Space exploration meets displacement studies

A disjunctive comparison of NASA astronauts and displaced peoples' journeys

(Refugee Astronaut by Yinka Shonibare CBE, Thomas SG Farnetti. Source: Wellcome Collection.)

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Abstract

Manned space exploration and displacement represent journeys at opposite ends of a continuum, with one venturing beyond Earth for humanity's benefit and the other involving movement within Earth for survival. This thesis investigates the possibility of comparing these seemingly incomparable phenomena and uncovers what such a comparison can reveal about the concept of journey. It employs Lazar's notion of disjunctive comparison, which enables the examination of seemingly incompatible subjects. The comparative analysis operates at two distinct levels: meso and macro. The meso level contextualises and compares the journeys of NASA astronauts and displaced individuals through a hermeneutic cycle, acquiring knowledge at each stage, progressing from space exploration to displacement, and eventually returning to space exploration. The macro level incorporates characteristics identified through multidisciplinary literature analysis in arts, religion, and literature, including origin, destination, duration, resources, actors, purpose, agency, effects, and preparation, to examine and compare the structural aspects of these journeys. By undertaking these comparisons, this research uncovers both similarities and differences, thereby challenging the assumption that journey is a static category. It explores the roles of sovereignty, international cooperation, agency, resources, and actors in these journeys. It also questions the applicability of conventional journey categories like origin, destination, and duration in accurately capturing the nature of a journey. The thesis promotes interdisciplinary connections between space exploration and displacement studies, highlighting the value of comparing these seemingly disjunctive phenomena. It encourages further research questions to deepen our understanding of journeys and their broad implications.

Abbreviations

AI:	Artificial Intelligence
B.C.:	Before Christ
Chat GPT:	Chatbot Generative Pre-trained Transformer
CNSA:	China National Space Administration
CSA:	Canadian Space Agency
DRC:	Danish Refugee Council
ESA:	European Space Agency
GEO:	Geostationary Earth Orbit
IASC:	Inter-Agency Standing Committee
ICBM:	Intercontinental Ballistic Missile
ICMC:	International Catholic Migration Commission
IDMC:	Internal Displacement Monitoring Centre
IDP:	Internally Displaced Person
IOM:	International Organisation for Migration
ISRO:	Indian Space Research Organisation
ISS:	International Space Station
JAXA:	Japan Aerospace Exploration Agency
LEO:	Low Earth Orbit
NASA:	National Aeronautics and Space Administration
OED:	Oxford English Dictionary
OST:	Outer Space Treaty
Roscosmos:	Roscosmos State Corporation (Russian Federal Space Agency)
UCAR:	University Corporation for Atmospheric Research
UN:	United Nations
UNHCR:	United Nations High Commissioner for Refugees
UNOOPSA:	United Nations Office for Outer Space Affairs
WHO:	World Health Organisation
WWI:	First World War
WWII:	Second World War

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1. Introduction

Manned space exploration and displacement, in many ways, can be viewed as different ends on the continuum of journey. The former is movement away from Earth performed by highly specialised individuals and agencies, fostering technological innovation, capturing people's imagination and propelling mankind towards new definitions of limit. The latter is movement within Earth's surface, affecting unprepared individuals forced to leave everything behind, embarking on uncertain paths, lacking support, in dire conditions and who are constantly facing social, political, and financial challenges.

Linking these two fields seems contradictory in principle as they apparently sit at opposite sides of journey experiences. It is a comparison not self-evident and never considered before as stretching theoretical explanations and lacking an appropriate framework to research and analyse it. The lack of literature underlines the novelty of the topic - after all why should the two fields have anything to do with each other? It warns against the risk of entertaining only an interesting thought without a real chance of corroboration, of its feasibility, appropriateness and defying common sense. It sets a high bar towards the exploration of potential links between the two fields.

Following these considerations, the aspiration is to find new shareable strategies by comparing fields never looked at together that might lead to cross-application benefits, useful applications or fresh solutions. The forthcoming analysis sets out to research, identify, and propose a theoretical approach comparing displacement and space studies. The underlying idea is to understand if there could be shared traits or dimensions of analysis between the two categories of people found in the respective settings, astronauts and displaced. The interest of this comparative research is motivated by the challenging aspect of theoretical analysis, forcing it to employ a high degree of creative thinking to build and define a language and framework of understanding when approaching two subjects that are never analysed together.

This paper proposes to see manned space exploration and displacement as journeys to understand if they might have specific traits that can be examined to compare how their articulations work in the respective settings. By employing the concept of disjunctive comparison and pre-existing interdisciplinary literature on the thematic of journey, the aim is to identify these potential traits for the analysis and compare them to space exploration and

displacement. Thus the underlying research question is: "*To what extent can human space travel and displacement journeys be compared as disjunctive fields? How can this expand our understanding of the concept of journey?*".

The research considers the experiences of NASA astronauts and displaced populations. It proposes dimensions of analysis shared by the two subjects to understand how their articulations can enrich the current understanding of the two fields when thinking about journeys. By doing so, it becomes evident if the two fields can be conceptualised together and provide grounds of comparison and further understanding or if the theoretical exercise is destined to fail due to the innate differences of the two. Yet, the research itself can provide further theoretical groundwork to develop new questions around the two fields, contribute reflection on alternative strategies of analysis and general feasibility of linking the two disciplines. It can pave the way to re-imagining the relationship between disjunctive academic fields of investigations by pushing theoretical boundaries leading to uncharted conjectural realms.

The following chapters will explain the research design and motivation, methodology used, and provide a first contextualisation of human space exploration and displacement by comparing the two fields at a meso level not in a causal or correlative way but to see what each can further contribute to the other current understanding of journey. This comparison is sustained by relevant literature pertaining to the two fields and is divided in sections about the history of space exploration and displacement, what we are referring to when saying space and displacement, the actors, the respective frameworks and environments, and future trends.

It is followed by a chapter dealing with the macrotier analysis where I will examine how a journey is conceptualised and understood in other fields to propose macro theoretical dimensions to compare manned space exploration and displacement journeys and their articulations. The dimensions identified after examining pre-existing literature are: point of origin, duration of the journey, destination, resources available, actors involved, preparedness, effects of the journey, and purpose of the journey. These dimensions stem from using the Oxford English Dictionary as first defining tool and then by analysing how the concept of journey is presented and examined in fields of humanities, namely arts, religion,

and literature. These fields represent comparable fields articulating and examining human aspiration and creativity when addressing the theme of journey.

Lastly the paper provides critical reflections and suggestions promoting a stronger collaboration between human space travel and displacement studies, by looking at them beyond their disjunctive natures as they represent new interdisciplinary grounds of further research and analysis.

2. Relevance and Motivation

The following section aims to record and lay out the motivation and thought process behind pursuing a never before-done counter-intuitive research. It provides a recollection of how I came up with the research question, how the research was theorised and the worth of even considering the two fields of examination as potentially related.

2.1 The birth of an idea

This research stems from a personal interest in the fields of displacement and space exploration studies. During a semester abroad, I took an elective on Astropolitics, the study of space geopolitics, the international relations among its players and the new trends taking place in the wider space landscape. Fascinated by the topic, I was struggling to see how I could combine this newly discovered interest with my main field of study, refugee studies. I could sense potential for connections but could not pinpoint what they were and how they could look like. This was further confirmed while attending the Czech Space Week, where I started interacting with private, institutional and academic actors involved in the space industry. There, I realised that people were baffled by the idea of having displaced populations and astronauts in the same conversation, with the majority of my interlocutors assuming I was supporting the idea of sending displaced peoples and refugees to space. This led me to ponder how the questions I had in my mind could be articulated, why they were relevant and whether something could be done to bring these two actors, astronauts and displaced, in the same conversation if not in the same room.

After tinkering with the idea for a while, I came up with a question stemming from curiosity: "*can an astronaut feel displaced once back on Earth?*". This question kickstarted a sequence of reasoning around the subject given the extreme difficulty of providing an answer. The

material is not easily accessible as astronauts are extremely busy people, very difficult to approach without establishing structured communication channels which can be time and resources intensive. Also, I thought that it would have been difficult to entice interest on the topic as I could not fully articulate it myself. Furthermore, the experience of a displaced person cannot seem more remote than the one of an astronaut as confirmed by the puzzled looks of my interlocutors at Space Week.

2.2 Crafting the Research question

I started doing some preliminary research on the subject and could not find anything addressing or establishing a link between these two fields: human space exploration and displacement. The lack of literature stirred further questioning and reinforced the idea of establishing some groundwork to explore whether manned space exploration could benefit from experiences in displacement and vice versa. I managed to briefly explore the idea by writing a short university assignment at the end of the Astropolitics course, yet it was nothing more than a class project that did not satisfy my growing interest in the topic. At the same time, I had to propose a master thesis synopsis and decided to take the risk and propose the research topic to a supervisor without knowing the chances of approval. Thankfully the topic captured the interest of a (brave) supervisor and after approval, I set to write this paper. However, given the limited time to write a master thesis alongside a full time job, it became clear that a strategy was needed.

Therefore, I stripped the two phenomena to their bare core, and asked: "*what are they?*". The answer in my mind was:" *journeys through time and space"*. Armed with this realisation, I started to ponder what it meant, how to analyse it and if anything could come out of it. The challenge was establishing a link between two radically counter-intuitive phenomena and questioning why this theoretical comparison was never done before and ultimately what it could have led to. The more the reasoning, the more the thoughts followed a path towards the research question highlighted above: "*To what extent can human space travel and displacement journeys be compared as disjunctive fields? How can this expand our understanding of the concept of journey?*".

2.3 How to analyse the impossible?

Yet, there was still the problem of how to describe the two journeys and how to set forth to analyse them. One thing is entertaining an interesting thought, another is to make a theoretically informed consideration and create a systematic framework to think through. Confronted by the lack of literature available and after consultation with my supervisor, Lazar's concept of disjunctive comparison was selected as a systematic framework allowing me to explore the data without aiming to draw causality or correlation. instead it permits the comparison of the two fields to spark new questions and reasonings.

I also incorporated my own framework alongside the concept of disjunctive comparison to analyse what a journey was, starting from the Oxford English Dictionary definition and then examining other disciplines that deal with journeys. The disciplines selected, arts, religion and literature, all belong to the field of humanities and were chosen because of dealing with human aspiration since ancient times. They seemed the most relevant fields as deeply interconnected with the concept of journey as examining different people in different contexts, how they move and navigate through life and how they communicate these experiences.

By applying multidisciplinary literature, the task at hand was then to identify if there were any traits suitable for the analysis and comparison of the experiences of displaced and astronauts. The empirical data for the research, through this approach, became the existing literature enriching the examination of displacement and space exploration.

2.4 In defence of Social Sciences

Moreover, the research is taking place in a specific academic period of time where social science is under increased pressure to deliver results. Frequently, attention and funds are directed towards STEM subjects as capable of providing tangible outcomes for some of the most pressing issues faced globally such as overpopulation, financial shocks, climate change or bacterial resistance. This results in resource allocation imbalances favouring specific disciplines over others. It presents a serious threat to the survival of humanities and social sciences as a whole, unless they prove to be still relevant and of use. In this context, this

paper can be seen as an additional attempt to bridge a growing gap between academic fields, specifically between STEM and social sciences.

It can highlight the valuable theoretical richness of social sciences exploring concepts without compromising on scientific rigour. It can act as a vehicle for further considerations of how a conversation between disciplines can articulate itself and promote fertile grounds to examine and identify new perspectives and paths to understand human nature bringing it at the same level of technological, engineering, or medical advancements. Thus, instead of going against the relevance of STEM disciplines, social sciences and humanities can be a valuable and resourceful partner towards advancing the implications of a higher scientific society by asking questions, bringing new perspectives, and providing sound theoretical reasoning to back them up.

Set in this intersectional juncture of fostering interdisciplinary thinking, this research can present a different angle to consider how a relationship between the fields can be articulated and how a research relationship can be shaped. Drawing from both sides, the project aims to showcase how a subject such as displacement studies can find relevance in the context of a sector highly dominated by STEM research and vice versa, creating a first foundational understanding and exploration to further address theoretical approaches employed, strategies, similarities and differences. Only by employing alternative strategies and thinking, creating interdisciplinary links and displaying its function in our modern society can social sciences still play a crucial role in academia.

2.5 Outlining the structure of the paper

By dividing the paper into clear chapters and subsections I aim to guide the reader through a theoretical journey unfolding the reasoning behind choosing such a challenging and counter-intuitive topic. After chapter 3 elaborating on the methodology employed to gather and analyse data, chapter 4 draws a first comparison at the meso level (group level) between space exploration and displacement. It starts by dwelling into the journeys of astronauts to equip the reader with a firm grasp of the history and current status of the field. I then move to the journeys of displaced people to see how those characteristics found in space are articulated in displacement and circle back to space exploration to identify if this comparison has recognised any new angles to look at the experiences.

The following chapter then presents the comparison at the macro level by providing a first definition of what a journey is by employing the Oxford English Dictionary as a starting point and then dwells on different disciplines taken from humanities to better identify traits of journeys. After presenting the disciplines used, then the traits of analysis are introduced and the comparison between the experiences of displaced and NASA astronauts is examined to highlight what can be learned from this comparison. Lastly, critical reflections and further research proposals articulate potential gaps in the paper and suggest potential points of future thinking around the subject.

3. Methodology

In this chapter the methodology of the research is explained. Primarily this paper relies on a qualitative approach as the concept of journey was examined in a theoretical fashion leading to an inductive approach difficult to measure with hard data found in quantitative research. The methodological framework used is that of a comparison between displacement and space exploration following Lazar's concept of disjunctive comparison, employed on two levels of comparison the macro and meso. The comparison, in particular in the case of the mesotier, results in a hermeneutic circle used to examine the data and enrich the future understanding by reiterating the characteristics of examination starting from space exploration then applying to displacement and back to space exploration.

To support the comparisons, this paper employs secondary and tertiary data (e.g. encyclopaedia, dictionaries) for the majority of its analysis with some primary sources in the form of podcasts' transcriptions and newspaper articles. While the project is qualitative in nature, during the research some sources of quantitative data were still employed such as the budget of NASA or UNHCR to provide a better sense of their ranges. Given the theoretical nature of the topic researched, the approach used, based on disjunctive comparison, was inductive as an observable phenomenon opens to shared characteristics recognition and then allows us to draw conclusions from them, without drawing causality or correlation but understanding what the data can tell us (Lazar, 2012).

3.1 Research Design

In order to produce a social sciences relevant paper, a systematic conceptual framework was needed. In this section, the theoretical framework behind the research design is explained by elaborating on the concept of disjunctive comparison based on Lazar's work and the use of an hermeneutics circle specifically at the meso (group) level of comparison between astronauts and displaced.

3.1.1 Disjunctive comparison

Developing a systematic research framework was quite a challenge for this paper, it was not always evident what type of comparison was made and how it would have been articulated. Especially when analysing these two very different counter-intuitive disciplines. Thus, in this research I use the concept of disjunctive comparison devised by Sian Lazar. The author argues that instead of doing the usual comparison when addressing two different subjects and pitching their empirical data against one another to see where the difference or similarity lie, the two subjects should be placed one next to the other, to make the data "*talk to each other"*, to see differences *and* similarities (Lazar, 2012, p.351).

Making this disjunctive comparison is particularly useful when comparing the incomparable, when comparing two items that are never compared together because belonging to two vastly different groups (Lazar, 2012). This type of comparison leads to questioning our own very assumptions of the two subjects analysed because instead of reasoning on the lines of "more or less", "before or after", the disjunctive comparison allows us to unveil if there is something that can be learned from pairing unpairable topics (Ibidem). It allows us to raise questions that would not be possible through another form of comparison as the two subjects would just be used to highlight differences or similarities (Ibidem).

Additionally, a disjunctive comparison, being inductive in nature, does not address correlation or causality, instead it limits to look at similarities and differences to see what can be discovered from them (Lazar, 2012). For this research the framework of disjunctive comparison is used both for the meso- and macrotier of research, allowing me to metaphorically sit the two subjects side to side, and see what the resulting conversation is. This enables us to understand how the topics can add to one another at the meso level and what this comparison can add to the concept of journey at the macro level.

3.1.2 Hermeneutic circle

While this research is inductive it is also interpretative in nature as through the data gathered, the phenomena examined are enriched and unveil their meaning and significance by employing the hermeneutic circle (Egholm, 2014). Hermeneutics as an approach enables us to acknowledge the potential changes of the understanding of a given phenomenon (Egholm, 2014). It becomes self-evident, especially at the mesotier of comparison, as the data taken flows from space exploration to displacement and then back to space exploration to enrich and deepen our understanding of the subject at hand.

So, the hermeneutic circle is reiterated by this loop, as one's pre-understanding is changed by new data, resulting in building a new understanding, which is supported by additional data, and it continues to broaden the comprehension of the topic examined (Egholm, 2014). In this research the initial understanding of displacement and space exploration is subjected to a comparison (actually two, meso and macro levels) resulting in new data to understand the topics which can be compared again to enrich the previous understanding and so forth.

3.2 Methods

The initial search was conducted using a systematic literature review to showcase the current state of academic literature exploring the links between the two disciplines. Keywords such as "displaced astronauts", "displacement in space journey", "common traits of displacement and space exploration" were used among others. After realising the lack of literature linking space exploration and displacement studies, I decided to follow a twofold strategy of research focusing on different areas pertaining to the research question, allowing me to benefit from both a broad and specific data search. In this paper I will refer to them as macro and meso tiers of research (Saylor Academy, 2012). Macro as this tier examines the higher level of astronauts and displaced interactions with their surrounding structure during a journey (Ibidem). Meso because it examines the two groups undergoing their journeys, astronauts and displaced (Ibidem). The data found in both tiers is then validated through data source triangulation for reliability by way of relying on different data sources such as books, journal articles, and dictionaries and sorting relevance through title and abstract screening.

Below a visual representation of the selection process:

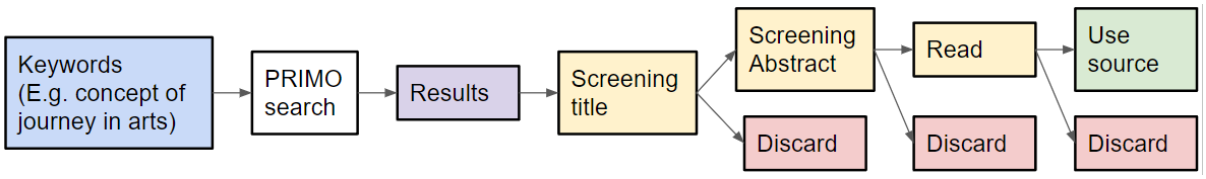

Figure 1: Selection process

3.2.1 Mesotier

The mesotier opened up investigating the specific, focusing on any resources available to determine potential links between space exploration and displacement studies (Saylor Academy, 2012). The mesotier looks at the two subject groups, astronauts and displaced, allowing to pair them through a disjunctive comparison and identify the potential outcomes (Ibidem). When referring to astronauts the space travellers identified were NASA members as data for these subjects is mostly available at the time of the research, other international astronauts, cosmonauts and taikonauts were not taken into account. For this purpose of research and review, a systematic online literature search through PRIMO was conducted to ensure transparent reporting of the existing literature.

In the mesotier there are characteristics pertaining to space exploration that have been maintained for displacement and were taken from existing literature exploring the history, framework, implications and other aspects of space travel. They provide a framework to compare how the two journeys can enrich one another. These categories provide a contextualisation of manned space travel and build a foundational understanding of what it means when we refer to space travel, what it entails, its surrounding framework, the specificities of its geography, who are its principal actors (the astronauts) and what is next. These are the blocks to understand what manned space exploration is and how it unfolds but are by no means exhaustive. By using them to understand displacement we can draw a comparison between these two vastly different disciplines and then following an hermeneutic circle we can look back at what is the new knowledge gained from displacement and see if it deepens our understanding of space exploration.

Also for this tier of research, the mesotier, a systematic computer search was performed through the University online search engine PRIMO collating data across databases. The general selection criteria for the search were: “peer-review journals", “open access”, “available online”, “relevance”, and “English”. To further refine the search, the following

combination of keywords were also used “space exploration displacement”, “displaced astronauts”, “space refugee”, “displacement journey in space”, “displacement and space exploration”, “space travelling displacement”, “displaced space farer”, “common traits of displacement and space exploration”, “interplanetary refugee”, “outer space displaced”, “outer space refugee”, and “shared traits of space exploration and displacement”. The aim of this narrower research was to highlight the current state of research focused on bridging the gap between displacement studies and space exploration

The only combination of words producing more than 5 results was “space refugee” with 345 results. However, when the results were examined by screening titles and abstracts, their relevance for the analysis was limited only to the refugee category as none of the sources found was related to the topic of space (outside of Earth). This showcases the lack of literature currently treating displacement and space exploration as two phenomena with potential of interdisciplinary exchange.

This narrowing down to specific words used for the search was intentionally devised to allow replicability and transparency of the criteria and selection. This is to avoid potential bias when examining the data found. However, arguably, a lack of sources prevents topic specific bias as there will not be any pre-existing influence determining the selection of the material to analyse.

3.2.2 Macrotier

The macrotier was designed to investigate the broader literature dealing with the concept of journey and its examples found in multiple disciplines belonging to humanities (Saylor Academy, 2012). The disciplines identified are arts, religion, and literature. These disciplines were identified as being comparable due to their intrinsic nature of exploring human ambition towards representation of journeys in different ways. They all involve expressions of human creativity that concern the movement of people, how they move, what are the outcomes and how these experiences are communicated to others.

The university PRIMO online search engine was the tool employed to conduct this level of research. The aim behind this macrotier is to understand from a broader perspective how and if the concept of journey has been employed in existing literature to build a theoretical background relevant to the identification of traits of analysis. Combined with Lazar’s

framework it allows one to understand what can be learned from the higher framework in which the two groups are found and if something can be highlighted by this comparison.

The starting point of the macrotier research was to identify the definition of journey using the Oxford English Dictionary to understand what categories of knowledge could be employed when analysing relevant literature found. The OED was used given its role as the main repository of the English language. By providing a codified definition of journey it acted as the first research tool to understand relevance of pre-existing multidisciplinary literature and benchmark to compare the sources found. Therefore it represents the first layer of understanding to then build and filter the material sourced.

The second step was to conduct a systematic literature analysis during the macrotier research. However, due to the volume of material available for each single area of focus (religion, arts, and literature) reviewing each single individual lead would have exceeded the time span of this research.

Thus, the whole search was conducted by employing the Aalborg University Library research online engine called PRIMO which collates material and data available cross-sector and discipline. It grants access to multiple online databases through the University credentials, allowing to filter them by field of interest. Additionally, it allows to refine research criteria related to access, peer-review, language, date, type of publication, and subject. The general selection criteria for the search were: “peer-review journals”, “open access”, “available online”, “relevance”, and “English”. Then for the search itself several combinations of words used included “concept of journey in religion”, “concept of journey in literature”, “journey in art”, and “what is a journey in humanities”. Then I selected those records deemed as relevant by screening their eligibility after examining their title and abstract and comparing them to the OED definition.

These combinations of words were devised to screen irrelevant data allowing to focus on a specific discipline. The reasoning behind it was to still keep the search as broad as possible to avoid excluding potentially relevant material while at the same time narrow the results number to make an efficient use of time. Also, these combinations were selected to ensure the sources found were reliable for the paper and allowed for replicability of search. Moreover, the combination of words used were applied to each discipline of research such as the

wording “concept of journey in” + discipline, again this was done to ensure transparency, replicability and relevance of the findings in combination of screening their titles and abstracts.

3.2.3 Employing an Artificial Intelligence Chatbot (Chat GPT) for research

Open AI developed a software, Chat GPT (Chatbot Generative Pre-trained Transformer), employing Artificial Intelligence to respond to users queries (University of Cambridge, n.d.). The user can establish a conversation with the Chatbot and it will reply to the inputs simulating a human interaction through a language model (Salvagno et al., 2023). The AI can perform rewriting, research and proofreading tasks, it is constantly improving through machine learning and other strategies to provide better interaction and more accurate answers to users (Kalla & Smith, 2023). It can be used for research purposes as it can find, summarise and organise sources and data (Salvagno et al., 2023). Employing Chat GPT to perform academic research can potentially make the process more efficient and effective by reducing time and resources requirements (ibidem; Kalla & Smith, 2023).

During the literature research it became evident that the scope of research was either too specific as in the case of links between space exploration and displacement studies or too broad such as identifying journeys analysis in the fields chosen. Thus, in order to optimise and make the sources selection process more efficient, I devised a strategy employing Chat GPT to find and list the most important accounts of journeys in the respective field, to benefit from a high level of customisation of research.

The process seemed promising to identify quickly and reliably relevant papers, articles, and literature on the topic at hand. However, while it seemed promising at the beginning, using Chat GPT led to incongruous data and unverifiable sources. When the AI was questioned, it was simply apologising for providing inaccurate information. It became quite clear that for this type of research where existing literature is still scarce or extremely abundant, the potential gain in efficiency is outweighed by the risk of unreliability. This strategy for literature and data gathering was dismissed after two attempts. It was deemed as too time-intensive despite its intention to the contrary.

3.2.3 Triangulation

The current research mostly relied on a qualitative approach of analysis. In order to provide credibility and reliability, the data and sources used need to go through a process of validation. For this purpose, the strategy employed was to triangulate sources for the respect and application of the four criteria of trustworthiness, namely confirmability, dependability, transferability and credibility (Bryman, 2016). Triangulation as a research approach allows to prevent the insurgency of bias as it enables the employment of different sources, theoretical perspectives and mixed methodology in a research (Heale & Forbes, 2013). It grants the validation and verification of the findings through the combination and display of different strategies (Bryman, 2016). Additionally, triangulation is suitable to analyse interdisciplinary research and can provide a broader and deeper understanding of the subject examined (Olsen et al., 2004).

Thus, in the project, triangulation is resulting from referring to different sources across primary, secondary and tertiary literature. Primary data was taken from podcast transcriptions and news articles recounting direct experiences related to experiences of journeys. Secondary sources included in this paper are textbooks, peer-reviewed journals, reports, and organisation websites. For the last category, tertiary, the sources employed were dictionaries, encyclopaedias and more dated books.

3.3 Limitations

The methodology at hand presents some limitations, below are the ones identified.

Firstly, narrowing the selection to English only prevents benefiting from material available in other languages that could have brung a new perspective of analysis.

Secondly, employing the university search engine can limit the amount of data found in the research, using a different search engine and different keywords could have provided access to other databases resulting in different data for the analysis.

Thirdly, choosing disjunctive comparison as the framework of comparison while inductive in purpose might still open to unintentional deductive assertions that operate a comparison on the lines of similarities or differences instead of similarities and differences.

Moreover, the selection operated at macrotier level highlights a further selection criteria operated by the author to narrow down what was the most relevant piece of literature for the analysis when screening abstracts and titles. While it was corroborated by the employment of triangulation to ensure reliability, this could have led to the exclusion of material presenting different perspectives surrounding the topic of analysis.

Lastly, the tentative employment of Chat GPT highlighted the underlying difficulty in finding specific literature to analyse the link between space exploration and displacement reflecting the novelty of the topic.

4. Mesotier: comparing astronauts and displaced

4.1 Chapter introduction

This chapter is the first disjunctive comparison at the meso level. It looks at manned space exploration and displacement as the loci of comparison where the two groups selected for the meso research, astronauts and displaced, operate. This is to address the research question through a first comparison of the two subjects to see if they can be compared and what we can understand from a comparison of two incomparable topics at the meso level.

The sections on space exploration and displacement are divided into subsections that help understand how the two articulate alongside these categories. The categories are taken from space exploration and then used for displacement to see how they are represented there. Subsequently, in a cyclical fashion, before the chapter conclusion there is a section pointing back at space exploration to see if anything stemming from displacement can help us understand something more about space exploration and about the comparison of the two fields. In this way the comparison aims to look at the data from both angles and illuminate further questions that can arise and result from the inductive approach of disjunctive comparison following the hermeneutic circle that allows to constantly enrich the interpretation and understanding of the subjects analysed.

4.2 Space exploration

The following section will present a contextualisation of space exploration, with a focus on manned missions, and how it developed over the years since its inception. The section is divided in subsections relevant for the theme of space exploration such as an introduction to its history, what space actually is when we talk about it, its environment, what is the current framework regulating space exploration, who the astronauts are, and then the new frontier represented by Mars. This sets the first comparison with displacement and establishes the first step of the hermeneutic circle within this chapter. By starting from a section on space exploration I aim to guide the reader through a sequential order of topics addressed in the paper, each laying the groundwork for the next.

4.2.1 History of spaceflight

Since the beginning of time humanity has been looking and wondering at stars. There are several examples of cave paintings dating as early as 38000 B.C. showing some tracking of celestial movements (Sweatman & Coombs, 2019). With the development of new technology such as the telescope, stars progressively became a crucial asset for travellers to avoid getting lost and following directions (Penprase, 2010). However, space exploration became attainable only during the 20th century with the advance of technologies allowing humans to fly (Launius et al., 2012).

In the aftermath of WWI, air supremacy became considered crucial for victory in any new war (Biddle, 2019). First works appeared dealing with rocket launches and hypotheses for space exploration, such as Goddard's *A Method of Reaching Extreme Altitudes* or Oberth's *The Rocket in Planetary Science* (Smith, 2014). This kickstarted a growing interest in rocket science, with Germany leading by experimenting with vertical flight (Ibidem). At first it was to break altitude records by sending manned gondolas or balloons as high as possible, then it took a military turn and experimenting became increasingly secretive (Larson, 2006).

The leaders in military rocket science were German scientists, resulting in the development of the first true ballistic missiles *Aggregat 4* and *5*, paving the way for the *V-2* programme during WWII (Smith, 2014). With the German defeat, American and Soviet forces scrambled to obtain scientists, blueprints, documents and data of the German projects (Petty, 2020). The

two superpowers gained access to the latest German discoveries leading to the development of the first *ICBM* (intercontinental ballistic missiles) (Dick, 2018; Smith, 2014).

The development of ICBMs led to the advancement of technologies capable of higher altitude flights, resulting in the launch of the first satellite, *Sputnik 1*, by the Soviet Union in 1957 (Launius et al., 2012; Dick, 2018). It was becoming increasingly clear how strategically important was being able to map and gain data from a higher altitude (Launius, 2012). It was the beginning of a space race, between the Soviet and American blocks, of military and political relevance, with human spaceflight at the forefront (Dick, 2018).

Research and development peaked by resulting in plans to send the first humans to space and then to the Moon. The Soviet Union took the lead on the race by sending the first living creature, Laika the dog, to space in 1957, then the first human, Yuri Gagarin in 1961 and accomplishing the first space walk in 1965 (Smith, 2014; Norberg, 2013). These successes intensified the American efforts to match the Soviet achievements, ensuing a successful Moon landing in 1969 with the *Apollo 11* mission (Dick, 2018). Having lost the efforts to achieve a landing on the lunar surface, the Soviet Union focused on launching an orbital space station, successfully leading to a first manned space station in 1971, *Salyut 1*, followed by the American *Skylab* project in 1973 (Dick, 2018; Smith, 2014). It was the beginning of humans spending longer periods in space.

While interest in sending people to the Moon waned, having a consistent presence in space was rising because of strategic considerations regarding technological, scientific and military advancements (Launius et al., 2012). However, single agencies' efforts were less fortuitous and more expensive than hoped, and the last period of the Cold War saw talks to establish a joint venture to create a space station (Dick, 2018; Smith, 2014). It was the blueprint of the International Space Station (ISS) combining the expertise of US, Canada, Japan, Europe and Russia (Launiu et al., 2012, 2018; Burger & Bordacchini, 2017). Launched in 1998 and manned in 2000 (Dick, 2018).

Currently attention is once again to the Moon with the Artemis I and II missions by NASA and partners aiming to land on the satellite by 2024 and establish the groundwork for permanent settlements, crucial for future missions towards Mars (Turnbull et al., 2023). Similarly, CNSA is aiming to land soon on the Moon to establish a first lunar base for further

missions and scientific research (Silver, 2018). At the same time, exploration to outer space is being considered following a strive to understand more of the Solar system, develop new technologies, and understand the feasibility of longer human spacefaring (Turnbull et al., 2023; Stuart, 2013).

4.2.2 What is space?

However, it is necessary to take a step back to understand what we are talking about when examining space. There are differences between near space and outer space, or between different orbits. Currently there is not a clear delimitation of outer space, it can be referred as "anything above the atmosphere" (UCAR, 2011). Some countries use the Karman line, roughly 100 km above sea level, others set the limit to 80 km but a consensus has not been reached yet (NASA, 2021; Norberg, 2013). In particular, there is not a specific physical boundary that marks the end of the atmosphere and the beginning of space even though the atmosphere is sectioned in layers (UCAR, 2011).

Orbits around the Earth are divided into Low Earth Orbit (LEO), Medium (MEO), High (HEO), and Geostationary (GEO). The first one, LEO, is where the majority of human activity happens (ISS included), all manned spacecraft have been launched here with the exception of the Apollo missions going beyond (Norberg, 2013). It includes anything up to 1000 - 2000 km above the surface (ESA, n.d.; NASA, n.d.). MEOs are those orbits roughly between LEO and GEO and they can be at different heights, normally used for navigation satellites (ESA, n.d.). GEOs are geostationary orbits above the equator (NASA, 2010). It means that the satellite is at a specific distance and location from the Earth, 35786 km, resulting in its orbital period being the same as the Earth rotation, 23h 56m (Norberg, 2013; Bordacchini & Burger, 2019). This orbit is mostly used for weather and telecommunication satellites giving them the advantage of monitoring over a specific area (Launius et al., 2012). Orbits beyond GEO can be considered as HEOs.

4.2.3 Environment

Space is a very specific and harsh environment with its own set of characteristics. It is defined by gravity as the larger bodies create pull effects that shape the surrounding geography, so it is difficult to represent in terms of traditional cartography and landscape references because everything in space is in constant motion (Norberg, 2013). It presents some unique characteristics such as free fall, vacuum, collision, radiation and space weather.

Firstly, free fall has an effect on movement and manipulation as there is always some form of attraction and when growing stronger due to a gravitational pull it can complicate movement (Norberg, 2013). Additionally, the absence of gravity has an effect on human beings even though they can survive in a free falling space. It results in bones and muscle loss, altered blood pressure and fluid distribution among others noticeable changes (Sakharkar & Yang, 2023; Curtis, 2010). Yet the full implications are still unclear especially in the long term.

Secondly, vacuum is incompatible with human life, unless properly shielded. It also presents decompression risks as it puts materials under huge pressure and can cause gas trapped and not properly checked to burst holes in a spacecraft (Norberg, 2013). Additionally, it can lead to cold welding as the air between two layers of material disappear, fusing them together (Dhawan & Kumar, 2021). Thanks to the cosmic microwave background, temperature is generally close to absolute zero (-270 C), but because of a lack of matter in space, decompression would affect an astronaut earlier than freezing (Sutter, 2019; Lea, 2022). Lastly, temperature is affected by surrounding radiation and proximity to colder or hotter bodies and a vacuum environment does not present any shield to dramatic temperature changes (Norberg, 2013).

In space there is always a risk of collision as everything is in constant movement and smaller debris such as micrometeorites are extremely difficult to detect (Launius et al.,2012). While the name micrometeorite seems harmless, they travel at very high speeds causing one of the most dangerous hazards of being in space (Dhawan & Kumar, 2021). Another risk of collision is presented by orbital debris which are constantly revolving around larger bodies with different dimensions and orbits (Dawan & Kumar, 2021). The increased space activities in terrestrial orbits has seen a higher risk of collisions as debris clutters air space.

Lastly, radiation, charged particles and space weather are a very dangerous aspect of space missions (Norberg, 2013). While on Earth, we are shielded by the magnetosphere, which protects from space weather (solar winds) and against solar and galactic radiation and particles (Launius et al., 2012; NASA, n.d.; NASA, n.d.). Galactic radiation and charged particles are an omnipresent threat for space exploration because once left the magnetosphere there is no further protection for living beings and electronics (Burger & Bordacchini, 2017; NASA, n.d.). Within the solar system they can add up to solar radiation and solar storms

causing magnetic storms interfering with our technology, spacecrafts and satellites operability (Launius et al., 2012; NASA, n.d.). In space there might be large outbursts of magnetic waves and particles depending on space weather (Norberg, 2013). There are also some areas called radiation belts around the Earth which represent high radiation density areas where astronauts need to be protected and shielded to avoid possible harm (NASA, 2020).

4.2.4 Current Framework

During the Cold War, the rivalry between the US and Soviet Union to go to space laid the foundation for the establishment of norms and treaties regarding outer space. The most important is the 1967 Outer Space Treaty (OST) which declares space as a non-sovereign neutral territory available to all mankind (Burger & Bordacchini, 2019; Dunnett et al., 2019). The main reasoning of the United States and Soviet Union was to ensure some form of regulations in this new environment related to the incapability of fully controlling it and strategic considerations regarding satellite trajectories (Stuart, 2013). The OST was followed by other agreements and conventions regarding the return of astronauts, vessels, debris, liability, satellite allocations and the ISS (UNOOSA, n.d.).

Despite some legal provisions, the space field is still a space of "*governance without government*" representing the tension between national and geopolitical interests and the necessity to set some norms, especially related to cooperation (Stuart, 2013, p.1; Klinger, 2021). On one hand there are legal tools that are accepted and respected such as the OST and others not reinforced by the main actors, such as the Moon treaty codified by the United Nations Office for Outer Space Affairs but lowly ratified (Klinger, 2021). On the other hand, there are other informal ones based on norms of behaviour that evolved in more structured frameworks such as the satellite communication frequency, started as informal norms and then regulated by the creation of the International Telecommunication Union (Stuart, 2013).

There are some grey areas, especially in terms of future space exploration and employment of resources, even though the OST established the peaceful use of space, the non exclusivity of its use by any country and activities exploiting resources should benefit the entire humanity and be governed by the international community (Dunnett, 2017; Dunnett et al., 2019). Yet, in a field where the number of actors is still scarce and mostly operate under national agencies, it becomes difficult determining where the lines are. In particular considering the lunar settlements planned by NASA and CNSA, arguably that lunar soil would become

exclusively used by the settlers because nobody else could do it (Hickman, 2012). In the case of NASA they are establishing partnerships with other countries to pursue the project, while Roscosmos seemingly partakes in the CNSA project (NASA, 2019; CNSA, 2021). However, it would be difficult preventing sovereign claims (Hickman, 2012).

National interests and scientific research are intertwined, in particular in light of future resources exploitation, commercial uses and increased space exploration (Dunnett, 2017; Klinger, 2021). Therefore, there are advocates for a more robust space regime moving beyond dated treaties such as the OST and encompassing the newer practices and potentials of space exploration as it is being increasingly recognised as a security issue that should be addressed by the whole international community together (Burger & Bordacchini, 2019; Mineiro, 2011).

4.2.5 Actors

Astronauts as a group are still a minority compared to the world population. The total number of people who went to space is currently around 600 (including those who were part of commercial flights) (Roulette, 2021). Those people are the 0.0000075% of the total global population of 8 billion (UN, 2022). In the case of the US, 44 active astronauts are the 0.000013% of 331.8 million Americans (World Bank, n.d.; Treat et al., 2020).

When astronauts reach space, their principal location of stay is the ISS which is the combined effort of 5 different space agencies and has recently opened to space tourists (Launius et al., 2012). Only Chinese personnel are not hosted in the ISS, they launched their own space station *Tiangong* after being excluded from the ISS project (Bordacchini & Burger, 2019). On the ISS there have been 266 people to date, spanning across 20 countries with NASA astronauts as the largest group, counting 163 (NASA, 2023).

But who are astronauts? Taking into account NASA's, the space agency with the highest number of astronauts overall, astronauts come from different backgrounds but they either need STEM education or jet piloting experience, making the group an assorted mix of civilian and military personnel (NASA, 2022). While this was inconsistently tracked over time, the majority of NASA astronauts used to be from a specific demographic which was male, white and between 30-40 years of age (NASA, 2022; Treat et al., 2020). This is markedly identifiable in the early groups of astronauts as they were all white males from

military backgrounds as deemed the fittest for space travel and even though the ages varied, the minimum was 25 years (Ibidem).

In 1965 the recruitment process opened to scientists and in 1978 the first female, Asian- and African-American astronauts joined the corps (NASA, 2022). In 1983 the first female NASA astronaut was launched to space, Sally Ride (Treat et al., 2020). The numbers of astronauts varied across time, spanning from 7 people in 1959 to the highest of 159 in 2000 and to the current 44 (NASA, 2022; Treat et al., 2020). Since the beginning of the space programme NASA has sent at least 355 people to space (NASA, 2021). Increasingly, the demographics have changed with more female astronauts and different backgrounds being represented (Treat et al., 2020).

4.2.6 New frontiers: Mars

Recently, attention has been increasingly driven by the potential of exploring Mars for scientific and further outer space explorations (NASA, 2022). Mars missions are way longer than any other conducted so far by humans. They will take on average 18 months back and forth due to the Mars-Earth alignment, adding one year overall to a normal ISS mission (normally 6 months) (Launius et al., 2012). NASA is at the forefront of this drive and in summer 2023, is launching a mission with a first group of 4 volunteers, undertaking a yearlong mission in a simulated environment on Earth to understand the impact and challenges faced by living on the Red Planet (NASA, 2023).

These missions will considerably change the way manned space exploration and the risks involved are understood (Szocik & Tkacz, 2018). They will give an augmented sense of a journey, especially when considering the settings: far from anything known and familiar. When on the ISS Earth is only a couple of days away at any given time while for a Martian mission, each day on the way to Mars is a day further away, adding up to months (Levchenko et al., 2019). This makes any rapid intervention impossible from Earth. Moreover, Mars missions will push to the next level our understanding of the impact of spacefaring on humans because it is mostly uncharted territory (Levchenko et al., 2019). Medical conditions, microbiomes, telecommunication, food and water sustainability, shelter, isolation and remoteness are all being currently studied in a combination of missions on Earth and space (Szocik & Tkacz, 2018).

For now there has not been a clear date scheduled as the current efforts are focused on the Artemis missions aiming to resend humans on the Moon. These missions' success will represent a first step to Mars as the idea is to establish a settlement on the Moon and then launch from there to Mars, being more efficient in terms of fuel consumption and gravity pull (Launius, et al., 2012; NASA, 2022). However, at the moment it is still only theory.

4.3 Displacement

In the following paragraphs the topic of displacement will be treated to provide a better understanding of the phenomenon by using the same categories found in space exploration. This is to see what these categories can reveal about displacement. It is part of the mesotier of comparison seeking to compare the two groups, astronauts and displaced. Also, it is the second step of the hermeneutic circle feeding information to build a better understanding of these characteristics and their relevance in the two disciplines.

4.3.1 History of Displacement

When looking at displacement through the lens of its history, displacement has been as omnipresent in human history as looking at stars. Whenever there has been a conflict, war, instability or natural disaster there was displacement. However, its structured framework is a much more recent phenomenon. Specifically, at the end of WWII, the international community started to codify and create categories of people on the move after experiencing the vast mass movements during and after the wars to better understand how to support them (Banko et al, 2021).

Different categories of people were considered legally moving, such as working migrants hoping to find fortunes somewhere abroad, e.g. the migratory fluxes to the US (USCIS, 2019). Yet, a need arose to identify and provide a framework for those without a recognisable status, those being displaced from their home or place of residence and having to relocate somewhere else (UNHCR, n.d.). The 1951 Geneva Convention started setting the legal and normative foundations for international law dealing with refugees and asylum seekers (UNHCR, 2010). It was further expanded by the 1967 Protocol to cover people affected by events after 1951 and outside Europe, giving it universal coverage (UNHCR, 2010). It was supplemented by additional provisions and further development of international law and human rights. An increased focus on people forced to flee but not crossing any international border, IDPs, led to the establishment of the 1998 *Guiding Principles of Internal*

Displacement which similarly benefitted by additional normative standards developed afterwards (McAdam, 2018; ICMC, 2021).

Currently, displacement is present globally, mostly concentrated in areas of the global South being the most affected by instability and increasing climate adversities (Bank & Fröhlich, 2018). The main hosting countries for IDPs populations are Syria, Colombia, the Democratic Republic of the Congo, Yemen, Ethiopia and Afghanistan while for refugees they are Turkey, Colombia, Uganda, Pakistan and Germany (UNHCR, 2022; UNHCR, 2022).

4.3.2 What is displacement?

When thinking about displacement in terms of its definition, the instinct is always toward examples of forced involuntary movement (Ramsay & Haugen Askland, 2022). Indeed for a vast majority of the people affected, displacement is forced movement to relocate somewhere else. It is represented by the case of refugees and IDPs being the embodiment of people fleeing due to forces outside their control such as persecution, war or natural disasters. Countless examples of displacement can be found, and displacement can happen anywhere and to anyone (Ramsay & Haugen Askland, 2022). Its ramifications and potential are wide reaching and a constant presence in media narratives. Some of the most recent examples were seen in Sudan as a result of escalating violence in Khartoum, those left without anywhere to stay in the aftermaths of the earthquake in Turkey or the flooding in Italy, or those leaving Myanmar due to conflict intensification (IOM, 2023; ReliefWeb, 2023; WHO, 2023; UNHCR, 2022).

Yet, displacement can also refer to a different nature of dispossession. It might articulate at a more intimate level that is less easy to see. For instance, in the case of gentrification of neighbourhoods where the locals are not feeling part of the area anymore, their surrounding feeling unfamiliar all of a sudden despite them having never moved (Elliott-Cooper et al., 2020). It can be represented by people who are born in displacement, not having experienced the displacement in the first place but indirectly living it and growing up with a feeling of not belonging (Im et al., 2022). Or it could be watching the familiar evaporate due to an industrial project in a rural area where a company buys allotments of land before receiving the go ahead from the authorities, the local community in an uncertain situation as they do not know who is selling and leaving and who is not (Ramsay & Haugen Askland, 2022).

While displacement is a complex phenomenon with different implications and understandings, its complex nature underlies the need of not looking only at the common definition of what it might be, it needs a deeper investigation to fully uncover the extent of its ramifications.

4.3.3 Environment

Guiding this section is the question: what can we say about displacement when we look at the environment? Displacement is subject to the geography of its locations, presenting harsher or milder environments. Ending up in the wrong one can result in severe harm, potentially fatal. Considering the prevalence of displacement happening in continents already affected by difficult conditions, the environment can affect a journey in two main ways (Bank & Fröhlich, 2018).

First it can cause displacement (McLeman & Gemenne, 2018). For instance, in the case of fish stock depletion on the coast of Ghana pushing fishermen to begin international journeys to find money to sustain their livelihood and their families (Lucht, 2011). Or in the case of protracted draughts in the Horn of Africa forcing people to move because life became unsustainable (McLeman & Gemenne, 2018). Additionally it can be linked to a more hostile environment in the sense that people are confined in a space that is being exploited against their interest and results in exacerbated conditions depriving them of control over their lives as in the case of the occupied Palestinian territories (Human Rights Council, 2019).

Then there is the environment found enroute, the conditions experienced by the people on the journey. Different journeys can take place in different ways and places, sometimes determined by the resources available to the displaced, sometimes by lack of alternatives (Steele et al., 2009). Thus, often displaced people find themselves crossing unfamiliar environments presenting hostile conditions because they are lacking safer options (D'angelo, 2021). Routes of movement are very varied and can span from deserts as in the Saharian routes to reach Northern Africa to deadly jungles as the Darien one in Panama or from unpredictable seas in the Mediterranean to freezing climate in the Balkans (IOM, 2023; Jovanović, 2018; Bini, 2010; Obi-Ani et al., 2020).

Thus, the environment can have a role both before and during displacement as a cause or further medium of hardship forcing people to carry on their journeys hoping to survive the challenges presented by their surroundings.

4.3.4 Current Framework

The governing framework for displacement identifies categories of people and stems from international definitions, the main ones are refugees and internally displaced people. However, when dealing with the two groups individual states can act following sovereignty considerations especially in case of internal instability and emergencies, preventing international community interventions.

An IDP is considered someone who "*[has] been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border"* (United Nations Commission on Human Rights, 1998). They do not benefit from a specific legal framework, they fall within the broader categories of human rights, international law, and norms (Geissler, 1999; McAdam, 2018). There are some complementary tools such as the Kampala Convention, a regional tool codified by the African Union, which has more a regional validity or the IASC Framework, aiming to provide guidance to the actors involved on long-term and durable solutions to the internal displacement issue (IASC, 2010; Bradley, 2018).

Thus, IDPs are relocating within their same country of residence, therefore still subject to state sovereignty if a central government is still operative and functioning. This creates issues with international interventions aiming to help the displaced because they cannot access a country's territory without permission as it would undermine the state sovereignty under international law (Leenders & Mansour, 2018). It poses challenges to the intervention of rescue missions not only in conflict scenarios, but also in natural disasters. Governments refusing access to international actors might aggravate the situation of the displaced because of the nature of the potential conflict, inability to intervene in a disaster due to lack of resources and infrastructures, or impossibility to prevent general violence (Telec, 2014).

To define a refugee the legal tool used is the 1951 *Geneva Convention* (and 1967 additional protocol) stating that a refugee is someone "*unable or unwilling to return to their country of origin owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion"* (UNHCR, 2010). The Convention has been enriched by other normative tools such as the 1969 Addis-Ababa Convention for Africa or the Global Compact on Refugees in 2018 (Janmyr, 2021).

The first characteristic to consider a refugee as a refugee is to cross an international border, then the asylum and protection process can start while verifying the fear of persecution. The definition does not include the same wording referring to war, man or natural disaster and generalise violence as in the IDP case. The international framework promotes durable solutions to solve displacement such as naturalisation or return when the situation is solved (Can, 2022). However, as binding states, ultimately they are the interpreter of the definition and solutions, and there has been a tendency to interpret it more narrowly than broadly and failing to ensure safe resolutions (Janmyr, 2021). It reflects a general trend of closure towards migration fluxes in the international arena framed within concerns of security and order.

4.3.5 Actors

In displacement we can find very different people according to their necessity to flee. Anybody can be affected by displacement (Ramsay & Haugen Askland, 2022). The two main categories of people found in displacement are IDPs and refugees (including asylum seekers).

IDPs, internally displaced people, are currently 60% of the total displaced international population, with 53.2 million people estimated in mid-2021 (UNHCR, 2022). Their rights are codified by the 1998 *Guiding Principles of Internal Displacement*, a non-binding set of standards regarding protection and rights of IDPs which is recognised as the main international tool drawing from international human rights and humanitarian laws (McAdam, 2018; ICMC, 2021).

If the displaced cross an international border, they can fall within the asylum seeker and later refugee (if granted asylum) categories (UNHCR, 2001). Contrary to the IDPs, refugees and asylum seekers benefit from a binding provision represented by the 1951 *Geneva Convention* (and subsequent 1967 *Protocol*) which establishes the definition, rights and form of

protection of refugees (UNHCR, 1999). The refugee and asylum seekers population was estimated as 34.4 million people as of mid-2022 (UNHCR, 2022).

Yet who are IDPs and refugees? Displacement does not follow rules of demographics, it can affect anybody, anywhere (Ramsay & Haugen Askland, 2022). Within displacement there are people from any background, walks of life, and age. Currently, there are marked hotspots of displacement affecting populations found mostly in sub-saharan Africa, Latin America and Middle East, with Eastern Europe generating an increased number resulting from the current Russian-Ukrainian war (UNHCR, 2022). However, rising living costs and economic disparity worldwide are increasingly affecting populations in countries considered destinations of displacement, thus setting the ground for new displaced populations (Chapple, 2017).

4.3.6 New frontiers: Displacement future trends

Progressively, the international community is recognising the relevance of displacement just by facing the sheer number of those affected, over 100 million people (UNHCR, 2022). Seemingly this number will not decrease in the foreseeable future as a crisis after the other are continuously increasing the pressure of the support system (DRC, 2022). Commitment, will and funding are dwindling also in the wake of internal social inequalities affecting countries considered as unaffected, for instance surging inflation in Europe, the Ukrainian war, and the aftermath of the covid crisis are unveiling the extent of these social divides (World Bank, 2022; World Bank, 2023; Ong, 2023). Additionally, the current system is facing an increased securitisation of displacement, leading to a closure trend undermining durable solutions and safe alternatives (Massari, 2021). The narrative is seeing displaced populations as threats to countries' homogeneity and security, leading to increasingly restrictive measures for the individuals (Lehr, 2018). Therefore, it seems the future trends will only see the displacement phenomenon become increasingly relevant and potentially affect a growing number of people.

4.4 Displacement and space exploration, closing the circle

To continue the hermeneutic circle we will now look back at space exploration with the new knowledge acquired by looking at displacement through the lens of space exploration. This opens up to several considerations to make for space exploration and also for displacement.

Several are in the form of questions as highly hypothetical and will require further exploration and events to happen, such as establishing settlements on the Moon.

Firstly, categories of people do not always include everybody, codifying them is to risk excluding someone, so what would happen if someone on a Moon settlement became displaced? Would the current framework suffice and how would that play out? What would be the sovereignty role? Also being the Moon a non sovereign territory with its unique geography how relevant would be applying a framework such as the Law of the Sea?

Secondly, displacement showcases that while the best intention is to cooperate to create a framework to establish support and norms, ultimately the individuals are still subjected to the will of states. It shares a similarity with space exploration, it being a cooperative field but still subject to sovereign strategic considerations. Yet, additional questions arise in terms of what the future of space cooperation looks like. Especially looking at the similarities of displaced people vs sovereignty and mankind benefits vs sovereignty. On the same line of thought is the case of space cooperation vs CNSA exclusion from cooperative missions. Crucial for this question will be the success of the lunar missions of both NASA and CNSA.

Moreover, still tied to sovereignty, the plurality of actors makes it difficult to avoid sovereign considerations in displacement due to the different interests at bay. When comparing it to the scarcity of actors in space exploration there still are similarities in terms of being subjected to sovereign interests. This seems to challenge the assumption of plurality vs minority easiness of decision-making, so it prompts considerations on the reason that despite the different settings the result seems to be the same. What is driving those interests despite the scarcity of actors in space exploration? Has it already trampled the neutrality of space?

Fourthly, displacement opens up to a more intimate nature of a journey, revolving around the personal perception of being displaced which is not necessarily linked to movement. It points to a difference with space exploration where astronauts do not seem to feel displaced despite spending months in space or in isolation during training. Yet it seems the topic just has not been explored and leads to question if this can happen in space exploration too. Given that the full implications are still unclear in terms of long spacefaring it seems that the question will stay open until we receive a better understanding of it.

Fiftly, the amount and diversity of people involved in displacement showcases a global problem potentially affecting everybody, while astronauts are a minuscule fraction of the world population. Yet, they are still willing to face unknown dangers and health implications, while for the displaced is mostly an unavoidable choice. What could be the reason behind this desire? Can it stem from extreme faith in training and prevention? And if so, is there any way that this prevention can be applied to displacement?

Furthermore, still related to the number of people, the striking difference between the demographics of displaced and astronauts also opens to a conversation regarding what is making it so hard to become an astronaut. Is it still a matter of privilege or is it just an extremely selective process? This opens up for considerations regarding social mobility and the chances of becoming an astronaut for a displaced person.

Sevently, when considering the role of the environment in displacement it has a more active role in shaping the journey of the people involved both on the onset and during the journey. While looking at space, the environment seems to have more of a passive measurable role, addressed by creating tools to avoid its unique dangers. Can the harsh conditions experienced by displaced people help in understanding and preparing those faced by astronauts?

Lastly, to understand the implications of displacement, we need to examine the forces behind its deeper articulations and ramifications, creating theoretical grounds to examine what it entails. This theoretical push is an eye-opener on the necessity of understanding what the categories mean also in space exploration as there is not a unified understanding of what is space, so this leads to questioning what would happen if the notion of outer space changes at some point because the Moon starts to be considered “near territory”.

4.5 Chapter Conclusion

The first comparison between displacement and crewed space exploration highlighted several further points of questioning pre-existing assumptions of the two phenomena, enriching the theoretical considerations made when examining the two disciplined at a meso level. By grounding it in the disjunctive comparison framework, the analysis uncovered some similarities and differences between the two groups analysed, displaced and NASA astronauts, while raising new questions.

In particular in relation to the idea of sovereignty and its impact on cooperation and future categories of people, the role of categories and what would that mean for lunar settlements or the Moon in the future, the intimate nature of displacement and its potential implications for space exploration, and questions around the differences in size and demographics between the groups. It enables us to appreciate the ramifications of the two phenomena and challenges the theoretical understanding of categories of displacement and space exploration, especially for the future. By providing this first disjunctive comparison, the research builds an initial layer of knowledge of both of them and sets the foundations for the next tier of analysis.

5. Macrotier: interdisciplinary journeys, their characteristics and comparison

5.1 Chapter introduction

This chapter is situated at the macrotier level of examination. This tier allows me to research and identify trends in different disciplines when dealing with the concept of journey to address the research question by providing a disjunctive macro comparison to further the understanding of what a journey is and its implications. Looking at the concept of journey gives theoretical grounds to then widen the perspective for understanding what are the implications, traits and shapes, at the structural level, of the journeys undertaken by astronauts and displaced through the lens of other transformative journeys found in multidisciplinarity and their characteristics.

The mesotier highlighted aspects of the transformative journeys undergone by astronauts and displaced at a narrower level. Here the analysis is enriched by bringing it to the broader and examining if new knowledge can be gained. Starting with the concept of journey can bring new insights on the aspects leading to astronauts and displaced undertaking these journeys, showing their reasons, characteristics, and articulations.

The chapter starts from addressing what is a journey in theoretical terms by using the OED as the starting point and then enriching it with characteristics taken from arts, religion and literature as disciplines all dealing with forms of human development and expression, looking at how people navigate life and express their ways of doing so.

5.2 What is a journey?

My attempts to define the research question led to the theoretical reasoning behind this paper of considering the experience of displacement and space exploration as journeys. This was done to employ as a macro tool of analysis the characteristics presented by different journeys and potentially expand them by gaining a broader perspective by examining how journeys are understood and articulated in different contexts.

Thus, by first assessing a dictionary definition of journey, the identification is enriched by further understandings found in the disciplines of arts, religion, and literature. These disciplines all present types of human aspiration and creativity related to journeys, the people undergoing them, and their meanings. This allows to emphasise the pervasiveness of journey as an experience not only belonging to displacement or space exploration. After examining these articulations then characteristics can be identified and added to the dictionary definition to encompass the concept of journey aiming to capture as many characteristics as possible for comparison between space exploration and displacement.

However, the first step needed for the analysis is defining what is a journey. The term is used to describe different situations and can be context dependent. Interpretations of journey can encompass spiritual, physical, mental aspects or different degrees and combinations of all of them. As a starting point, the dictionary definition can be used to first assess what a journey is and can be from an English speaker perspective, given that English was chosen as the working language for this paper. The current paper analysed journey as a noun and not verb to understand if both experiences of displacement and space exploration can fit in the category of journey and if in the literature examined there are identifiable traits of analysis.

In the Oxford Dictionary, journey can have different meanings. There are three main ways of understanding what a journey is according to "*senses relating to time, a day*", "*senses relating to travel*", and "*a day's work*" (Oxford University Press, n.d.). The first and third understandings only present either obsolete or not related meanings to this analysis. The second entry, *"senses related to travel",* presents several subcategories. Those relevant for the current paper are:

1. "*a day's travel; the distance travelled in a day or a specified number of days"*

2. *"A 'spell' or continued course of going or travelling, having its beginning and end in place or time, and thus viewed as a distinct whole; a march, ride, drive, or combination of these or other modes of progression to a certain more or less distant place, or extending over a certain distance or space of time; an excursion or expedition to some distance; a round of travel. Usually applied to land-travel, or travel mainly by land, in contradistinction to a voyage by sea*"

3. "*the 'pilgrimage' or passage through life*"

Thus, there is already a distinction to make when referring to what a journey is. This distinction stems from what type of journey the person is undergoing. It can be either physical such as going from A to B or inner, such as someone journeying from childhood into adulthood.

To further complicate things, while for a physical journey multiple examples are readily available (think about an international holiday or a work trip), for an inner journey the interpretations can vary and depend on the context they have been used for. Especially when addressed and analysed in different disciplines. The sections below present a collection of understanding based on different fields of research, aiming to clarify and represent the different characteristics of a journey. The areas examined are arts, literature, and religion. While not being exhaustive in their examination, they still provide valuable insights on the different ways these disciplines treat the theme of journey.

By examining and analysing these different understandings, the aim is to define how the concept of journey can be employed to examine the potential of manned space exploration and displacement comparisons. These multidisciplinary approaches provide the groundwork for creating relevant traits of analysis and comparison for this chapter.

5.2.1 Arts

The section below sets out to explore how the concept of journey is treated in the arts. When referring to "arts", the paper refers to those branches of human activities imbued with creativity (Oxford University Press, n.d.). The following examples are drawn from filmmaking, photography, painting, installations, and performances as those were the branches of art where data could be found via the PRIMO search. However, some examples are based on personal knowledge found during cultural visits. While the section provides some examples of how art is representing the concept of journey, it is by no means

exhaustive. The intent is to see how this concept can be explored in different artistic fields and provide an overview of ways of articulation to identify characteristics useful for the analysis.

Right at the beginning of the search, the OED definitions represent a guidepost for screening irrelevant sources. It aids in making a first distinction as even in the arts there is not a clearcut way of understanding what a journey is. Two main categories are physical journeys and journeys through life, one represents movement between places and the other sits within the inner space. They are not mutually exclusive as they can be intimately intertwined. For the arts, the Tate proposes an additional category of journey explained as "*artists create work using systems that dictate the journeys they will make in their creative process*." (Tate, n.d.). It indicates the formal process of art making that is the procedure of the artist and how it influences the end result of the work (Chilvers & Glaves-Smith, 2009).

5.2.1.1 Physical journey

In the case of a physical journey artists have different strategies available as they can portray a subject moving from place to place or have a sequence representing this journey. The representation can take place at any point of the journey, depending on what the author wants to communicate. An example is the photography collection made by Ed Ruscha, *Sunset Strip Portfolio,* where he photographed each building of the Hollywood Strip to show the differences over time and represent the urban journey of the buildings (Quick, 2018; Tate, n.d.). Sometimes the art piece itself is a representation of a physical journey. Pieces taken during colonial periods ending up in a different location from their original place, such as the Benin Bronzes looted by the British empire from Nigeria (Gregg, 2022). In another case, it might be marking the location of other people's movements as seen in the *Green Line* by Francis Alys where the artist walked the contented territory in the West Bank while leaving a line of green paint behind him to show the territorial division of Jerusalem between Israel and Arab sides (Fisher, 2011; Tate, n.d.).

Additionally, authors themselves can represent a journey after moving away from their country of origin and establishing somewhere else, guiding the observer through this movement with their work, an example is the *Room to Breathe* exhibition curated by the Migration Museum in London, collecting audio, films, photographs and objects belonging to different artists portraying their experience of arrival in Britain (Tendler & Ross, 2020).

Furthermore, journeys can embrace the idea of physical freedom of movement as seen in the movie *Easy Rider,* where the director, Dennis Hopper, depicts the freedom of roaming of the two protagonists across the US (Oktugzengiin & Zengin, 2013). An additional example can be the performances included in *Making Routes*, a collaborative project, funded by the University of Edinburgh and launched in 2011, connecting researchers, artists and performers exploring the central role of movement in our lives to explore mobilities in various ways (Edinburgh Future Institute, 2023).

5.2.1.2 Inner journey

When dwelling into the inner journey, artists can try to communicate what is their own or those of their subject's personal experience through life or specific experiences to try to open a door towards their private world and build a link with the observer (Martiniello, 2022). In this way, the artist's journey can indicate the process undergone from the infancy of the artistic production to its end, going through the different stages. For instance in the work of Picasso, his journey is represented by 5 distinct periods each dealing with a different artistic style, using different mediums and constituting a continuum in his art (Galeson, 2008). The analysis of Hye Jean Chung, denotes how filmmakers through their documentaries and photographs can set the onlooker on a journey witnessing other people's life, as seen in *Born into Brothels* (Ross Kauffman and Zana Briski, 2004) and *City of Photos* (Nishtha Jain, 2005) depicting the life of underprivileged subjects in India (Chung, 2019).

Different art mediums can also be employed to convey specific messages related to a political, social, historical, or personal situation (Rizzo, 2018; Schramm et al., 2019). Thus through different strategies artists bring these inner dimensions and lay them in front of the audience going through an emotional or contemplative journey (Schramm et al., 2019). For instance the Warsaw Rising Museum in Poland displaying objects, writings, sounds, and art pieces related to those who died for Polish independence, or the *Path of Silence*, *Doorway to Memory* in Northern Italy, an open air natural memorial comprising 10 art pieces to remember and symbolise WWI (Muzeum Powstania Warszawskiego, n.d.; Rifugio Campomuletto, n.d.). Furthermore, influences from a migrant community can shape the way artists understand journeys and set to navigate their personal dimension as migrant themselves, in Scheding's work *Musical Journeys: Performing Migration in Twentieth-Century Music* three migrant composers are examined to understand the articulations of this relationship and in their resulting works (Paré-Morin, 2022).

5.2.1.3 Systemic journey

The last category deals with the process of art making itself to exemplify a journey following the articulation of different procedures of crafting artwork (Chilvers & Glaves-Smith, 2009). An example is employing computational systems by using their rules to guide the organising principles to create artwork as seen in the works of Ernest Edmonds, or by having to establish a whole supply-chain to craft an object from raw material as seen in *Work Made-ready, Les Baux de Provence (Mountain Bike) 2001* by Simon Starling (Franco, 2018; Tate, n.d.).

5.2.1.4 Identified characteristics in arts

These three categories elaborate on the idea of journey seen in various forms of arts. For this analysis some characteristics can be identified by these examples. These are: actors involved and what enables the journey (institutions, artists, audience), resources (reflecting the different mediums used), a component of introspection for both the artist while creating the piece and for the audience when browsing, and the physical traits of origin and destination.

5.2.2 Literature

This section will examine how the concept of journey has been used in literary works. Similarly to the case of arts, it does not aim to encompass all the works written but to provide an overview of what are some of the trends found in literary production around the theme of journey. Not only recounting physical travelling but also representing the internal transformations undergone by the protagonists.

In the following sections the theme of journey is explored with the aid of two authors, Vladimir Propp who was the first to examine stories in a systematic point of view trying to provide a classification and so laid the groundwork for subsequent works, including the most recent one by Christopher Booker providing a reduced classification of plots applicable to every literary genre. Employing these two authors will help identify characteristics of a journey through literary examples useful for the analysis. While these two specific authors were chosen to provide a sense of how journey is addressed in literature, the analysis does not encompass all the taxonomies. Propp was chosen as the first one thinking in terms of categories while Booker was the most recent one.

5.2.2.1 Vladimir Propps's *Morphology of Folktales*

In his work, *Morphology of Folktales,* Propp analysed 100 Russian folktales to understand if there were similarities and shared traits in their recounting (Adams, 2008). He identified 31 functions or narratemes, replicating themselves in the stories, encapsulating how a story unfolds and the characters' behaviours (Dogra, 2017). These functions do not need to be simultaneously present, they can combine, there might be a recurring one or just parts of some (Propp, 1968). While Propp focused only on Russian folktales, after the publishing of the *Morphology of Folktales*, it became evident that there is a "*unique element to all stories in the sense that they can be replicated"* regardless of their provenance (Dogra, 2017, p. 410). This does not apply only to folk tales but it applies to narrations in general, the value of Propp's analysis is of being a useful reference point to understand how narrations work and its applicability to different strands of literature (Adams, 2008; Dogra, 2017).

After examining his 31 proposed narratemes, only very few are of interest for this analysis as partially dealing with the idea of journey. Specifically, narrateme XI "*The hero leaves home*" deals with journey as a result of the hero trying to pursue a specific goal or being pushed to flee from home (Propp, 1968; Dogra, 2017). Additionally, narrateme XX *"The hero returns*" explores the journey back of the hero (Ibidem). However, after examining these narratemes dealing with journey, it became evident that they treated journey just as spatial movement, in XI the hero is forced to move while XX is just the physical return (Ibidem). Other narratemes could have been examined however they were less related to the concept of journey, and only describing actions and not transformation. It opens up to further considerations and research when using literature to address "stories" within different contexts to see if there are shared characteristics linked to how they are narrated and perceived.

For this reason a subsequent classification was examined in order to understand if journey is still perceived only from a physical perspective in literature. This classification is examined and presented by Christopher Booker in his book, *The seven basic plots: why we tell stories.*

5.2.2.2 Christopher Booker's *The seven basic plots: why we tell stories*

Contrary to the 31 functions identified by Propp, Booker argues that every literary work follows at least one out of seven common plots (Booker, 2004; Adams, 2008). However, similarly to Propp's, it does not mean that "*every story fits neatly and with mechanical regularity into one or another category of plot"*, what the author wants to convey is how

stories can be extremely complex and intricate to include several overlaps of plots, a single one, part of one or even failing to fully develop any (Booker, 2004, p.5).

For the purpose of this research, Booker's motif of *Voyage and Return* has been selected as the most pertaining to the analysis at hand (Booker, 2004). The theoretical examination is explained by using the characteristics defining the plot of *Voyage and Return* found in literary examples. They present sources to further understand if these journeys undergone by the main characters have specific traits and characteristics expanding the OED definition that can further enrich the analysis.

According to Booker the *Voyage and Return* theme is identifiable because: "*the main character/characters travel out of their familiar, everyday 'normal' surroundings into another world completely cut off from the first, where everything seems disconcertingly abnormal, [outside the framework of the familiar]*" (Booker, 2004, p.). Furthermore, this specific plot is articulated alongside other elements that can be present by themselves or in combination. Those elements are: where the journey is bringing the main character (to an imaginary world or to the limits of the known one), the nature of the journey (physical, social or identity swap), the unexpectedness of the experience (sought after or unpredicted) and lastly, the degree of transformation affecting the protagonist (affected or unaffected). (Booker, 2004)

Firstly, the destination characteristic is divided into imaginary worlds or to the limits of the protagonist's known one (Booker, 2004). The former means that the character finds himself in a completely new world, such as in the case of the *Chronicles of Narnia* where the characters stumble into a fantasy realm outside their native world (MacSwain & Ward, 2010). The latter, instead, sets the story within the world surrounding the protagonist but pushes the boundaries of the known, for instance *2000 Leagues Under the Sea* is set in a submarine exploring the uncharted depths of the known ocean (Cain & Plokhy, 2014).

Then, the nature of the journey presents three cases: physical, meaning that the journey is plotted to show the protagonist movement from one place to the other (e.g. *The Hobbit*, narrating the journey of Bilbo Baggins from his homeland to far places and back); social, showcasing a change to unfamiliar social circumstances, such as spending a long time with someone wealthier or indigent (e.g. *Papillon*, the protagonist is used to a lavish French lifestyle to find himself deported to the French Guiana prisons); and identity swap, where the

protagonist has a complete body swap while retaining the self (e.g. *Freaky Friday* where mother and daughter exchange bodies) (Booker, 2004; Pienciak & Tolkien, 1986; Doyle, 2016; Erbert, 1977).

Thirdly, the category of unexpectedness identifies if the journey was voluntarily undergone or completely unforeseen (Booker, 2004). An example of the former is *The Lost World*, where the characters willingly set on an expedition to uncover a legendary prehistoric world in the Amazon (The New York Times, 2021). The latter is found in *The Wizard of Oz* where Wendy has only a feeling of falling, without any warning, before entering the new setting (Lowne, 2023).

Lastly, transformation takes into account if the experience affected the main character (Booker, 2004). In *Robinson Crusoe*, the protagonist, against his father's advice, sets out to explore and wander the world resulting in his shipwreck on a deserted island (Dirda, 2019). This experience enlightens his initial frivolity and changes and develops his understanding of the world and its dynamics (Booker, 2004; Dirda, 2019). While for *Alice in Wonderland*, she experienced her journey in the form of a dream and essentially did not change her afterwards, being recollected only as a bizarre experience (Robson, 2015).

5.2.2.3 Identified characteristics in Literature

Starting from Propp's physical characteristics and enriching them with Booker's, the characteristics identified for the analysis are origin, destination, nature of the journey, unexpectedness and personal transformation. They can come handy while trying to define traits of examination and comparison of the experiences in displacement and space exploration. Ultimately, they help contextualise better the experiences undergone by these two groups of people without risking losing focus by analysing imaginary settings.

5.2.3 Religion

Here I will examine how the concept of journey is treated in religion, while the examination is not exhaustive it allows us to get a sense of what can be the articulations and characteristics of journeys in this field.

The theme of journey is present across all main religions as they have accounts of journeys in their tradition, varying from pilgrimages to spiritual journeys. To validate and broaden the

OED's characteristics of what is a journey, examples drawn from the main religions are presented as they have the potential to enrich the research of characteristics of analysis. One example of journey has been chosen for each of the main four religions to help provide a more comprehensive understanding, namely Christianity, Islam, Hinduism and Buddhism (Pew Research Center, 2017).

In religious narrative, the two main examples of journeys are those recounted in sacred texts belonging to each religion narrating specific stories related to important characters within the religion (i.e. Noah) and pilgrimages still undergone by followers to this day (i.e. *Kumbh Mela*, *Hajj*) (Timothy & Olsen, 2006). Both types highlight a dual aspect of a journey: the inner and physical.

The inner or spiritual journey is understood as a process of self discovery and development, which can lead to the encounter with the divine (Chandra et al., 2023; Fortin, 2018). In the case of Christianity and Islam, the encounter with God is a marked aspect of the inner journey. It preludes a path towards the divine and life on Earth is in prediction to another life where beatitude (or hell) is experienced (Fortin, 2018; Schönborn, 1995; Timothy & Olsen, 2006). Similarly, for Buddhist and Hinduist traditions the spiritual journey is defined by the final encounter with the divine oneness, yet the journey towards the spiritual liberation of the soul is endowed into cycles of reincarnation or rebirth until breaking free from the ties binding it to Earth (Chandra et al., 2023; Harvey, 2019).

The second aspect of a journey is the physical. It can include the travelling of a person or people from one place to the other, and the logistical aspects of it. There may be forced movement such as in the story of Noah, or voluntary sacred pilgrimage such as the *Hajj* or *Kumbh Mela*. Thus spatial movement becomes relevant by representing the divine will to relocate the believers from one place to another or to experience the places of a pilgrimage during a journey. (Anheier & Juergensmeyer, 2012; Vacaru, 2015; Verma et al., 2021)

Presented below, there are some examples of journeys recounted either in religious sacred texts or as pilgrimages still undergone to this day.

5.2.3.1 Pilgrimages

The following section addresses two pilgrimages practices found in Islam and Hinduism. These examples are the two main institutionalised pilgrimages still relevant to this day. By providing an account of them, the aim is to understand if any characteristic can be identified and then subsequently employed for the analysis.

5.2.3.1.1 Hajj

In Islam, pilgrimage is a highly defined practice as "*it is a duty that every Muslim of full age, health and financial capacity has to perform*" (Lartey et al., 2022). It is one of the five pillars of Islam, performed by the Prophet, and ultimately, cultivates devotion to God (Anheier & Juergensmeyer, 2012). According to Abdallah, in the *International Handbook of Practical Theology*, *al-Hajj* or *Hadj,* has several characteristics: " *there is an occasion (Sura 22:28), a fixed place (Sura 3:96–97) and a fixed period (Sura 2:197), [...], a religious and social responsibility (Sura 22:36–37) and a social and emic perception (Sura 22:34–35), [...]"* (Lartey et al., 2022, p. 417).

However, it does not mean that a practitioner should just leave everything behind and undergo the pilgrimage. The pilgrimage should be performed by those able to. It highlights the need of having not only physical but also financial ability to partake in the religious tradition. (Al-Ajarma, 2021; Anheier & Juergensmeyer, 2012) International pilgrims are usually aided by their religious community, tour agencies and even their own states, aiming to provide accessibility to mid and low income pilgrims (Lartey et al., 2022). Overall, influxes are regulated by Saudi Arabia who provides entry access to the facilities and to the itinerary of the *Hajj* (Xiao & Jafari, 2016). Moreover, the authorities dispense resources such as guides, booklets, or audio files to impart knowledge of the rules during the pilgrimages, emergency information, regulations to observe and logistics (Al-Ajarma, 2021).

5.2.3.1.2 Kumbh Mela

In Hinduism, pilgrimages help the community to come together and reach a better understanding of their relationship with the holy place and the divine (Verma & Sarangi, 2019). One of the most important is the *Kumbh Mela*, the largest gathering of people in the world (Ibidem). It lasts for 55 days and is celebrated every 12 years (Encyclopedia B. I., 2008). The pilgrims hope that through the pilgrimage they can show their devotion to God and ultimately reach the goal of *moksha* which is liberating the soul from *samsara*, the cycle

of rebirths, through enlightenment by bathing in the river (Encyclopedia B. I., 2008; Kanaujiya & Tiwari, 2022).

While the pilgrimage represents a spiritual journey towards purification, it sits within a complex organisational physical framework. While a specific number is impossible to determine, around 240 million pilgrims joined the event in 2019 (Kanaujiya & Tiwari, 2022). This mass movement of people is heavily monitored and controlled by the authorities who ensure accessibility to facilities, provisions, and general logistics (ibidem). Thus, the preparedness of the authorities is key in dealing with the gathering, it also showcases limitations on the freedom of the pilgrims as they are directed towards specific spaces and through flows of movement to prevent potential disasters (Verma et al., 2021).

5.2.3.2 Sacred texts

The following section will present examples of journeys taken from the Bible, the Old Testament specifically, and from canonic Buddhist literature. Similarly to the pilgrimages examples found in Islam and Hinduism, these two cases will help expand the OED definition of journey and highlight additional characteristics useful for the analysis.

5.2.3.2.1 The story of Noah

A crucial component of Christianity is the inner (or spiritual) journey combinable with the physical one. According to Cardinal Schonborn (1995), Christianity is a journey towards a homeland in heaven, a one way route for the soul from this world to the other. One of the most known stories of journeys is that of Noah.

In the story of Noah, God is displeased with the current earth inhabitants and after recognising in Noah a righteous man he advises him to build an ark to host his family, provisions, and a pair of any bird, mammal and reptile (Encyclopedia B. I., 2008). The ark would save them from the Deluge, a global flooding used by God to purify Earth (Ibidem). Thus Noah navigated in the ark for roughly a year, trusting God to provide a safe place to settle (Faulkner, 2015). In the story, God alerted Noah of the happening and advised him on what to prepare and store, to not be found unprepared and losing his life (Goshen-Gottstein, 2023). Crucial to his survival was his preparedness and proactiveness, he was ready to counter and overcome the challenges presented by the flooding (Veronesi, 2007). In addition, his faith prevented him from despairing during the time spent in the ark (Dynes, 2003).

5.2.3.2.2 The life of Siddhartha

The story of Siddhartha Gotama, the Buddha, narrates how Siddhartha reached enlightenment through a physical and spiritual journey (Harvey, 2019). Born as a prince, mostly lived a sheltered life in the palace until he witnessed for the first time, age, sickness, death and asceticism (Encyclopedia B. I., 2008). After inquiring about the nature of these phenomena, he noticed how the encountered ascetic was radiating calmness and peace (Harvey, 2019). Thus, Siddhartha decided to embark on a journey towards reaching the same. By leaving everything behind he left his previous life and began a physical and spiritual journey towards enlightenment as a wandering ascetic (Lartey et al., 2022).

While the physical journey represents the hardships endured by Siddhartha towards enlightenment, the spiritual journey is the crucial aspect of him becoming the Buddha. By rejecting temptation, he set forth to lead by example how to reach the awakening without indulging in extremes (Lartey et al., 2022; Harvey, 2019). Then he proceeded to share his knowledge with a first community of followers, resulting in the fulfilment of his mission and left the world by breaking the cycle of rebirth (Encyclopedia B. I., 2008). The story of Siddhartha showcases different levels of agency over a lengthy period of time allowing him to prepare for his journey from sheltered prince to the Enlightened.

5.2.3.3 Identified characteristics in Religion

In the examples examined in the section regarding the concept of journey in religion, there are some identifiable traits that can be added to the OED characteristics of a journey. These traits are origin, destination, purpose, agency, actors, resources and inner aspect. They will be combined with the traits found in the other disciplines addressed.

5.2.4 The role of the interdisciplinary journeys for the comparison

Ultimately astronauts and displaced people undergo transformative journeys with broad effects and ramifications, which might present similarities and differences in their articulations. In the mesotier some of these features became evident such as the role of sovereignty in both fields, how defining categories paradoxically might exclude people, or who actually are the people experiencing these journeys. Here, in the macro, other transformative experiences drawn from the arts, religion and literature, allow us to examine if there are new aspects that were not considered at the meso level and can enrich our understanding of these journeys.

This interdisciplinary analysis was needed to make it evident how broad the concept of journey is and how there is not a single definition for it. There are characteristics that can be gathered by comparing them and using the comparison as a starting point for a further examination of what a journey is.

The macrotier dealing with the OED definition, religion, arts, and literature shows how differently a journey can be perceived depending on the field of examination. There are several characteristics pertaining to each single field and while there might be some similarities there are also different understandings and articulations of specific traits. For instance the inner component, found as a recurrent aspect across the disciplines, had connotations of introspection, personal growth, or inner development. While other aspects were not present in all the fields such as the agency of the experiencer in a journey.

The following section of this chapter will look at taking these interdisciplinary characteristics and use them for progressing the disjunctive comparison between manned space exploration and displacement.

5.3 Defining the characteristics of the macro comparison and comparison

In this section, the characteristics gathered from the various literature strands are combined and put together to understand what are some of the shared aspects of journey across disciplines. They serve as an addition to the characteristics identified through the OED definition. These aspects will aid in the macrotier comparison between manned space exploration and displacement to emphasise the potential value of bringing conventionally incomparable fields to cast a wider net for understanding the experience of journey.

Starting from the OED definition, traits of a journey identified are “origin”, “destination”, and “duration”. In addition, there is an inner journey aspect which was also found across the other three fields examined, namely: personal transformation in literature; inner aspect in religion; introspection in arts. These different examples of inner aspects were combined in the characteristics “effect of the journey” and “purpose of the journey” addressing how the journey can impact the person experiencing it and what is the reason to undergo the journey.

Also, when adding the additional characteristics identified in arts, religion, and literature, the following traits emerged: “resources available”, “actors involved”, “agency of the subject”, and “preparedness”, in which the journey happens. Thus after identifying these 9 characteristics, in the following sections these dimensions will be outlined in detail and used for comparing space exploration and displacement.

Table 1 and Table 2 below represents the 8 characteristics found across each discipline examined and if they were found across one discipline or in multiple. The colour coding is a visual aid to assess which fields presented the characteristic.

Literature	Religion	Arts
Preparedness	Origin	Actors
Origin	Destination	Resources
Destination	Purpose	Introspection
Nature of the journey	Resources	Origin
Personal transformation	Actors	Destination
	Inner aspect	
	Agency	

Table 1: Interdisciplinary characteristics

Table 2 represents a summary of the characteristics in a different format and in how many disciplines they appeared in the multidisciplinary examination.

Characteristic	Arts	Religion	Literature
Origin	x	x	x
Destination	x	x	x
Inner aspect	x	x	x
Actors	x	x	
Resources	x	x	
Reason of journey		x	x
Agency		x	
Preparedness			x

Table 2: Discipline presenting the characteristic

After identifying these 9 characteristics, 8 from the interdisciplinary examination and 1 specific to the OED definition, I will proceed to compare displacement and manned space exploration at the macrotier of analysis, starting from “origin”.

5.3.1 Origin

Point of origin was a characteristic that emerged across disciplines. It represents the point of departure of the journey, even though it might be difficult to pinpoint precisely. However, considering only from a physical point of view, the origin of movement, for now, for both astronauts and displaced people is Earth.

For a manned space mission, the journey would generally be a trip from the astronaut’s home or the training facility to the space centre leading to the spaceport. This might require additional travelling as the main spaceports for orbital human launch are situated in Baikonur (Kazakhstan), used also by NASA astronauts, and Cape Canaveral (US) (Roberts, 2023). There is a third, Jiuquan in China, yet it is closed to foreign astronauts (Roberts, 2019).

Regarding displaced people, their journey can start from home in a physical sense (Migration Data Portal, n.d.). However, as in the case of the interviewed refugees arrived in Sicily by D’Angelo, it might start from a different place that is hard to locate precisely as it can be intertwined to social relations leading to the journey (D’angelo, 2021). The idea of having a specific starting point is also difficult when taking into consideration intergenerational forms of displacement as the physical home might not coincide with the spiritual one (Al Sharmani, 2010). Such is the case of people born and raised in displacement considering home the place where the original displacement started (Im et al., 2022). Additionally, violence, sudden natural disasters, or increased general instability can lead to displacement, resulting in people fleeing directly from wherever they are at the moment of the happening (Becker, 2022).

Thus, while origin can be a useful tool to understand where some types of journeys start, it does not capture the full spectrum of journeys and how they are experienced by those undergoing them. It highlights a tension between the physical and personal, with even the physical not totally capturing what a point of origin can be especially when dealing with the idea of home as it might not be clear and defined. It leads to considerations on how the idea of origin should include these different experiences and their articulation, proposing to enrich the current understanding with alternative ways to theoretically think about journeys.

Encompassing a broader definition of origin can allow to develop further understanding in light of future types of journeys by being a foundational conceptual tool.

5.3.2 Destination

Similarly to the point of origin, the destination of the journey represented a shared characteristic among the various disciplines. It identifies the point of arrival of the journey, where it ends. Here things become less clear cut, as it depends on what is considered as the journey to examine.

For instance in the case of astronauts there are two cases that can be considered. First, it is the arrival at the space station after departure from the spaceport. Or journey can be the entirety of the mission, making the point of arrival the spaceport and eventually the astronaut home. Additionally when taking into account future Mars missions, there could be a transitory stopover on the Moon before setting off to the Red planet and before returning to Earth, further reinforcing the idea of identifying what is the journey accounted for (NASA, 2023).

In the case of displaced people, things are even more complicated. The idea of destination is affected by their transient experiences as where they arrived might just be another transitory place enroute to a final destination, a return home or being forcibly relocated somewhere else due to new displacement forces (UNHCR, 2018). Thus, destination depends on the circumstances of the displaced person (D'angelo, 2021). What seems the physical final location in reality might just be a new origin for a further journey.

While from a strictly physical sense people always arrive somewhere, yet the uncertainty aspect is not captured and neither its implications. It leads us to think that once someone arrives in a place then the journey is over and then the next movement is a new journey, however these different journeys are intimately intertwined, connected and deep in the realm of uncertainty as a final arrival might never be the case. Thus the question on what exactly is a destination can be raised and examined to understand what are the implications of defining something and if newer elaborations are required, which seems the case.

5.3.3 Duration

The third characteristic identified is duration of the journey. It is useful to understand how long a journey can be from start to end. Arguably, every journey has a temporal beginning and end, yet it can be closely related to the experiencer's perception.

When setting off for a space mission, astronauts have a clear idea of how long they will be away from the surface (NASA, n.d.). The information is shared in advance and their training is tailored to suit the time spent in orbit. ISS missions typically last six months, with a crew rotation after this period (Stimac, 2020; NASA, n.d.). There have been missions lasting longer testing the limits of spacefaring on humans and how it affects the body, the longest so far was 335 continuous days (NASA, 2023). These missions were launched for general research, discovery perspectives and preparation for future longer haul missions, specifically Mars (NASA, 2023). A mission to Mars would take 18 months in total, 9 months each way, a completely different scale from the current ones (Stimac, 2020; NASA, n.d.). Sometimes there might be unforeseen scenarios forcing astronauts to lengthen or shorten their mission duration, still, overall they have a good sense of how long it will be (Stimac, 2020; NASA, n.d.).

Displaced populations generally do not know how long their journey will last. The duration can dramatically differ from experience to experience with some only lasting shortly as in the case of Kyrgyzstan and Tajikistan people escaping the clashes for a few days while others last over decades such as climate displacement in the Horn of Africa or the Jewish 2000 years in displacement (Becker, 2022; IDMC, 2022; Brubaker, 2005). The only certainty is having to leave with an unknown date of return. The length can vary depending on many different aspects such as where the person moves to, what is the political and social situation there, how are migrants treated, how it was reached e.g. formal or informal migration routes, if there is a network that can help, and what sort of accommodation is found (Can, 2022; Becker, 2022). All these aspects can influence the duration of a person's journey in displacement and determine how long it will last (Can, 2022; Becker, 2022). Additionally, arriving somewhere does not mean that the journey has ended as the person can perceive it as never ending due to a hope to return in the future, so it is only a temporary stop in time without the whole journey coming to a conclusion (OCHA, 2016).

So while measuring the duration of a journey answers a question of length, considerations can be made on what is the actual perceived length of it and what it means for different people experiencing it. Longer space exploration missions are paving the way to get a better understanding of what it means being far from Earth for longer stretches of time. Here, the experiences of displaced populations can enrich the conversation and bring a new take on the whole experience as in some cases they spent years or all their lives on a journey. For instance, it can open the gate for questions such as "will settlers on the Moon or Mars still feel on a journey?" or "does seeing Earth from afar have an impact on the perceived duration of a space journey?".

5.3.4 Resources

Resources as a characteristic allows us to understand how the journey might be sustained. In the case of astronauts the budget of NASA was taken into account as the main funder of the space exploration drive in the US, while for the displaced population the budget of UNHCR has been examined. Yet, in the case of displaced populations it is difficult to fully grasp the extent of resources available as often they follow informal routes and agencies budgets (e.g. UNHCR) will come into play when already in displacement, meaning that the journey itself will have likely happened through different means.

NASA had a projected budget for 2023 of $26 billion (Halunko et al., 2022). The agency for the last 20 years had on average a budget of 20.5 billion dollars each year, allowing it to be the largest space agency and the most technologically advanced (Roberts, 2022). Having this large amount of funding allowed the agency to focus on the training and preparation of its missions and astronauts, focusing on quality over quantity (NASA, 2022). Those funds allowed NASA to deploy all its expertise to improve general conditions of astronauts in the face of space travels and adverse physical settings (NASA, 2022). For instance, NASA developed better telecommunication capability between its spacecrafts and the ISS and the surface after realising how crucial it was for astronauts to have a reliable connection to the mission control centre and their families (Stimac, 2020; Tung, 2017). Mission control centre is another key resource for space missions as it is available round the clock and can provide immediate support in case of emergencies (Green, 2017).

It is difficult to fully understand the extent of resources deployed in displacement settings. In the case of IDPs those available to the country need to be added to potential international

agencies and those of the IDPs themselves (Ekezie, 2022). For refugees, similarly the resources are spread among the different places they can reach, those they can muster themselves, and those that can be provided by their social networks (Bond, 2022; Organisation for Economic Co-operation and Development, 2022). Just to get a better understanding of what the UNHCR can contribute, it had a budget of 10.7 billion dollars in 2022 and for the last 7 years it had an average budget of 8.6 billions each year (UNHCR, n.d.). If we look at the current displaced population of 100 million individuals, the resources available through the main agency dealing with displacement present a grim picture. For this reason displaced people usually rely on a combination of institutional/formal aid channels and their own social networks which can be international families, diaspora communities, general relatives or friends (Tobin et al., 2022; Christ & Etzold, 2022).

Thus this characterist unveils the complexity of trying to quantify the resources available in the setting of displacement. It underlines the need of not stopping at the structure level, which would be quite grim nonetheless, but to understand the various networks of resources that a displaced person can potentially deploy. Those become extremely difficult to track as it is a matter of personal finances. By comparing these two experiences it becomes evident the need of considering more than just an agency, personal relationships need to be factored in too.

5.3.5 Actors

Actors as a characteristic examines who are the actors enabling displacement and manned space exploration journeys, it was present in arts and religion.

The main enablers for manned space missions in the case of NASA astronauts are NASA itself and the US government. They are the two actors with the power to abort or launch missions. A smaller role is played by supporting agencies such as Roscosmos operating the Baikonur spaceport (Roberts, 2023). Additionally, some private sector players cater for the demand and can be contracted by NASA. Telecommunication, satellites, ground operations, insurance and launch themselves are all fields with private development of technologies to support spaceflight. The main private actor is SpaceX, who can provide launching support and supplies for NASA (Weinzierl & Sarang, 2021; Burger & Bordacchini, 2017). So technology plays a crucial role in enabling space missions as without all the technological assets going to space would be impossible.

Additionally, due to the high costs and resources needed to operate space missions, there is a degree of reliance on other international actors' expertise. An example is the joint cooperation for the creation of the ISS, a strategy to offset some of the cost and merge expertise to enable structured space missions, similarly the future missions to Mars and Moon are done as joint-ventures (NASA, n.d.).

Lastly, for astronauts also the public can play an indirect role as showing support can lead to more attention towards space missions resulting in a more positive perception of the need of space exploration and space expenditure (Detsis & Detsis, 2013). At the same time, increased attention can lead to scrutiny and demand of justification on space investments instead of focusing them on the social fabric of the country (Shindell, 2016).

When talking about displacement actors we can look at these enablers by considering the migration structures in place that highlight the actors, processes and technologies employed in a journey (Xiang & Lindquist, 2014). It is a mixed structure where different actors can partake and it highlights the paradoxical nature of movement as there is a generalised heightened freedom of movement due to globalisation yet at the same time the moving actors are placed under increased regulations and rules (Ibidem).

Firstly, there are institutional actors represented by the host government and their agencies that draw the rules and regulations for movements by enforcing and adopting new standards. Alongside the governmental actors, there are international ones providing support and recommendations such as the UN and its agencies creating a framework of migration (e.g. UNHCR) (GPC, 2010). Then there are the international and local non-governmental actors such as DRC or ICVA which aim to provide further support and assistance for the people on the move navigating the migration structure (UNHCR, 1999).

The general public or civil society represent another actor in displaced journeys as it can provide some form of support by sharing resources or positive perception, while at the same time the risk is to navigate an hostile public perception which can result in additional tensions and problems for the displaced (De Coninck, 2020; Becker, 2022). Moreover, the private sector can have a role in displacement journeys as a kickstarter due to resource exploitation creating man-made disasters and forcing people to relocate (Rechkemmer et al., 2016). Armed and illegal groups can entice violence and instability as in the case of people fleeing

ISIL in Syria or caught in the current Sudanese fighting in Khartoum, and can smuggle people between countries (O'Hanlon, 2015; Al Jazeera, 2023).

Technology is a further enabler of journeys as now the digital society is making it easier to purchase movement in the form of tickets or visas, while at the same time it curbs this potential due to restrictive technological scrutiny measures and applied biometrics to determine who is allowed or not access in a specific country (Xiang & Lindquist, 2014).

Lastly, the displaced themselves, their families and their social networks represent crucial actors in displacement journeys. Families and networks can offer additional support and aid in the form of international money transfers, resources sharing, and opportunities (Böhme & Schmitz, 2022; Al Sharmani, 2010). Diaspora communities are important players in helping people on the move to reach safer locations. All these actors intersect and operate with the displaced populations (Baser & Halperin, 2019).

Both scenarios present a similar complexity of relationships with the actors involved in the journeys, some are directly partaking in shaping the direction of them while others are part of the overarching structure. The idea of migration structure for displacement journeys might present a starting point of further inquiry of existing migration structures for space exploration, sparking a conversation on how potential space movements can articulate and if there will be a risk of reiterating structures previously experienced in displacement. At the same time, a theoretical exercise can be entertained on what the future articulations of migration structures can be in a lunar or Martian settlement, who could be the enablers and what would be their articulations and relationships.

5.3.6 Agency

When referring to agency, the idea is to understand the extent of someone's control over their actions and the capacity to influence the outcomes (Moore, 2016). This characteristic allows us to examine the agency presence in the astronauts and displaced journeys.

Joining a space programme is a voluntary act that presupposes the undergoing of a recruitment and assessment process (NASA, 2021). It offers the possibility to quit and renounce while building a better understanding of the consequences faced when going to space. Also, it does not seemingly interfere with astronauts' private lives apart from when

they are on a mission, being away from Earth, or when undergoing training that requires some form of isolation or containment such as underwater labs or the Mars case (NASA, 2023; NASA, 2017). Even during a mission on the ISS, astronauts benefit from some down time to pursue their personal interests despite the intense workload (NASA, 2020).

A form of exercising their agency happened during the *Skylab 4* space mission which resulted in a crew "mutiny" against centre control due to overworking and lack of rest (Moskowitz, 2011; Green, 2017). It was solved amicably with both parties, the crew and the mission control acknowledging the tension and working to avoid future cases (NASA, 2020). Yet, it brought to light how the needs of astronauts were often sacrificed by the needs of the space agency as rigorous regimented experiments had to be run, exercising and maintenance (ESA, n.d.). Even now an astronaut shift on the ISS is 12 hours long.

However, astronauts can be both civilians and military personnel working for the government under the space agency or the military branch they serve (there are also the categories of commercial astronauts or private astronauts but they are not examined in this paper) (Federal Administration Aviation, 2022). This can lead to a restriction of agency as parts of their involvement in a mission, their activities or training might be considered classified (NASA, n.d.). Thus, it can prevent astronauts from freely sharing their experiences during their time in the role in the form of NDAs and orders (NASA, 2017). Moreover, they can partake or not in the mission but it is the agency setting the destination and scope of the project, astronauts can help design the plan yet the decision is of the agency (NASA, 2022).

Lastly, given their unique role as astronauts, they become relevant for the promotion of the space agency both in space and on Earth (Detsis & Detsis, 2013). They often have to attend events, conferences, talk to students, and so forth. Of course, it is part of their jobs, yet it might highlight another form of lack of agency as they become part of a public sphere that is required to constantly perform for an audience.

In a displacement situation, displaced people are forced to leave their home and do not follow a recruitment process into displacement. Nobody offers them a choice of being displaced. They are on the move because they have to, the alternative would be severe harm or potential death (Can, 2022). When on the move then they might cross an international border or

relocate within the country. It can depend on how far they are from a border, what type of threat they are facing, and what is their international network.

Living in displacement is not a free will choice. Often displaced face restraining conditions due to the settings they end up in. For instance they might access a refugee camp or IDPs camp, and generally there is not much control over life decisions as the framework they found themselves in is regulated by institutional or non institutional actors such as NGOs or governmental agencies (Bigg, 2020; Böhme & Schmitz, 2022; ReliefWeb, 2015). To avoid conflict and tensions processes in camps, they are heavily regulated with clear steps and structure (Bigg, 2020). Alternatively they might find themselves in informal settlements or constantly moving from one place to another, even in this case the personal agency on the decision making process can be limited as other external factors might come into play (Bigg, 2020; Böhme & Schmitz, 2022). For instance, asylum claimants in Dublin who are forced to camp outside the International Protection Office due to a lack of available accommodation and have to rely entirely on NGOs support (Carroll, 2023).

Yet, there have been an increased number of examples of displaced and refugees exerting agency despite their conditions. Sudanese asylum seekers in Cairo organised protests in front of the UNHCR office to express solidarity with protests in Sudan (Human Rights Watch, 2022). Or IDPs establishing self-management structures in Nigerian camps (Ekezie, 2022). Another example are the IDPs anti-government protests at Kalma camp in South Darfur (ReliefWeb, 2017). Or depending on the international network of the subject they might reappropriate agency in terms of options as they could move to another country by using transnational social networks, as in the case of Somali refugees reaching Egypt or Germany (Böhme & Schmitz, 2022; Al Sharmani, 2010). Lastly, the anti-Covid measures devised and shared by Afghan refugees in the Moria camp in Greece (Böhme & Schmitz, 2022).

This characteristic showcases similar tensions in both experiences as agency can be constrictive for astronauts and displaced. Both are seemingly dependent on decisions made at institutional or structural level outside their control such as which planet to land to or deciding or not to flee. An interesting implication is the use of social networks, in displacement they articulate on the lines of relatives, family, community or friends, and for astronauts can still articulate in those terms but have the addition of a mission control centre who act as the main support for their journey and struggles. Also it opens for considerations

on the efficacy of those networks for astronauts as the benefits obtained are different in terms of decision-making given the specific conditions of an outer space mission. The characteristic also highlights how the lack of agency for astronauts has a lesser impact on their private life while for IDPs and refugees the drawbacks are considerable. However, for displaced people there seems to be more strategies available which are still context and personal circumstances dependent.

5.3.7 Purpose

During the interdisciplinary review this characteristic emerged from literature. sociology and religion specifically. It tries to answer the question: "*why is this person embarking on this journey?"*.

For some astronauts it might have to do with a deep fascination with space since they were kids (NASA, 2013). They dreamed about going to space and made everything possible to achieve it. For others it could be a desire for discovery and human development, being part of a team representing the vessel to carry on experiments in space that can lead mankind on a path towards solving some of the burning answers affecting the planet (NASA, 2013). Thus, the purpose becomes to advance humanity from a knowledge, biological, and technological perspective which is very much in line with the scope of NASA as an agency pushing the limits of humankind to the newest discoveries and technologies. (NASA, 2020; NASA, 2022)

However, there are different considerations related to sovereignty as space missions are intertwined with economic reasons, geopolitical strategies and space supremacy (Spagnulo, 2021). While they are usually framed with progressing humankind and neutral scientific purposes, the reality underlines military purposes and calculations around the first mover trends to reap benefits before other actors can join and use that position of power to shape the future agenda (David, 2015; Gross & Harper, 2023).

Displaced people do not really have a choice, they have to flee (Can, 2022). The purpose of their journeys is safety and avoiding harm or death. It applies both in the case of an IDP and of a refugee, even though they might be avoiding different causes and embark on different routes to reach the safety they aim to.

In a sense astronauts and displaced people are seemingly both looking for a better life, in the first case it applies in a longer term and to all humankind while in the second it is tied to the personal human nature of avoiding harm and danger. Thus, despite having very different routes and reasons, an understanding of security and safety is shared by both experiences. Which can lead to questions on the perceived safety for longer space journeys and what is the trade off for astronauts when weighing the risks compared to the reward. Similar considerations can be made for displaced people as they flee an immediate or coming danger with the risk of falling into other harmful scenarios. It opens up questions surrounding the perception of danger and what considerations made by both astronauts and displaced people can tell us on the potential of dangers, especially as in space the danger is omnipresent while in displacement after leaving the immediate, the subsequent dangers are not always evident.

Also, it raises questions on the real purpose of space missions because national interests can pervade the reason behind going to space while still framing it as peaceful exploration benefiting mankind. It would be interesting to understand the perception of the astronauts in relation to the tension between national interests and the whole mankind and if there are differences between the military and civilian personnel's way of seeing their journey.

5.3.8 Preparedness

Literature was the only discipline that presented this trait. This characteristic examines the rate of unexpectedness and so preparedness of the journeys undergone by astronauts and displaced. It looks at how ready the subjects are before embarking on the journey.

It is in the interest of the space agency making sure its astronauts are in the best conditions possible when launching to space. It is a process that starts at the time of recruitment through rigorous assessments comprising physiological, physical and knowledge tests and continues with constant training that can last for years depending on mission and role in the mission (NASA, n.d.). The agency needs to make sure that once in space they are capable of addressing any sudden unforeseen situation that might arise and equip them with a general knowledge of all the aspects of the mission as help will not be able to come straight away (Flint, 2017; NASA, 2022). For this reason, astronauts are often called jack of all trades because they are very capable individuals able to endure, adapt, and succeed in extremely varied contexts (Flint, 2017).

Nobody prepares displaced people, there might be some foreseeable signals before the breakout of violence or conflict, maybe even before a political period of instability, yet there is no preparation before displacement (Becker, 2022). Countries might have emergency plans in place to address the basic needs of the population in an emergency but usually it is aftercare, not preparedness. Displaced people find themselves plunged in situations outside their control, with no preparation and having to rely only on their wits (Desai et al., 2020).

By pairing the preparedness of astronauts and displaced, there is a fundamental consideration to make which lies in who has an interest to prepare the subject before fronting an emergency. In the case of astronauts it is the agency while displacement is lacking an actor providing preparation due to its complexity. This consideration allows us to then bring it further by suggesting routes to examine what potential plans could be put in place, what might be the needs of the affected in broader terms, who could enable it and how it will articulate in different contexts. In particular, can the preparation of NASA help build countries' preparations? What would such a plan look like on the Moon or on Mars? And what would it mean preparing potentially future displaced people?

5.3.9 Effects

This characteristic was created to examine what can be the effects of experiencing a journey in displacement and in space. The section is not exhausting all possible effects found in space exploration and displacement.

Space is a very hostile environment where miscalculations can result in dangerous outcomes. Trying to map all the possible effects is extremely valuable for current technological and medical advancement because it can lead to breakthrough discoveries. Yet the full implications of space exploration are not entirely understood. Recent research has focused on both physical and mental effects to better understand what it means being in space for long stretches.

Understanding the challenges posed to astronauts is crucial for ensuring safe future missions and pondering the feasibility of living in space. Several issues are posed in the absence of gravity. The body undergoes several adaptations such as different blood pressure and liquid dispersion on the body, decreased muscle and bones, biohazards related to the disposal of harmful bacteria and how to balance a healthy diet to prevent the rising of conditions,

radiation exposure, and the impact on sleep patterns (Sakharkar & Yang, 2023; Curtis, 2010; Bonnet, 2015). Moreover, the implications of living in closed quarters for prolonged periods of time without leaving the enclosure, proximity and the interpersonal dynamics in the long term, isolation from loved ones and familiar settings, the idea of being away from Earth for so long, not seeing Earth in the case of Mars missions (Curtis, 2010; Bonnet, 2015; Kanas, 2023). All of these are some of the effects in relation to space missions.

Other effects in broader sense belong to biology, technology, international law and cooperation, geology and environmental sciences, architecture only to cite some fields affected by space exploration. Also there are the social effects on the general public because successful or disastrous missions can alter the public perception of going to space and the funding needed. (Thumm et al., 2014; Baum, 2009)

The effects of displacement are similarly encompassing many different aspects. Often they are linked to why the journey starts, what happens during the journey and what is the surrounding social, legal and political environment. For instance relocating within the same country of residence might present different effects than crossing two continents. Yet, there are some overarching aspects related to the physicality of displacement that include injuries, abuse, malnutrition, exposure to harm and environmental hazards, unsanitary hygienic conditions, unsustainable living spaces, death, torture, rape, exploitation or imprisonment (WHO, 2018; Montgomery, 2011; Gerber et al., 2021; Becher et al., 2022). Then there are the mental effects of the experience which include trauma, anxiety, disassociation, PTSD, suicidal thoughts, mental violence, depression and memory loss (Zipfel et al., 2019; WHO, 2018; Montgomery, 2011; Loebel, 2020; Gerber et al., 2021; Becher et al., 2022). Also there are the social aspects such as social exclusion, financial disarray, separation from families and loved ones, constant fear for safety and security, uncertainty of being in a place, slipping outside recognised legal categories, or the intergenerational aspect of displacement (WHO, 2018; Montgomery, 2011; Loebel, 2020; Williams et al., 2016).

Effects are not only affecting those undergoing the journeys but also the others involved from country level to family members. It can have an impact on the public perception depending on the political agenda of a country. It also has an effect on finances for countries and international institutions that need to have resources or ask for resources to support the displaced populations. (Yoshino & Paul, 2019; Corbin, 2021)

This characteristic unveils a similar difficulty to address as there are many aspects to consider in terms of effects for both space exploration and displacement journeys. However, given the fact that both have implications on the physical and mental health of those undergoing them it would be interesting to understand the framework around them, what are the strategies in place to prevent them, the potential for their cross application in the two different contexts, if there are already any overlapping strategies and how they can benefit the people found in these two disjunctive sectors. Both are risking long term consequences for the hopes of a better future, one for the "greater good", the other to survive.

Additionally, other similar effects are found also in the surrounding structures supporting the journeys and can go from influencing the public opinion to support space exploration or pressure governments to support displaced or can have other effects in several additional disciplines and this is the case for both types of journeys. Even here it would be interesting seeing what the full breadth of the effects are and what they are affecting to unveil the further complexity of the networks linking these journeys.

5.4 Chapter conclusion

From this chapter it became self-evident how difficult it can be setting two very counterintuitive topics side by side and drawing interpretations of what is the current theoretical understanding of them and ways to enrich it. However, it showed the value of comparing them by highlighting differences and similarities found in the two fields at a macro level.

Complexity was an underlying theme found across space exploration and displacement and helped in showcasing similar and vastly different traits. Differences in complexity were especially relevant in the understanding of characteristics such as origin, destination and duration. While for astronauts these characteristics are relatively easy to understand in the case of displacement it becomes very difficult defining them precisely as the current categories do not fully encompass their articulations.

Yet it highlighted a common theme of uncertainty found in the two journeys resulting from many unknown factors. For instance in the case of the effects resulting from the journeys

affecting the social, physical and mental levels, where some effects are clear and evident others are concealed and will require further analysis. Uncertainty is found mostly in displacement, yet even in space exploration there is a high degree of unforeseen because of scenarios still belonging to the hypothetical. It is closely linked to the interest of preparing the people undergoing the journey, showing how a single agency's interest in preparing its astronauts to the highest level might represent a potential learning tool in displacement where at the moment there is no preparation available.

Moreover, a similarity in complexity was found in the spectrum of actors involved in both journeys, especially when addressing the idea of migration infrastructure taken from displacement it seems clear that there can be some applicability in the case of astronauts too. Its future implications for future space settlements can discover additional actors that were never considered before.

Another interesting similarity was unveiled by the characteristic of agency showcasing that both groups see some constriction in their decision-making. Decisions are made at a higher level in both scenarios, with less impactful outcomes for astronauts and more severe for displaced. Still, displaced benefits from more strategies available than astronauts even though for both of them social networks are a crucial aspect for their journeys.

Lastly, the comparison highlighted how both displacement and space exploration journeys have the same intent of promoting security and safety yet they come from different perspectives. For the displaced is deeply linked to survival while for astronauts is for humanity. It highlights also how both subjects undertake these journeys knowing the risk of long term effects and possible dangers. In both situations there are known and unknown layers of dangers, yet both undertake the journey, one for lack of alternatives the other for seeing a bigger picture.

The comparison led to some new insights on the fields, and also provided a contextualisation of the two phenomena within a wider interdisciplinary theoretical understanding of journeys. It raised new considerations on similarities and differences of the two experiences prompting new grounds of inquiry and examination.

6. Critical reflections and further research

Throughout this project the framework of disjunctive comparison was applied comparing the experiences of journey found in manned space exploration and displacement. The reason to employ that specific framework was related to the characteristics of this project which is aiming to compare two extremely different disciplines in an inductive manner through a qualitative study. The comparison included a two level analysis at the meso and macro level to contextualise and draw from pre-existing literature characteristics useful for the research. In the section below I will critically reflect upon the project and propose future grounds for research.

Firstly, focusing only on NASA astronauts and resources did not encapsulate the full breadth of experiences of journeys as astronauts part of other agencies might present differences. A new research could benefit by including them and their resources available. Similarly, when dealing with displaced people the paper was taking the general population of IDPs and refugees into account. Narrowing it down to only one specific category, such as IDPs or refugees, can highlight different perspectives on how experiences might differ based on locations, nationalities, infrastructures and flight drivers.

Secondly, while the methodology of comparing two counter-intuitive topics through the concept of disjunctive comparison allows to establish this research, this interdisciplinary field could benefit from a different comparative type of study design. In particular to further examine the physical and mental effects of the two scenarios, the strategies available and adopted by astronauts and displaced, and investigating the full extent of their ramifications.

Thirdly, the research could have focused only on one of the two comparison tiers, the meso or the macro. While the ambition was to provide the broadest view possible, it might have penalised the full exploration of the two different levels. In addition, the paper does not examine the micro level, the personal realm where the single astronaut and displaced person themselves are studied. Further research would be welcome to also investigate the astronauts and displaced own perceptions.

Moreover, this paper does not provide an analysis of the strategies adopted in both scenarios by the actors. It touches lightly on some of the ones available but does not provide a full

account or examination of how they are deployed and their implications. For instance the role of mission control centres for space exploration and social networks for displacement are briefly discussed. Their role can be ground for further research. Also, understanding how astronauts and displaced people cope with specific conditions such as isolation, close proximity, constant dangers, could represent a new exploration strand, alongside comparing them to understand the cross-sectionality of strategies and their application in the different setting. It could highlight the value of potentially shareable strategies or differences adopted in the two contexts addressing the same issue.

Fifthly, while taking into account some of the characteristics and aspects of space exploration and displacement, those are not exhaustive. They only provide a tentative way to compare the two phenomena and act as guides to see what might result from these comparisons and their meanings. It opens the door for further considerations on additional suitable criteria for analysis, the methods and disciplines used, and it would be a welcomed addition to the theoretical grounds of comparing displacement and space exploration. Related to this topic, further research could benefit from using different interdisciplinary fields for the macro analysis and creation of different characteristics of comparison.

Furthermore, related to the previous point is the risk of exposure to potential bias by using only specific disciplines for determining the characteristics of a journey. It can result in biassed considerations not encompassing different views. In the paper I was trying to address this risk by providing different accounts in each discipline and via triangulation but it could have been broader or more effective. Focusing only on specific examples can exclude others that might illuminate different aspects of journeys leading to a very different research.

Lastly, the project highlighted that there are similar themes and characteristics in the two journeys despite being very different in practice. Isolation, mental struggles, being in a hostile environment among others. Still astronauts are willingly placing themselves in those conditions while displaced people do not have a choice. It leads to a question in relation to what are their considerations when exposing themselves to these dangers. And to circle back to my very first thought around the possibility of astronauts feeling displaced once back on Earth, there is not an answer to this question as it would require a different type of study probably including interviews with the subjects and addressing their perception of displacement. It would present a theoretical challenge to analyse what are the strategies in

place preventing astronauts from feeling displaced once back or while in space, and if this could have to do with their perceived duty as being government employees on a mission for the whole of humanity.

7. Conclusion

In this paper I investigated the experiences and characteristics of journeys found in displacement and manned space exploration to answer the research questions: "*To what extent can human space travel and displacement journeys be compared as disjunctive fields? How can this expand our understanding of the concept of journey?"*.

Through a comparison at the meso and macro levels, this study has demonstrated the value of disjunctively comparing manned space exploration and displacement, providing insights that find application beyond their individual areas. By refraining from establishing causality and instead examining these fields at their extremes, a complex and novel theoretical exercise was undertaken bringing together the two disciplines. Grounded in a systematic scientific methodology and enriched by interdisciplinary perspectives, this research created a higher level hermeneutic circle, continually adding new data and posing new questions that will require further investigation.

At minimum this research led to the opening of further questions. The paper challenges the assumptions of seeing displacement and space exploration as static phenomena affecting only determined people as their implications and articulations are further reaching. By engaging in a disjunctive comparison of these disciplines, it becomes evident how necessary are new ways of thinking and how further topics require investigation to build new theoretical grounds to capture future scenarios. It promotes and suggests stronger ties between social sciences and STEM disciplines to benefit from the expertise of one another and to look at the strategies employed in the two fields to see cross-applicability.

Moreover, the project highlights that there are some tensions, similarities and differences which were not self-evident before undertaking the research. Surprisingly, the research uncovered the limited degree of agency experienced by astronauts, as well as the articulations of sovereignty in the two settings imbued with uncertainty of the future. Also the complexity of the effects affecting both astronauts and displaced underlined similarities in the aspects

involved, social, physical, and mental, opening for further comparison of the strategies used to deal and address these issues.

In addition, the role of cooperation, actors, resources and purpose in the journeys were highlighted showing similarities and the shared complexity of their articulations despite coming from very different perspectives. When seen alongside the observed differences, especially demographics, resources and preparedness, it becomes evident how all these aspects can actually help drawing a comparison between these two fields and provide further prompts of investigation.

While this paper succeeds in its intent of prompting new conversations and raising further questions on what the two disciplines can tell us about our understanding of journeys and their implications, it also advises to consider different study designs when addressing those questions. Different approaches can only enrich the interdisciplinary field through theoretical explorations and novel perspectives.

Ultimately, the paper challenges, in a broader sense, the idea of defining journey as a static element with clearly identifiable and straightforward characteristics. This reductionist perspective fails to capture the full multifaceted complexity of journeys as shown in the comparisons at macro and meso levels. By comparing experiences situated at opposite ends of the journey continuum, this research has revealed both similarities and differences, enriching our understanding of the concept through their nuanced articulations.

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