently discussed examples. As such, one interview participant highlighted how legislation in the USA for a long time prioritized now-outdated concerns about cholesterol, which therefore was included into the food label design and eventually erased after the new findings of the nutrition science field showed that the main source of cholesterol in the human body arises from the breakdown of saturated fats rather than direct

dietary intake. As the other examples, interviewees invoked the food labeling regulations of the EU, which they claimed to be comparably stricter than the US one. The EU regulations, according to the interviewees, are attempting to pressure the food industry to prevent including misleading health claims to the etiquettes of their products, – in recent years EU issued a formal prohibition on making any kind of health-related claims on food packaging labels. Several of the experts also mentioned the recent implementation of the "A-D traffic-light" style labels in the EU, which compare food items within the standardized categories to indicate "good", "medium" and "bad" nutritional score of the products, as well as claims by type of "No GMO", and "No Added Sugar".

Many of the interviewed nutrition science experts were emphasizing that national food policies, – across all countries and levels of the public health regulation, – always attempt to provide consumers with the information most relevant for them guiding to healthy choices. What was most important in those statements, however, is the reflexive dimension: the ways in which different populations are imagined and cared for through the design of food labels, and how these envisioned subjects (people) become acknowledged and shaped by corresponding political decisions: *"they want to give consumers the information that is relevant for them to make right decisions, and of course, this is different from legislative authorities in different countries, but also from people, the population. Different populations might want to see different things, right?"* (interview transcript – participant C). Drawing further on the governmental practices of care (Puig de la Bellacasa, 2017) incorporated into the design of the nutrition labels, another interviewee stressed that the information infrastructures of the food-labels across different countries and world regions are shaped by population-specific health factors, – such as the availability of certain food products in specific geographic regions, or the burden of a particular type of a disease on the specific population might have: *"there are certain countries that have population that maybe affected with certain conditions or disease; of course, we can argue that cardio-vascular disease, diabetics, cancer know no borders — these do not differentiate between countries, but potentially there always will be certain categories of a country's population, which is not getting enough fiber, or certain nutrients in their diet. Maybe this particular country may emphasize certain nutrients within that particular food-label, or in that particular product, – it will always be that certain nutrients may be more targeted, generally speaking, for that population!"* (interview transcript – participant A; emphasis added)

Another of the interviewed experts stressed that in each national context governmental authorities may find it to be necessary to count on a major cultural and religious preferences of the certain population groups, – e.g. *"we have a large proportion of the population that*

are practicing Islam, so may not eat certain types of foods" (interview transcript – participant B), – as well as cohorts whose food choices dictated by the individual, ideologically-driven motives: *"maybe a certain country wants to highlight that their product is vegan, or that their product is plant-based, or that their product is halal, and so on and so forth, because of a specific population, they want to corner turn to that specific population, especially when the population is more heterogeneous. So, for example (say) coming from the United States, we do have a wide dynamics of different types of people, who live in that population, who may have a very specific needs and let's say that something is gluten-free, or vegan or something is halal, that particular product that fits to that particular person."* (interview transcript – participant A; emphasis added)

With respect to the food policies and regulations at various levels, several of the interviewed experts argued that although food labels are intended to guide consumers toward healthier choices, they often fail to highlight the broader value of whole, unprocessed foods. Additionally, some of the interview participants problematized the prevailing tendency of food labels to focus too much on emphasizing the individual nutrients rather than the overall quality of the food item itself.

6.2.1.1.2.2.The Influence of the Food Industry

Another major determinant of food labels and packaging design across different countries and world regions, according to the interviewed experts, is the power and influence exerted by the food industry. As was stressed repeatedly during the interviews, the food industry is primarily driven by monetary profit and, therefore, often devise strategies to circumvent governmental regulations in order to portray and present their products in the most favorable light. Consequently, in countries with weaker food-labeling policies, industry actors have greater power and leverage to influence the design of the labels on their products, making potentially misleading claims to increase the sales rates. According to the interviewees, even in jurisdictions with stronger regulatory frameworks, like the European Union, the food production companies continue putting an effort to work around the existing rules to maximize profits. Most experts therefore underscored that the design of the nutrition labels of the food products is consistently shaped by the tension between industry interests and public health regulations, with the strength of a country's food policies determining the extent of industry influence.

6.2.1.1.3. Normal Distribution and Population Generalization: What is the Standard Human Body Model Behind the Design of Food-Label(s)?

According to all interviewed nutrition science experts, food labels are generally designed to cover 95% of the adult population with their numbers – *"we are designing that label with an intention of covering a large portion of an adult population"* (interview transcript – participant A; emphasis added). These labels are typically grounded in dietary recommendations developed for the population under consideration, and draw on statistical and demographic data, which are utilized to construct an "average person" model specific to each country or region. During the interview, one expert illustrated the US approach to the constitution of such an "average person" model, with critical view of it: *"As for a nutrient label, we typically design it for an adult — someone who is described between the age 19 to 60, or even lower in some of the States. But as you can imagine, even someone between the ages 19 to 60, there is much physiological change happening during that time!"* (interview transcript – participant A). The very concept of an "average person" varies across different national and regional contexts but, as was noted by a few experts, it is standardly derived from a number of factors such as imagined daily activity levels of the considered population, average body size, and other biological characteristics of the envisioned consumers.

All of the experts agreed that nutrition labels through their numbers inherently simplify the complex nutritional needs of different representatives of a population by adopting and forcing a "one-size-fits-all" approach. This reduction of complexity and simplification, according to them, often leads to neglection of the diversity of dietary needs and requirements across different groups, – e.g. *"adult-males, or adult-women, or pregnant-woman, or lactating-women, or children of this sex, this age"* (interview transcript – participant C). Worth mentioning that some experts viewed the root of an issue regarding this process not in the chosen approach of generalizing population through statistical models, but rather they problematized the low quality of data underlying these models, – for example, the data underlying the widely spread generalization of the standard average of 2,000 calories per day referenced on food labels, which attempt to cover roughly 95% of the population within a "normal distribution" curve. Other interviewed experts, claimed that this simplification as such is not inherently problematic, but rather problematic is that it puts the responsibility on the consumers, – predominantly lay people – to interpret the information on the eventually established labels according to their individual needs, while using the numbers labels as a guidance: *"let's say what 100 grams of specific food gives you* (voice emphasis)*; the label is more giving a really very value of this food, per 100 grams. «This is 10% of your dietary daily intake of energy!» — for some it might be true, for others not, for others it might cover 20%*

of the energy." (interview transcript – participant C). This interview participant was stressing that the responsibility of the legislative body should be "to educate the public" about the fact that the information on the nutrition labels are not tailored to specific individuals, not simply providing general information on the nutritious content of the 100 grams of the food item.

The interviewees commonly acknowledged and problematized the inherently generalized, – and therefore, discriminative – character of the numbers presented on food labels. They stated that the human body imagined behind different types of food labels is based on statistical averages, and is not capable of, – even in theory – accurately reflect and present the nutritional needs of every individual.

6.2.1.2. Numbers of RTO-TR-HFM-154 as Symbolic Representations and Social Constructs: Why Do the Data Constructs of Human Bodies Vary Across Different National Garnissons?

The key part of the interviews largely focused on the complexity of the numbers underlying the RTO-TR-HFM-154's data-constructs of human bodies. At this stage, the experts were provided with a copy of the Military Nutrition Data Matrix (MNDM), which underlies the RTO-TR-HFM-154's data-constructs of human bodies. None of the interview participants had a chance to familiarize themselves with the content of the Matrix prior to the interviews, – the objective was to elicit the first impression and reflections of interviewees regarding the numeric composition of MNDM. The experts were asked to reflect on the possible factors that might have contributed to differences in nutrition recommendations across various NATO's Member States, as presented in the RTO-TR-HFM-154's MNDM, and reflect why the resulting human models took their current shape. My role as interviewer was to attempt "to think together" with the experts through the numbers of RTO-TR-HFM-154, thus engaging in collaborative sense- and meaning- making.

The comprehensive qualitative analysis of the interview transcripts eventually enabled me to identify seven key factors, which might have determined the shape of the RTO-TR-HFM-154's data-constructs of human bodies:

1) the physical activity levels assigned to the soldiers by the RTG;
2) the envisioned average body composition of the NRF servants;
3) their gender(s);
4) basic caloric-needs dedicated by the above listed characteristics;

5) environmental conditions under which soldiers of the NATO's troops are expected to perform assigned spectrum of military tasks;
6) national dietary recommendations of the countries of the soldiers' origins;
7) cultural variations in food preferences in those countries, particularly sociocultural models of "comfort food(s)".

The following subsection of the Master's thesis guides the readers through the key findings on each of the factors, some of which are clustered together into a storyline the experts developed while interpreting the numbers of the RTO-TR-HFM-154.

6.2.1.2.1. Astronauts in Space and Soldiers on the Battlefield(s): National Dietary Recommendations and Demands of the Military Service

While addressing the differences in the RTO-TR-HFM-154's numbers, most experts began their line of thought by referencing civilian nutrient norms across different countries and then were trying to brainstorm the possible factors that might differentiate the military dieting standards from the civilian ones. Some suggested that variations in numbers brought to RTO-TR-HFM-154's MNDM by different countries stem from the national dietary guidelines, which themselves are shaped by international standards set by organizations by type of World Health Organization (WHO), and the Food and Agricultural Organization of the United Nations (FAO). All experts emphasized that the major drivers of the RTO-TR-HFM-154's values should have been the specific physical activity demands of the soldiers, the stressors they are likely to be exposed to, and the type of environment(s) in which they are expected to operate. One expert compared the conditions of the military service of NATO troops to those of the NASA's space missions: *"The best example are astronauts of the National Aeronautics and Space Administration (NASA) of the USA, – in NASA they have a nutrition division, whose goal is to understand what the nutrient needs are, and how the basic requirements look like, when the person is in space. We see that after astronauts come back from multiple years of travel, they have a lower bone-mineral-density, – one of the reasons for this is that being in zero-gravity, they don't have the pressure of weight bearing down on them, then similarly, they have a decreased vitamin D status, and so on and so forth; what is important is that nutrient needs are different when you are in a very different environment, and when in very different circumstances (say for astronauts). Soldiers are, similarly to astronauts, also have a very unique job and a very unique role, and as such require a very unique nutrition planning"* (interview transcript – participant A; emphasis added).

Nevertheless, most of the interviewed experts supported the opinion that the numbers of RTO-TR-HFM-154 are determined less by national dietary guidelines and more by the

demands of (envisioned by the RTO-TR-HFM-154's Working Group) military missions and operational environments. A shared view was that numbers of RTO-TR-HFM-154's MNDM reflect military dietary recommendations focused on what "a standard military servant of NATO" should consume on a daily basis. One interviewee noted that the Matrix likely assembled according to the so-called "food pyramid scheme", which translate globally-set standard of nutrient requirements into practical food choices, and therefore aims at assisting general populations in meeting their needs, without focusing on individual nutrients:

> *"this is something that somehow is connecting all these things, right? This is the food-based dietary guidelines, because people do not eat nutrients, they eat food; you don't say: «Mmm.. I need some magnesium today!», right? You can't say that you need some magnesium, and some iron and some protein, you rather go for:«I want to eat a fish…», or «I need to eat something», right? And this is where the food-based dietary guidelines are coming from. The food based dietary guidelines are made to bind the public health institutionally. Something that is made to, again, to make people make better decisions about which foods to eat to cover the nutrients needs, but without people having to think about nutrients, magnesium and others, because again – you just don't eat nutrients, you eat food."* (interview transcript – participant C; emphasis added)

As a result of this exercise of imagining in which ways military service life differs from the civilian one assisted the interviewed nutrition science experts in speculating on the possible factors that should have been counted on during the construction of the nutrition requirements scheme for the NRF, – factors which, as hypothesized in this Master's thesis, laid into the basis of the RTO-TR-HFM-154's data-constructs of human bodies.

6.2.1.2.2. The Level of Physical Activity and Environmental Conditions

The RTO-TR-HFM-154's Working Group, according to the interviewed experts, prioritized the physical activity levels and different environmental conditions in their calculations for the design of the numeric models of the soldier's body. They emphasized that (judging on the numbers), soldiers of NRF are expected to engage in intense outdoor activities that require notably more energy than the civilian average of the country of their origin. Experts were repeatedly highlighting that the scenarios underpinning the RTO-TR-HFM-154 assume that such physical activity occurs within the settings of extreme temperatures, – this clearly stands out from the numbers and design of RTO-TR-HFM-154's human body models. As one of the experts underscored the significance of this factor in the MNDM: *"You see? Norway is divided – there is Norway-Arctic, and Norway-Tropical. This excellently*

demonstrates exactly how they [energy requirements] *are set differently, when they* [military troops] *are in really cold seasons"* (interview transcript – participant C). Most of the experts were noting that during the interviews that it is explicit that RTG accounted for the fact that operating in cold environments soldiers are highly likely to lack certain type of nutrients than those in hot environments, – citing the RTO-TR-HFM-154, these are vitamins A,B, D, and K. Special emphasis, experts also put on the fact that under the high physiological stress, the body's capacity to digest and absorb these nutrients diminishes, risking nutrient deficiencies.

Notably, experts always tended to link physical activity and environmental conditions together, never discussing them in isolation, when interpreting the RTO-TR-HFM-154's numbers during the interviews. One interviewee explicitly argued that these factors should only be considered in combination with each other, as their assemblage necessitates substantially higher energy demands for the human body. As was exemplified on the pages of RTO-TR-HFM-154, active NRF soldiers on the battlefields of Nordic countries would require profoundly different nutritional scheme and dieting for sustaining themselves, than those in sedentary military roles, – such as, as one put it "those sitting at the computer". According to the statements of the interviewed experts, scenarios in which soldiers are envisioned to be constantly on the move are imperative in RTO-TR-HFM-154. The mobility of the soldiers likely guided the RTO-TR-HFM-154's Working Group in designing rations that could be properly prepared and consumed in a diverse spectrum of military circumstances. As two of the experts stressed, there are a long list of factors affecting the food safety, preparation efficiency, and nutritional integrity in the field; therefore, the RTG had to account for as many mobility-related contingencies as possible when constructing the RTO-TR-HFM-154's data-constructs of human bodies: *"they* [soldiers] *are not standing in one place, they may be in one area at a very specific moment, but then may have to go to another area very quickly, and who knows what types of resources that they may have there, such as water, a pot, a fire. So, you have to design potentially pre-packaged meals, or meals that can still be consumed regardless of the situation, or circumstances that they* [soldiers] *may be in — saying not having access to clean water, or fire to be able to cook their food. These are all different circumstances that one has to consider, when designing the diet, or designing the food-supplement, or food-package for someone in a military personal, when compared to civilian"* (interview transcript – participant A).

6.2.1.2.3. Caloric Requirements Determined by Body Composition, and the Place of Sex-Specific Nutritional Needs

Another notable feature of the numbers populating RTO-TR-HFM-154, as emphasized by the nutrition science experts, was the RTG's practice of determining energy requirements

according to the imagined body-size of “an average soldier”, – based on the assumption that larger bodies require higher caloric intake. Many interview participants noted how this is reflected in the set of numbers for the standard energy needs in MNDM, where each section allocated for a particular numeric body model defined by a specific Member State. As a result, standard daily energy needs vary widely across the countries, ranging from just over 2,000 kcal to more than 3,200 kcal depending on national human body models.

Some discussions during the interviews also touched on the sex-specific requirements, which experts argued should have been incorporated, but are largely absent from the RTO-TR-HFM-154’s data models. As such, two of the interviewees stressed that female soldiers, due to systemic menstruation, generally have higher iron needs, – a feature not accounted for in the RTO-TR-HFM-154’s data-constructs of human bodies.

6.2.1.2.4. Spectrum of Cultural Differences and Residues of National Dietary Recommendations

The RTO-TR-HFM-154’s data-constructs of human bodies, and consequently the MREs designed based on them, vary significantly across NATO's Member States. Differences are evident not only in the numbers of energy and nutrients requirements, but also in the food compositions of MREs. All interviewed experts noted these substantial variations; for example, as was pointed out by one the interview-participant, – Canadian military rations tend to include more high-sugar content items, whereas Spanish rations incorporate significantly more (in comparison to MREs of other countries) dried meat products. According to the experts, this suggests that the numbers of RTO-TR-HFM-154’s MNDM reflect not only calculative nutritional needs of the soldiers’ bodies, but also accounts for the cultural dieting preferences of the troops.

Meaningfully, this indicates (as emphasized by one of the experts) that the RTO-TR-HFM-154’s Working Group’s design decisions extended beyond just technical requirements to ensure that the soldier's body could sustain the conditions, stressors and demands of the battlefields environment, and also accounts for a necessity to support soldiers’ psychological well-being by incorporating culturally familiar for them food products into MREs. According to the two of the experts, this feature of the MREs design stands beyond the pure mathematical calculations, – it accounts for the psychological component of the soldiers' experience accumulated prior to the service. They were convinced that by including such “comfort foods” into military rations, the RTO-TR-HFM-154’s Working Group made an effort to provide soldiers with a certain sense of home and care: ***“****it is not just to make a machine going, right? This is what is behind that. You think you give the food to the*

person to make that machine going, like this it is just a fuel, but it is actually a lot more than just that! This is also this: you are away from home, you are in hardship, you need to have something that makes you feel at home. By adding some kind of food that can comfort them [soldiers]*, it is like an addition to say: «Alright, we need to have enough to meet your energy, or nutrients needs, but also we need to give you something that you appreciate and that can comfort you a little bit». So, something that can make them feel good, and this of course, is different — what actually makes people feel good, right? Of course, there are always individual differences and preferences, but there are also some characteristics from the different countries, which are common. And this probably also something to think about that could also change over time — the food-preferences, or preferences for comfort food, or something that makes you feel good; it is to some extent not stable, but also changing over the generation time. But it is quite interesting that this is something that is so obvious, when you receive ratios from different places of the world!"* (interview transcript – participant C; emphasis added). Theoretically, therefore, this inclusion of "comfort foods" into MREs by RTO-TR-HFM-154's Working Group can be understood in STS terms as as enactment of care (de la Bellacasa, 2012) towards the NRF soldiers.

Another factor, which according to the experts might have fostered the sharp differences in the numbers of RTO-TR-HFM-154's MNDM across the data models of various countries (e.g. energy, micro-/macronutrient requirements) is the presumed origin of these numbers. As outlined above, most of the interview participants hypothesized that the values of MNDM stated for each of the NATO countries were originally derived from national dietary guidelines shaped by the public health regulations and food policies. They noted that the cultural specificity of dietary practices of each Member State is clearly reflected in the country-specific MREs included into the RTO-TR-HFM-154's Matrix.

6.2.1.2.5. Major Discrepancies in Numbers of RTO-TR-HFM-154's MNDM for Different NATO's Member States

Several nutrition science experts criticized the design of the RTO-TR-HFM-154 for the wide discrepancies in numbers it contains for the data models of human bodies of different Member States. The set requirements for iron were frequently cited as one of the most striking examples of such discrepancies, which was raising experts' doubts about the coherence of the approach taken to the RTO-TR-HFM-154's Working Group. As one interview participant put it: *"I'm heavily questioning these stark differences, and whether here should be some level of one sort of ration, or diet that should be harmonized globally, and then still having these sort of different rations based on all these different special factors, or circumstances"* (interview transcript – participant A).

Similar stark inconsistencies were also noted by the experts in the macronutrient recommendations defined in MNDM, which varied substantially across different countries without always correlating to energy demands or environmental conditions. As an example, the value for calcium requirements fluctuated, despite (as suggested by the interviewed experts) in principle they should remain the same regardless of temperature or altitude soldiers are exposed to. Most of the experts were unable to explain these differences, suggesting instead that they may reflect logistical or cultural choices about which food items to include to/exclude from the rations, rather than scientific rationalities or recommendations based on nutrition science.

The other anomaly, which was surprisingly rarely acknowledged during the expert interviews, was the RTO-TR-HFM-154's standard for the water intake for the soldiers. Worth mentioning that only one expert addressed this issue very closely and did so with astonishment regarding the extreme variations in numbers:

> *"Oh, the water is also very very important! And as a nutrition researcher myself, I even forgot that water is incredibly important! The growth differences here in requirements are impressive to say the least, – I wonder how the Committee might have just sit down and set 700 ml of daily water requirements for one, and 5, 000 ml for the others!"* (interview transcript – participant A; emphasis added).

As we have chance to observe here, these critiques voiced by the experts in the framework of the conducted interviews point to the underlying arbitrariness of certain values and standards set by RTG and suggest that national differences in the numeric human models of RTO-TR-HFM-154 often stemmed less from science, but rather from political, logistical and sociocultural rationalities of the Working Group.

6.2.2. Interviewing Soldiers: When Numbers Meet Bodies on the Battlefields of the Russia-Ukraine War

At the third stage of fieldwork, I conducted a series of interviews with soldiers, who at that time were active warfighters on the frontlines of Russian-Ukrainian war, and due to the NATO military assistance of Ukraine, became directly exposed to the nutrition regime shaped by the abstract numbers and assumptions inscribed into RTO-TR-HFM-154. As outlined above, the key objective of interviewing soldiers was to gain insights into how the epistemological foundations, rationalities, sociotechnical imaginaries, care practices, and

normative assumptions embedded in RTO-TR-HFM-154 materialize in actual battlefield conditions. More importantly, through these interviews I was seeking to understand how the RTO-TR-HFM-154's data-constructs of human bodies align, or conflict, with the actual diversity of soldiers' bodies and their needs.

Altogether during March 2024, I interviewed three soldiers of the UDF. All of the interviewees at that time were active combats fighting at different battlefields of the Russian-Ukrainian frontlines. They served in different battalions and military units of the UDF, were men of age range from 35 to 51 years old, and came from different regions of Ukraine.

6.2.2.1. Integration of NATO Standards in Ukraine: Organization of Frontline Zones, Field Kitchens and MREs Logistics

The food logistics and feeding of the military troops at the frontlines of the Russian-Ukrainian war are organized according to the battlefield zones, – there are three zones. The frontline zone, where the actual fights are taking place is called "Zone Zero"; it relies exclusively on MREs, due to the high intensity of fighting and constant enemy artillery fire that disables the potential use of centralized field kitchens: *"As we are in the middle of the active phase of war right now, and 99% of advanced observation posts, as well as armed command support units are rotation-based. The MREs and dry-food-products, which personnel carry with them, are the most predominant ways of organizing the food-supplies, once soldiers are entering "Zone Zero". This is generally not warm-meals, but the specifics of the organization of the military field kitchen for the military units at Zone Zero is that every single day they are being exposed to the massive bombing of fire-rays of enemy artillery, cooking there (let's say) is not very convenient."* (interview transcript – military, participant A).

The "Second Zone", and "Third Zone" are located behind the "Zone Zero", – they are classified to be relatively safer areas, where logistics are set, and rotations of the soldiers are traditionally taking place. These zones allow for field kitchens, organized either locally by the personnel or by senior command, depending on the military unit composition and capacity. What is important to mention is that such a system of organizing the battlefield feeding is based on the standards of NATO, which the Government of Ukraine adapted in the framework of the third wave of military reform taking place 2016-2022 (Sanders, 2023). Before this alignment, according to the interviewee, the organization of the food provision of the Ukrainian military units followed a different system. Two of the interviewed Ukrainian military servants noted that from the one side, the adaptation of the NATO standards for food provision increased the reliance of the UDF on the MREs, but from the other side, improved

the supplied food quality. One soldier recalled that prior to this reform of 2016, rations supplied to UDF primarily consisted of canned meat, sardines, and bread, whereas after the alignment to the NATO standards, the diet became significantly more diverse and included more meat and fruits.

6.2.2.2. RTO-TR-HFM-154 Meets the Realities of the Battlefields and Ukrainian Sociocultural Context: UDF Soldiers' Experiences

The principal part of the interviews with soldiers was focused on exploring the differences between the variety of NATO's MREs available on the Russian-Ukrainian war frontlines. Within this part of the interview, the UDF soldiers were asked to comment on the design, differences, as well as their preferences and experiences with different types of the dry-food military rations. As interviews revealed, additionally to the NATO MREs, – designed based on the RTO-TR-HFM-154's data-constructs of human bodies, – Ukrainian troops are also massively supplied with the MREs of the local (Ukrainian) production. This finding facilitated the inclusion of the Ukrainian MREs into the initial research design. Such a decision was additionally determined by the insights from experts' interviews and ethnography of the RTO-TR-HFM-154. More specifically, following the remarks of the experts regarding the fact that RTO-TR-HFM-154 accounted for cultural differences and traditional cuisine in the design of its MREs (presumably) to provide soldiers with a sense of comfort and well-being. Consequently, the research was extended with the inclusion of the Ukrainian type of MREs with the intention to explore whether such carry sentimental and sociocultural significance for the soldiers. This comparison allowed to more effectively illuminate the script (Akrich, 1992) embedded in the RTO-TR-HFM-154's data-constructs of the human body, and trace the inclusion/exclusion patterns it exercises over the bodies of different soldiers as a part of care practices (Puig de la Bellacasa, 2017) of the NATO's Member States. The findings presented in this subsection of the Master's thesis, therefore highlight not only how MREs designed based on different data-constructs of human bodies of RTO-TR-HFM-154 incorporate different scripts and care practices, but also the distinct way the Ukrainian types of MREs address the physiological and cultural needs of the Ukrainian soldiers.

6.2.2.2.1. Ukrainian MREs: Content, Preferences of the UDF Soldiers, and Comparison with RTO-TR-HFM-154 MREs

The majority of the interviewed soldiers began their accounts by discussing their experiences with Ukrainian MREs, before moving on to the NATO rations. According to most of the interviewees, Ukrainian MREs most closely resemble those of the United States of America (among the NATO States), both in terms of packing and included food items. One

interview participant made sense of this similarity as derivative of the fact that the USA has an extensive production of the military rations, therefore country offers a wide variety and diversity of MREs to their troops, – the menu of US MRE (by time of the interview) comprised 25 variants Therefore, as speculated by the interviewee, in this view the wide variety of options of USA MREs increased chances and likelihood of content-wise overlap with Ukrainian MREs.

Soldiers commented extensively on different NATO MREs more broadly highlighting what they referred to as “cultural difference” between them. One of the interviewees, for example, mentioned that in comparison to Ukrainian MREs, which always include a liquid dishes (such as soup), the NATO MREs variants he had encountered (as listed by him specifically, – USA, Polish, Danish, German, Swedish, and British) contain no such items. Additionally, most of the interviewees emphasized a marked decline in the quality of Ukrainian MREs since the beginning of the Russian full-scale invasion of Ukraine; they could recall that the Ukrainian MREs reached a “peak” in terms of their quality in 2021, when offering eight to nine different dishes, convenient packaging, and integrated self-heating mechanisms that allowed soldiers to warm their meals in the field settings. By contrast, the onset of Russia's full-scale military assault on Ukraine in 2022 triggered the rapid demand for mass production of MREs to supply the frontlines, which significantly compromised the quality of these MREs. As reported by the interviewees, these included a notable reduction of menu options (from previous eight/nine to only three basic dishes), as well as removal of self-heating mechanisms from the packings. Participants attributed these changes to raised practical necessity of the Ministry of Defense of Ukraine to sustain a vastly expanded military force at lower cost and under the urgent circumstances of wartime.

What is important for the scope of this Master’s thesis, is the fact that (as reported by interviewed Ukrainian soldiers) MREs of the Ukrainian production consist predominantly of the dishes rooted in Ukrainian national cuisine, – examples mentioned include various porridges, soups (such as Borscht, or pea-soup), and meat pâtés.

6.2.2.2.2. Difference in NATO’s (RTO-TR-HFM-154) MREs Through the Lived Experiences of Ukrainian Soldiers

According to all soldiers interviewed in the framework of this research, NATO MREs (constituted under RTO-TR-HFM-154) differ significantly by country of origin in terms of their practicality and value on the Ukrainian battlefields. Leveraging the theoretical framework of this Master’s thesis, these differences could be understood through the notion of the scripts (Akrich, 1992), – the scenarios speculated by the RTO-TR-HFM-154’s Working Group for

one of the other types of MREs seem to align more closely with the realities of Ukrainian battlefields in some cases than the others. This importantly for this Master's thesis implies that the type of soldiers' bodies that were cared for (de la Bellacasa, 2012) in the scripts of certain MREs might more closely reassemble the bodies of the Ukrainian soldiers than others. Speaking practically, this results in a hierarchy of utility, where some NATO MREs have higher value and preferences in the eyes of the Ukrainian soldiers than others. Among these, Ukrainian and US MREs were identified by the soldiers as the most practical due to their compact size and lightweight, which make them easier to store in backpacks and carry across the battlefield. Contrastingly, German and Danish MREs were regarded as the least practical due to their bulky packaging and heavier weight, which complicate storage and transport of them in frontline conditions. As one soldier emphasized German MREs are practically large size and box-like shaped, – this design makes them highly impractical and generally unsuitable for operational mobility in active combat zones.

Remarkably, Austrian MREs, – despite originating not from the RTO-TR-HFM-154, and not compliant with NATO standards, – were repeatedly highlighted by all of the interviewees as an example of most practical MREs packaging. Soldiers stressed that the vacuum-packed design of Austrian MREs make them compact, lightweight, and thus especially convenient for the battlefield's conditions, – this makes them of a special value for the mountain infantry military operations: *"Austrian ones are great for the Special Operations Units, they are distributed in the vacuum-packages, and you can take more food with yourself, all the air is taken from the package, and therefore they are very compact – they are like in little briquettes, and it makes them super practical and convenient for packing into the backpacks! Austrians are slightly different in their military planning, they rely on mountain infantry units, and you cannot really carry a lot of heavy packages to the mountains with you, so they really needed to save on volume and space in the backpack; this is what I assume determined the way they look."* (interview transcript – military, participant A).

These findings demonstrate how the practical usability of NATO MREs on the Ukrainian battlefield reveals the biopolitical assumptions (Foucault, 1976) embedded in their design, as constituted within the RTO-TR-HFM-154. These assumptions, inscribed into the RTO-TR-HFM-154's data-constructs of human bodies on the pages of this document, materialize certain bodies as the primary focus of intensified care practice (de la Bellacasa, 2012), while sidelining others. The preferences expressed by the interviewed soldiers make explicit that certain NATO MREs (e.g. as demonstrated above, – those of the USA, Austrian and Ukrainian production) align more closely with the embodied realities and logistical demands of UDF, especially in context(s) where mobility and compactness are privileged.

When interpreted through Akrich's concept of scripts (1992) and Puig de la Bellacasa's conception of matters of care (2012), these MREs emerge as technoscientific artefacts that enact specific situated regime of care originally constituted within the RTO-TR-HFM-154. As the interview data shows, this regime of care (Puig de la Bellacasa, 2017) tends to produce unequal biopolitical effects (Foucault, 1976) by privileging some types of human bodies at the specific battlefield conditions, while marginalizing and neglecting others.

6.2.2.2.3. UDF Soldiers and Biopolitical Care Practices of RTO-TR-HFM-154: Caloric Density, Nutritional Content, and the Embodied Experience of "Comfort food(s)"

The caloric density of the MREs occupied a central place in the discourse examined in this Master's thesis. Not only is it treated in considerable detail on pages RTO-TR-HFM-154 and was a recurring focus in the interviews with nutrition science experts, each of whom devoted substantial attention to this topic, but the issue of caloric density proved equally engaging for the Ukrainian soldiers. All of the interviewed soldiers stated that Ukrainian-produced MREs are more calorie-dense than the NATO rations supplied to the Russian-Ukrainian frontlines. One soldier, comparing Ukrainian and US MREs, estimated that the latter contain roughly one and a half times fewer calories. Consequently, he judged USA-produced MREs as less satiating, therefore requiring soldiers to consume a greater number of packs to meet their energy needs. As the interviewee explained, this amplifies the logistical burden on Ukrainian troops, since carrying additional rations reduces their mobility capacities and operational efficiency in the war battlefield conditions.

The nutritional content of the MREs (e.g. micro- and macro- nutrient compositions) was not extensively referred to by any of the interviewed soldiers. This absence of engagement suggests that at a practical, grass-root level perspective, UDF soldiers do not interact with MREs through the lens of nutrition science, – the technical categorization of the food neither informs nor influences their experiences with the MREs foods. As lay users, the interviewed soldiers tended to prioritize immediate, tangible concerns, – such as taste, digestibility, and familiarity – over any abstract nutritional metrics behind the MREs design.

When the interviews turned to the personal preferences of the Ukrainian soldiers, all participants stated a clear preference for the (native to them) Ukrainian MREs over any NATO-supplied alternatives. This preference extended beyond the nutritional content of the rations. Some soldiers noted experiencing fewer digestive issues with the Ukrainian MREs compared to NATO MREs, specifically those originating from the USA, Poland, Denmark, Germany, Sweden, and the UK, – countries represented in the RTO-TR-HFM-154's Working Group, which contributed to the construction of the data-consults of human bodies

underpinning these MREs. Notably, two soldiers identified the vegetarian variant of the USA MREs as least favorable on the Ukrainian frontlines, – not based on their personal tastes, but as an observation of the broader preferences within their military units.

What became an important finding is that all interviewed soldiers attributed their preference for Ukrainian MREs not exclusively due to the practical considerations, but also to affective ones. They narrated that the food-items included in these MREs very closely reflect Ukrainian traditional cuisine, providing a sense of home, familiarity and comfort that extends beyond mere sustenance, – this resonates with the reflections of one expert-interviewee, who stressed that it is “not just to make a machine going”, bringing us back to the matters of care (de la Bellacasa, 2012). The Ukrainian MREs shape how UDF soldiers embody and endure the war battlefield conditions through evoking the sense of familiarity, and sentimental attachment to home, – this affective dimension cannot be satisfied by NATO MREs (constructed according to the RTO-TR-HFM-154), as the bodies of Ukrainian soldiers were not considered by the RTO-TR-HFM-154’s Working Groups. This demonstrates that the caloric and sociocultural composition of military MREs extends far beyond technical specifications, – they script (Akrich, 1992) specific bodies embedding not only nutritional regime, but also the affective attachments that render certain soldiers’ bodies more cared for than others (Puig de la Bellacasa, 2017). Such a biopolitical care practices (Foucault, 1976; Puig de la Bellacasa, 2017), as illustrated in this subsection of the thesis, became inscribed into different MREs as an end product of the discussion held on the pages of RTO-TR-HFM-154 both materially and symbolically.

6.2.2.3. Distribution of MREs as a Mode of Biopolitical Governance

The circulation of the different types of MREs on the frontlines of the Russian-Ukrainian war is a strictly regulated and regimented process. According to the interviewed soldiers, the distribution of the MREs across the military units and operational groups is not random but strategically determined, based on the profiles of each mission, its operational intensity and logistical feasibility. The interviewees stated that certain specialized military units receive specific types of NATO MREs tailored for the particular missions; for example some menus of the USA-produced MREs, characterized by their lighter weight and compact packing, are typically reserved for the UDF units engaged in mobile, or high-intensity military operations. Contrastingly, soldiers performing less physically demanding or more stationary tasks are generally supplied with centralized field-kitchen meals in the second or third frontline zones, or alternatively with more conventional rations (predominantly of the Ukrainian production). Among the special-purpose military units mentioned by the interview participants as

receiving distinct NATO MREs suited to their operational profiles were the Ukrainian Military Intelligence Brigade, and the Air Assault Forces of Ukraine.

As suggested by the interviewees, the MREs distribution system set by UDF commands is intended to match the dietary and energetic demands of soldiers to their functional roles. Assessed through the lens of STS, this organization of military provisioning transcends mere logistics, emerging instead as a mode of biopolitical governance (Foucault, 1976). Within such practices of governance, bodies of the soldiers are neither conceptualized nor treated universally and equally, – rather, they become situationally specific and operatively inscribed. This is exactly within this dynamic where the scripts and scenarios envisioned by the RTO-TR-HFM-154's Working Group, materialize in practice, or in Latour's phrasing "come into being" (2005).

6.2.2.4. Water as a Care Artefact – Hydration Regimen on the Ukrainian Frontline(s)

All of the soldiers informed me during the interviews that according to the standards established within the UDF, frontline personnel receive a minimum of 1 liter of water per person per day in cold environments (during the winter season), and 1.5 liters per person per day in hot environments (during the summer season). They narrated that military troops on the Ukrainian frontlines receive water supplies separately from MREs. The water delivered to the battlefields is typically stored in plastic bottles. None of the interviewed soldiers reported experiencing water deficiency. Some of the soldiers were mentioning that the water supplies stored at frontline positions are generally allocated for multiple purposes beyond drinking, – as as hygiene or cooking:

> *"The standard minimum is 1 liter per 24 hours. This is not technical-purposes, this 1 liter is solely for drinking. Now it is 1 liter as for a winter, and then it is 1,5 liter per day as for summer. This is an absolute minimum. If there is a possibility, they double the amount of this norm. This all depends on the logistic-shoulder, but frankly speaking, it is usually not limited. They do understand that water is the base for life. And so, if there is the possibility, the water is supplied heavily and being stored at the positions in unreasonably huge amounts, so to use it for all the possible life-cases, including to shower, and to stop the fire. This is not under the question, water is always there."* (interview transcript – military, participant B).

The thresholds interviewee outlines, – 1 liter of water per day in winter / 1.5 liters per day in summer, – resonate with the scripts and scenarios articulated in the RTO-TR-HFM-154, which are embedded within the RTO-TR-HFM-154's data-constructs of human bodies and

inform the design of military provisions across NATO's Member States. Specifically, they correspond to the varying environmental conditions of war battlefields and reflect underlying assumptions about the performance and self-regulation of the soldiers' bodies under different temperature regimes. As we can observe here, the hydration regime established on the frontlines of the Russian-Ukrainian war, as it is experienced by the interviewed UDF soldiers, reflects the logic of care that underpins the broader logistic of frontline organization; in this sense water could be conceptualized as a care-artefact (Puig de la Bellacasa, 2017), – an intrinsic component of the biopolitical logic (Foucault, 1976) that governs the survival of the soldiers in the war zone.

7. Discussion

The starting premise of the work of RTO-TR-HFM-154 RTG (in line with STANAG 2937 MED), is not soldiers as a living, sensing, perceptive, ethnically and historically contextualised human beings, but as a numeric entities and quantitative objects, – technoscientific artefacts that could be calculated, parameterized, modeled and standardized within and across the national borders of the NATO's Member States. The RTO-TR-HFM-154's data-constructs of human bodies could be understood as an integrated, multidimensional model(s) in which the assumed by RTG anthropometric and physiological characteristics of the soldier's body, physical activity patterns, environmental stressors, and socio-cultural attributes operate as mutually constraining parameters that define nutritional standards and (other) numeric specifications of the NATO's military MREs.

7.1. What Essentially Are the Data Constructs of Human Bodies Incorporated Into the Design of RTO-TR-HFM-154?

The RTO-TR-HFM-154 does not simply describe the bodies of the NRF soldiers, instead it enacts these bodies/soldiers by transforming heterogeneous and complex human variability into standardized, operable parameters. These parameters do not function as independent inputs, instead the categories upon which RTO-TR-HFM-154's data models of human bodies became constituted are algorithmically and conceptually intertwined: demographic parameters and anthropometric anchors selected by RTG (e.g. age range, sex, body-size percentiles) dictate the imagined body's baseline energy source; assumed PAL of the soldiers (correlated with speculated operational scenarios) scales the total expected energy expenditure; and employed environmental classifications (e.g. cold/hot and high-altitude conditions) impose cardiorespiratory and thermoregulatory adjustments that modify both

suggested energy and micronutrient demands. These metabolic and energetic calculations during the process of data-models construction become further shaped by explicitly non-nutritional constraints, – such as assumed energy density preferences, sensory expectations of the soldiers, and national taste profiles, – which meant to ensure the plausibility of translating strategic nutrient targets of the RTG into acceptable by the troops, field-deployable MREs formats (RTO-TR-HFM-154, Annex J).

Calculations authorize interventions, – executed through the RTO-TR-HFM-154 substitution of the bodies of NRF soldiers into numeric objects is an epistemic move (Knorr Cetina, 1999), which by rendering human physiology governable (Foucault, 2009; Cakici et al., 2020), enabled the agreement between NATO's Member States. As was evidenced in STANAG 2937 MED, these States could not converge on "the soldiers", but they were able to negotiate calories, macronutrients, and energy expenditure, – the body of a soldier, therefore, needed to be made calculatable before it could become governable (Foucault, 1976). The RTO-TR-HFM-154 meant to address this demand by abstracting lived experiences, and physiological variability of human bodies into standardized data models. This epistemic abstractification is not neutral reduction, or simplification of a lived body; it materializes the very process of operationalizing care (Puig de la Bellacasa, 2017), converting soldiers' embodiment into a space of intervention, – and therefore, governance, – where States' coordination efforts, care and control ambitions become entangled under the logic of standardization (Star, 1999; Bowker & Star, 1999).

Methodologically, the construction of the RTO-TR-HFM-154's data models of human bodies implied the staged modeling process, where each factor is simultaneously conditioned by and (in return) conditions the numeric treatment of the others. As this process could be followed through the pages of the RTO-TR-HFM-154, the modeling sequence begins by the selection by the RTG of the reference anthropometrics, – statistical values, which act as markers of central tendencies that define "the standard soldier" of NRF as imagined by the Working Group of RTO-TR-HFM-154. These values become a ground for estimation of the basal metabolism, which later scaled by the coefficients of the (imagined/suggested) activity level, appropriated according to the (assumed) operational scenarios, and modified with the introduction of the environmental factors with the intention to generate the scenario-specific energetic and nutritional requirements. All of these parameters were afterwards synchronized with a number of non-nutritional considerations, specific for each of the States. As was revealed by the interviews with the UDF soldiers, the numeric standards of the RTO-TR-HFM-154's data models of human bodies operationalize the negotiations, which were accompanying the process of their construction, and consequently tend to confront the

logistical, cultural and industrial realities on the ground. Obtained through this Master's thesis research data, allow us to talk about two major consequences entailed by such an integrative logic behind the RTO-TR-HFM-154's data constructs. First, the initial normative assumptions of the RTG, – such as those about the predominantly healthy and physically fit personnel of a demographically male-centered reference, – automatically bias the outputs towards a very narrow physiological archetypes of the human body. This primary reference point directly reduces the interindividual variability and misrepresents those body-types, which fall out of given reference, despite their presence within the actual military personnel (e.g. women, individuals of the older age, and/or non-standard body size). Second, while the achievement of interoperability was claimed to be initial purpose of the RTO-TR-HFM-154 discussions, the inclusion of the national-taste specific sensory parameters (as observable in the MNDM Matrix), despite being instrumental for ensuring the consumption compliance, clearly created a number of design-related tensions between the Member States. Consequently, the data models design had to simultaneously ensure the cross-cultural taste acceptability and adhere to the standardized numeric targets, therefore necessitating a number of compromises. Nevertheless, the findings suggest that these outcomes are deliberate decisions of the RTO-TR-HFM-154's Working Group. While the complexity and fluidity of the living body fragmented consensus in STANAG 2937 MED, the establishment of the data constructs of human bodies enabled collective understanding in RTO-TR-HFM-154, – what could not be standardized simply disappeared from the RTO-TR-HFM-154's data models. This allows one to assume that the document does not misrepresent the soldier's body, but intentionally and deliberately displaces it, creating a human body that best suits for the governance. As a result, the RTO-TR-HFM-154's data models of human bodies could be understood as much as technoscientific artefact as the negotiated biopolitical instrument, whose numeric values emerge from the interplay of scenario-based assumptions, physiological modelling, as well as political and logistical practicalities.

7.2. The Script(s) and Selective Logic of the RTO-TR-HFM-154's Care Regime: Which Body Should Count?

The substitution of the solder's body into calculative entities within the RTO-TR-HFM-154 is a political process, – the RTO-TR-HFM-154's Working Group converge not on an actual bodies of the soldiers, but the negotiated numeric abstractions of them, constructing a common object of care. The care practices (Puig de la Bellacasa, 2012) documented on the pages of RTO-TR-HFM-154 are neither universal, nor *per se* neutral, – they function as a selective tool/mechanism that delineates and specifies which bodies are recognizable and worth of attention, and therefore eligible to be governed and cared for in a wider sense.

The care of RTO-TR-HFM-154 is derivative from the (discussed in the preceding subsection) process of epistemic abstraction and standardization, – care only becomes possible after the body of the soldier is transformed into administrable entity that embodies the criteria for both inclusion and exclusion. Stated differently, the care practices of the RTO-TR-HFM-154 are rooted into the performed within the document epistemic abstraction, which constitutes a script, – (in the Akrich's (1992) interpretation) a formalized set of assumptions of the RTO-TR-HFM-154's Working Group about what an NRF soldier's body is, how it behaves, and what exactly it requires in concrete operational and environmental circumstances for the operational readiness and efficiency. This script behind the RTO-TR-HFM-154's data-constructs of human bodies, presented in detail in the empirical chapter of this Master's thesis, enacts and operationalizes the care practices less as support or protection for an actual soldiers, but as an instrument of selection and alignment, – only bodies, which fall within identified by RTG numeric intervals of metabolic rate, anthropometric, and physiological thresholds are rendered as legible object of governance, while the bodies, which do not fit the established parameters are implicitly deprioritized. This grants the care established through the RTO-TR-HFM-154 with the agency of filtration mechanism, which simultaneously justifies the normative assumption of the RTO-TR-HFM-154's Working Group inscribed into the data constructs, and prescribes the standard for intervention, – it delineates not only what are nutritional and energetic needs of the bodies of NRF solders, but (more importantly) which bodies are legible to be addressed, and which are not. Such logic of selective care (Puig de la Bellacasa, 2012) was also highlighted during the interviews with the nutrition science experts of NHRESS/DHH/IAEA, who emphasized that the numeric values behind the RTO-TR-HFM-154's data-constructs of human bodies seemed to condense physiological diversity strictly within the manageable averages; this suggests that complexities and great variability of human bodies were acknowledged in RTO-TR-HFM-154 only to the extent that it could be administratively planned for. Altogether this illustrates the extent to which the care practices of the document became entwined with bureaucratic rationality.

What is particularly important in this process is that this is not simply a procedure of passive abstraction performed by RTG, but is an active world-making practice (Goodman, 1978; Mol, 2002; Law, 2004): by defining and imposing the numeric standards for which bodies count, the script of RTO-TR-HFM-154 enacts very particular biopolitical rationality, which produces the hierarchy of soldiers' bodies, and established concrete conditions under which the care should be applied, therefore creating and stabilizing a very particular, commonly agreed by the NATO's States regime of care (Mol, 2008; Puig de la Bellacasa, 2012).

7.3. When Calculability Replaces Flesh: Rendering Embodiment Governable in Practice – Identified Conflicts and Misalignments

While the RTO-TR-HFM-154's Working Group managed to successfully negotiate and construct the consensus-based numeric models of the solder's body, the examined in this Master's thesis translation of these models into an actual operational environment of the Russian-Ukrainian war demonstrated a number of significant discrepancies, frictions and tensions. The fieldwork with the soldiers of the Ukrainian Defence Forces (UDF) clearly evidenced that the document's abstraction often fails to correspond to the realities of the lived bodies of the soldiers.

When standardized metabolic templates of the RTO-TR-HFM-154's data-constructs of human bodies face the lived bodies of the Ukrainian soldiers, – each of which are unique in their physiological constitutions, sociocultural experiences, and environmental conditions of the war frontlines, – the mathematical calculations tend to conflict with the chaotic in their nature contingencies and uncertainties of the war battlefields. Obtained through interviews data suggest that these conflicts manifest themselves in multiple ways. Soldiers were reporting misalignments between caloric density of the NATO's MREs and the actual energy expenditures of them during the military missions and operations, along with the frictions between macronutrient content of the different NATO's rations, and the tensions those have with the local Ukrainian eating habits and dietary practices. This surfaces the conflicts between the RTO-TR-HFM-154's data-constructs of human bodies designed to be made governable, and the actual bodies of the soldiers, – living, heterogeneous, sensing, and contextually bounded. The script of the RTO-TR-HFM-154, while being conceptually and methodologically consistent on the pages on the document, is not capable of adequately accounting for given material and performative differences, and therefore establish a control over the variability of the lived bodies of the soldiers.

Central to the scope of the Master's thesis is that the conflicts we have a chance to observe are socially, and therefore politically significant, in the sense that selective consumption, preferences and self-willed adjustments of some of the MREs reported by the soldiers might serve as an example of resistance of lived bodies to the prescriptive governance imposed on them by the RTO-TR-HFM-154, – this, again, demonstrates the limits of the prefigured script, scenarios, and assumptions inscribed into the RTO-TR-HFM-154's data-constructs of human bodies, and how that intended alignments gets disrupted by the real-world complexities. These conflicts clearly underscore (once again) that the deviations, which are not merely accounted for in the design of the data models, constitute a site, where governance

established through the RTO-TR-HFM-154 fails, significantly heightening the life-threatening risks soldiers bodies expose to. Codified as script(s) behind the RTO-TR-HFM-154's data-constructs of human bodies and operationalized through care, normative abstractions embedded into the document are conditioned with compliance of the lived bodies with abstraction(s). Soldiers, whose bodies do not consist with the numeric model experience are either fully, or partially invisible within the RTO-TR-HFM-154's system of care (Puig de la Bellacasa, 2012), demonstrating the conditionality and selectivity of biopolitical interventions intended by the NATO's Member States.

Consolidating the above, the research conducted in the framework of this Master's thesis underscores the co-constructive nature of the script(s) and care of the RTO-TR-HFM-154: as such, care practices define which human bodies do matter, while the script behind the RTO-TR-HFM-154's data-constructs of human bodies defines how those matter. Conflicts, discrepancies and frictions arise when these two aspects confront the complexity and unpredictability of the real lived bodies of the soldiers in the actual environments of the war, exposing the limits and constraints of the performed in the RTO-TR-HFM-154 technoscientific abstraction(s). Collectively, revealed during the fieldwork collisions surface both the power and the vulnerability of NATO's governance approaches. The data constructs of human bodies indeed (in some cases) stimulate coordination and appropriate degree of standardization. Nevertheless, the operational effectiveness of this technoscientific artefact is always contingent upon the alignment or misalignment of the actual lived bodies of the soldiers with the numeric templates imposed on them.

8. Conclusion

The key ambition of this Master's thesis was to investigate the biopolitical construction of human bodies models within the NATO's Research and Technology Organization Technical Report on Human Factors and Medicine No. 154 (RTO-TR-HFM-154), and understand how this document enacts, governs and cares for the soldiers' bodies. Situated within the Science and Technology Studies (STS) sensitivity and the biopolitical theory of Michael Foucault (1976), the research examined the processes of reduction of human body into numeric abstractions/calculatable objects to enable the governance, international military coordination, as well as operational standardization across twelve of the NATO's Member States.

The search for answer(s) to the question “What are essentially the imagined data-constructs of the human-bodies incorporated into the design of RTO-TR-HFM-154?” guided the research and key discussion(s) of the thesis. Three derivative interrelated sub-questions were assisting this key RQ, and became instrumental in situating the case-study of the RTO-TR-HFM-154's data-constructs of human-bodies at the intersections of nutrition and military science, biopolitics, STS, and actual military operations, shedding the light upon different ways standardization mediates both control and care: (1) What is the script enacted within the foundation of the RTO-TR-HFM-154's data-constructs of human-bodies? (2) Which care practices shape and justify the biopolitical constructs of peoplehood in RTO-TR-HFM-154? (3) What are the key discrepancies and frictions between the RTO-TR-HFM-154's data constructs of human bodies and living-bodies of actual soldiers? Methodologically, the designed case-study was approached through the research strategy of muti-sited ethnography of George Marcus (1995), which integrated two key methods of data collection/generation, – semi-structured qualitative interview(s), and the practice-oriented method of document analysis (Asdal & Reinertsen, 2022): while the document analysis was applied for the examination of the RTO-TR-HFM-154 as a site that originates the data-constructs, the two groups of interviews enabled me to follow these models as they travel across different sites and collect accounts of the international nutrition standard-setting experts of the IAEA, and soldiers of the UDF, who were exposed to the nutritional regimes of the RTO-TR-HFM-154 in the warzone conditions.

The data-constructs of human bodies are the central figure of the NATO’s Technical Report for Nutrition Science and Food Standards for Military Operations (RTO-TR-HFM-154); they structure discussion within the document, summarizes key arguments and positions of the Alliance's Member States, and makes a concluding statement. Conducted research demonstrated that the RTO-TR-HFM-154 as a document does not engage with bodies of the soldiers as complex, fully-living, heterogeneous, culturally/contextually situated and sensing, but instead it substitutes the actual corporeal bodies with a numeric models, – a calculative abstract entities and technoscientific artefacts whose physiology could be parameterized, modeled, standardized, and coordinated across the national boundaries of the States participated in the RTO-TR-HFM-154’s Working Group. Only when a soldier's body is reduced to such a numeric abstraction, it becomes measurable, and therefore stable, – for that reason predictable and governable. Nevertheless, this epistemic abstraction is never a simple neutral simplification (Bowker & Star, 1999), instead it operationalizes care (Puig de la Bellacasa, 2012), instituting a concrete framework in which only the type of bodies, which align with pre-defined by the RTG anthropometric and metabolic thresholds are eligible for biopolitical intervention(s), and therefore reciprocative of care. The care-practices of

RTO-TR-HFM-154 therefore, have an agency of filtration mechanism (Suchman, 2007), which encodes a particular assumptions that filter which subjects are to be recognized, – therefore directly delineating which human body counts and worthy of attention, automatically excluding those that deviate from the fixed on the pages of the document normative template. Consequently, RTO-TR-HFM-154's care became materialized as derivative and conditional, framed not around the protection of the soldiers, but rather around the optimization of the operational readiness. As a result, the RTO-TR-HFM-154's data models penetrate the process of decision-making, establishing the document as an effective instrument synchronously applicable for the enactment of technoscientific interventions on the soldiers' bodies and the production of multinational interoperability, endowing the document with a double ambitions.

The RTO-TR-HFM-154 contains a clearly structured script, observable in the framework of this Master's thesis research. As situated within Akrich's conceptual repertoire, who claimed that when designers *"define the characteristics of their objects, they necessarily make hypotheses about the entities that make up the world into which the object is to be inserted"* (Akrich, 1992, p.207-208), the script of RTO-TR-HFM-154's data-constructs of human bodies shapes how the bodies of the soldiers are imagined, understood, and biopolitically managed. Script(s) inscribed into the RTO-TR-HFM-154's data-constructs of human bodies has an objective of integrating this technoscientific object into the world, – it explicitly codifies hypothesis, imaginaries and assumptions of the RTO-TR-HFM-154's Working Group regarding the soldiers' metabolism, physical activity levels, energy expenditure, and micro-/macro- nutrients requirements, therefore practically transforming human bodies into the objects of calculation, and therefore administration and governance. Calculative nutritions within the script(s) of the RTO-TR-HFM-154 are enacted as a standardized tool of knowledge and governance (Asdal & Reinertsen, 2022; Frohlich, 2017; Latour, 2005), – the soldiers are nourished not as a contingent human beings, but as an abstract, numeric, functionally-compatible units, whose adherence to the RTO-TR-HFM-154's script not only dictates their survival chances on the war battlefields, but – what appears to be more important on the pages of the document – ensures alignment across NATO's multinational framework. This logic of technoscientific standardization that materially defines the boundaries of the belonging of the solder's body, rendering it administratively (in)visible highlights how care and calculations are mutually constitutive of the RTO-TR-HFM-154's script, – while care justifies the abstractification and standardization of the bodies, calculations authorizes its operational application. Understanding this became essential for comprehending the biopolitical ambitions of the RTO-TR-HFM-154's data-constructs of human bodies.

This Master's thesis further demonstrated a number of contradictions, conflicts and misalignments, which tend to arise when the RTO-TR-HFM-154's data-constructs of human bodies meet the contingencies of lived experiences of warzone(s). As interviews with the UDF soldiers showed, the script(s) and scenario(s) inscribed into the RTO-TR-HFM-154's data-constructs of human bodies become significantly disrupted when confronting the material conditions of war, – in this case Russian-Ukrainian. As was observable during the fieldwork, the major disruptions and frictions were rooted in (1) the practices of improvised and tactical adaptations performed by the UDF soldiers, (2) unforeseeable environmental circumstances of the field conditions, and (3) the diversity of actual physiological variations of the soldiers' bodies, – which together tended to significantly destabilize the assumptions and scenario(s) embedded into the RTO-TR-HFM-154. The violence of the war, vulnerability of the human body, and messiness of improvisations tend to deviate from the standardized templates developed by the RTO-TR-HFM-154's Working Group, significantly exceeding the predictive capacity of the data-constructs of human bodies. This demonstrates the limitations and instability of the RTO-TR-HFM-154's governance logic. Despite the ability and efficiency of the RTO-TR-HFM-154's data models in ensuring the joint agreement between twelve of the NATO's Member States, in practice these models are not capable to absorb and account for the overarching complexity, heterogeneity, unpredictability, messiness, and materiality of an actual lived bodies of different soldiers in the operational context. Contradictions, conflicts and misalignments emerge simultaneously as a site of adaptation of the soldiers to the conditions and realities of the war, and as a sign of the limitations and conditionality of the RTO-TR-HFM-154's care, – (as outlined) human bodies that conform the numeric template benefit from the standardized care and alignment with the NATO's operational logic, while others remain less visible, and therefore more vulnerable. This exposes the major limits of NATO's technoscientific governance performed through the RTO-TR-HFM-154's data-constructs of human bodies. This Master's thesis argues that this is not accidental, or case-specific phenomenon, but structural, – governance through standardization (Bowker & Star, 1999; Star, 1999; Frohlich, 2017) inherently tends to produce exclusions, omissions, and qualified forms of situated vulnerabilities.

Summarizing the above, the key findings of this Master's thesis demonstrate how the RTO-TR-HFM-154 constructs numeric and standardized data-models of human bodies that substitute the diverse, heterogenous, livable, sensing and culturally/contextually situated bodies of the actual soldiers. RTO-TR-HFM-154's data-constructs of human bodies is the central figure(s) of the document's composition, – they are instrumentalized to confront the central issue around which the RTO-TR-HFM-154 is structured; by transforming this key

issue into the “number issue” (Asdal, 2015), they aim at offering a computational/technoscientific solution to the complex, interrelated factors, which prevented the STANAG 2937 MED Commission to ratify “*one universal combat ration which suits all NATO forces”* (1-1, RTO-TR-HFM-154). Numbers of RTO-TR-HFM-154 are therefore essentially performative, – they were shaped by the definite actors, under certain conditions, for a very specific purpose; they are bringing a particular reality into being and shaping a very specific understanding of human body and how it ought to be governed biopolitically-wise. Remarkable is that after the failure observable in STANAG 2937 MED, the RTO-TR-HFM-154’s Working Group was from the outset to a lesser extent oriented at harmonizing the nutrition composition of the NATO’s MREs directly, but instead aimed at harmonizing the body that nutrition is meant to act upon, – this process fully relied upon the systematic epistemic abstraction, operational scripts (Akrich, 1992), and selective care for certain types of soldiers bodies (but not the others), simultaneously generating both strategic coordination and deeply performative hierarchies of the bodily normativity. Outlined findings allow us to comprehend the RTO-TR-HFM-154’s data constructs of human bodies as a narrative-device, which is meant to concise the story/narrative of RTO-TR-HFM-154 into a comprehensive whole. Drawn further on the Madelen Akrich’s (1992) theoretical framework of the script and Marie Puig de la Bellacasa’s (2012) conceptualization of the care as infrastructural (Bowker & Star, 1999; Bowker et al., 2010; Roth, 2005), the analysis conducted in this Master’s thesis demonstrated how the RTO-TR-HFM-154 materializes the explicit filtration mechanism that acts on distinguishing the “governable soldiers' bodies” from those, which fall outside of the set normative framework, therefore producing very specific form of biopolitical exposure.

This Master’s thesis contributes to the wider STS and military science discourse through demonstrating the boundaries and limitations of technoscientific governance in complex, contingent and heterogeneous environment(s) of military conflicts. Key findings and analysis of the conducted research traced how the human bodies are constructed, stabilized, and maintained through the interplay of practices of data-modeling, standardization, and international coordination, and as a result ultimately become transformed into governable and administrable objects, which simultaneously enable, regulate, and expose soldiers within the lived realities of the war environment(s). This highlighted the co-constructive nature (Michael, 2016) of relationship between the care and calculability, and presented how care (Puig de la Bellacasa, 2012), contextualized within the sphere of the military nutrition governance (Mol, 2008), stops being neither ethical nor medical practice, but instead becomes both political and epistemic technology.

While the policy-documents by type of RTO-TR-HFM-154 remain relatively invisible within the political processes (Asdal & Reinertsen, 2022), they tend to play a central role in governmental procedures. Methodological design of this Master's thesis was therefore aiming at the examination of the large-scale political process, – the biopolitical governance practices of NATO, – with the grounded "down to Earth approach" (Asdal, 2008), which was achieved through the employment of the multi-sited ethnography method (Marcus,1995) as a research strategy. Executed approach of following the RTO-TR-HFM-154's data constructs of human bodies as a metaphor across different sites allowed me to plot *«the relations among power processes, knowledge practices, and modes of subjectivation»* (Lemke 2011, p.119) entangled within and beyond the world(s) of the RTO-TR-HFM-154's data-constructs of human bodies. At the outset, a practice-oriented method of document analysis (Asdal & Reinertsen, 2022) enabled me to attend the material practices of the RTO-TR-HFM-154 and understand how the governance is being enacted through them, by making the active, practical and action-oriented dimensions of this document visible (p.44). Subsequently, two groups of conducted qualitative interviews allowed me to practically follow the RTO-TR-HFM-154's data-constructs of human bodies through the sites of international organisation and an actual war battlefields, which gave me an opportunity to explore the establishment of the politics of selective care of the RTO-TR-HFM-154's, and trace how livable-bodies of UDF soldiers resist the imposed data models. Conceptually, the adopted within this thesis theoretical apparatus of STS was instrumental for comprehending the RTO-TR-HFM-154's data constructs of human bodies as performative technoscientific artefact and meditative means of biopolitics (Fouchalt,1976, 2009; Cakici et al., 2020). Guided by the perspective of Michael Foucault's biopolitics (Fouchalt,1976, 2009), the Master's thesis framed the document of RTO-TR-HFM-154 as an instrument of political administration and governance of the soldier's lives, transforming physiological processes into the calculatable, and therefore governable parameters. Geoffrey Bowker and Susan Star's (1999) theories of standardization and information infrastructure were fundamental for drawing an analysis of how RTO-TR-HFM-154 establishes data-constructs of human body as common infrastructural entity, which is able to circulate across NATO's Member States regardless of disagreements observable in STANAG 2937 MED. Madeleine Akrich's (1992) conception of the script offered the necessary analytical vocabulary that allowed the examination of how the RTO-TR-HFM-154 incorporates a set of specific assumptions regarding the users and non-users of the NATO's MREs, – the imagined/assumed by the RTG soldiers, whose anthropometric and physiological characteristics, activity level(s), and micro-/macro- nutritional needs are encoded into the RTO-TR-HFM-154's data-constructs of human bodies. Lastly, Maria Puig de la Bellacasa's (2012) theoretical framework of the matters of care facilitated the very understanding of the RTO-TR-HFM-154's care not as a

self-evident ethical or medical practice, but rather as a selective mode of world-making delegated to the RTO-TR-HFM-154's data constructs of human bodies as technoscientific artefact.

The research of this Master's thesis unavoidably inhabited a number of limitations of diverse origins. At the outset, methodologically-wise the conducted multi-sited ethnography was limited strictly with the document and the intended interviews, which significantly narrowed the insights excluding the potential non-protocled, internal negotiations, which accompanied the development and establishment of the RTO-TR-HFM-154's data-constructs of human bodies. Next, while the interviews with the nutrition science experts of IAEA managed to provide valuable analogies for understanding the very process of data-constructs negotiations and assemblage, they still could not offer an access to the epistemic culture and corporate context of NATO. The findings of the interviews with the UDF soldiers who were exposed to the nutrition regime of RTO-TR-HFM-154's MREs, despite being rich and insightful, reflect only a situated context-specific perspective(s). Lastly, but most importantly, this Master's thesis represents the analysis of RTO-TR-HFM-154's data constructs of human bodies, which was aiming at foregrounding biopolitical, technoscientific, and infrastructural dimensions of this case-study, which excludes the wide spectrum of other possible perspectives.

As a concluding remark, this Master's thesis was aiming at fulfilling its key ambition by offering the readers an STS-grounded account of how the biopolitical governance of NATO's military troops is enacted, justified, operationalized and contested through the introduction of the numeric models by type of RTO-TR-HFM-154's data constructs of human bodies. Committed to STS reflexivity and rooted in situated, context-specific knowledge, this Master's thesis presents a single interpretative account of how a specific type of data practices shape the governance of life (Fouchalt,1976) in the context of international military cooperation.

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Appendix

Appendix A - Abstract (German)

Diese Masterarbeit untersucht den biopolitischen Konstruktionsprozess numerischer Modelle des menschlichen Körpers, dargelegt im Technical Report on Human Factors and Medicine No. 154 (RTO-TR-HFM-154) der NATO Research and Technology Organization einzelnes und befasst sich dabei mit der Ambition des Dokuments, militärische Truppen als ein einzelnes, umfassendes Objekt von Gouvernementalität zu konstituieren (Scheel, 2020). Verortet in der Sensibilität der Science and Technology Studies (STS) sowie in der biopolitischen Theorie von Michel Foucault (1976), analysiert die Arbeit die Prozesse der Reduktion menschlicher Körper zu abstrakten numerischen / berechenbaren Objekten sowie die materiellen Konsequenzen, die diese Form der Regierung für die gelebten Erfahrungen realer Soldat*innen in Kriegsgebieten hat. Zentrale Ergebnisse zeigen, dass RTO-TR-HFM-154 sich nicht mit den Körpern der Soldat*innen als komplexen, wahrnehmenden, heterogenen sowie kulturell und situativ eingebetteten Entitäten befasst. Stattdessen ersetzt das Dokument reale leibliche Körper durch numerische Modelle – kalkulative Entitäten und technowissenschaftliche Artefakte, deren Physiologie parametrisiert, modelliert, standardisiert und über die nationalen Grenzen der NATO-Staaten hinweg koordiniert werden kann. Kalkulative Ernährung innerhalb der Skripte von RTO-TR-HFM-154 wird als standardisiertes Instrument von Wissen und Regierung hervorgebracht (Asdal & Reinertsen, 2022; Frohlich, 2017; Latour, 2005): Soldat*innen werden nicht als kontingente menschliche Wesen genährt, sondern als numerische, funktional kompatible Einheiten, deren Befolgung der Skripte von RTO-TR-HFM-154 (Akrich, 1992) letztlich ihre Überlebenschancen bestimmt. Die beobachtete Logik technowissenschaftlicher Standardisierung, die die Zugehörigkeitsgrenzen des soldatischen Körpers materiell definiert, indem sie ihn administrativ (un)sichtbar macht, zeigt, wie Fürsorge und Kalkulation in den Skripten von RTO-TR-HFM-154 wechselseitig konstitutiv sind: Während Fürsorge die Abstraktion und Standardisierung der Körper legitimiert, autorisieren Berechnungen deren operative Anwendung. Dennoch übersteigen die Komplexität menschlicher Körper und die kontingenten Umwelten militärischer Konflikte in hohem Maße die Vorhersagefähigkeit der Datenmodelle von RTO-TR-HFM-154. Diese Masterarbeit zeigt die Grenzen und die umfassende Instabilität der Gouvernementalitätslogik von RTO-TR-HFM-154 auf und argumentiert, dass es sich dabei nicht um ein fallspezifisches, sondern um ein strukturelles Phänomen handelt: Regierung durch Standardisierung tendiert inhärent dazu, Ausschlüsse, Auslassungen sowie qualifizierte Formen situierter Verwundbarkeiten zu produzieren.

Appendix B - Statement on the Usage of AI

AI Tool	Work Phase	Task/How was the AI used?	Reason for Usage	Comment and Reflection on the Results
Chat GPT - 5 Mini	Proofreading/ Refinement	The AI was used for proofreading the text on the subject of possible grammar mistakes as well as spelling and punctuation; requests were made for improving the readability and clarity of some sentences and parts of the text	As English is not my native language, the assistance of the AI was needed to make sure that the text is written without any major mistakes and is generally readable and understandable	The used AI tool was indeed very handy and helpful with proofreading the text, identifying and correcting mistakes, as well as making suggestions of how the readability of the thesis could be improved further, – it was still important to be attentive and constantly check and review whether the initially intended meanings and arguments within the revised text were reflected accurately
Chat GPT - 5 Mini	Translation of the Abstract from English into German	The AI was used for translating the Abstract from English into German	As German is not my native language, the assistance of the AI was handy in translating English version of the Abstract into the German language	The translation suggested by an AI was generally accurate, but the another round of corrections done by the native speaker was still necessary