Fourth Mission and Post-Sustainability Oriented Innovation in the Arctic

Olsen, Martin Mohr

Publication date:
2023

Document Version
Publisher's PDF, also known as Version of record

Cover Sheet

Doctor of Philosophy
Doctoral thesis in Management

Fourth Mission and Post-Sustainability Oriented Innovation in the Arctic

Author: Martin Mohr Olsen

Supervisors: Professor Jason Li-Ying,
Associate Professor Francesco Rosati
Affiliated Teaching Lecturer Lau Øfjord Blaxekjær
Associate Professor Jens Christian Svabo Justinussen

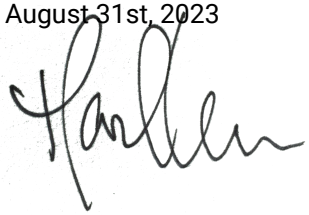
DTU Entrepreneurship
Centre for Technology Entrepreneurship
Technical University of Denmark
Diplomvej
Building 371, room 220
2800 Kgs. Lyngby

0.1 Preface

This thesis was submitted to the Technical University of Denmark (DTU) in partial fulfilment of the requirements for the degree of Doctor of Philosophy (Ph. D.) in Management. The work presented in the thesis was completed between December 1st 2018 and August 31st 2023, at DTU Entrepreneurship and the University of the Faroe Islands, under the supervision of Professor Jason Li-Ying (Technical University of Denmark), Associate Professor Francesco Rosati (Technical University of Denmark), Affiliated Teaching Lecturer Lau Øfjord Blaxekjær (University of the Faroe Islands) and Programme Leader in Politics and Administration and Associate Professor in Social Science Jens Christian Svabo Justinussen (University of the Faroe Islands).

The project was jointly funded by the Technical University of Denmark,, the University of the Faroe Islands and the Municipality of Tórshavn.

Copenhagen, Denmark
August 31st, 2023



0.2.1 English summary

This thesis concerns itself with how small Arctic institutions of higher learning can work to implement sustainability as an operational factor. I take the stance that implementation of sustainability within academic organisation is complicated by the interconnected nature of the issues that it addresses. Institutions of higher learning are found to be built around rigid and sharp demarcations between different fields and disciplines, lacking interdisciplinary collaborations and dialogue between not only distinct academic fields but also in terms of communications with the communities that surround them. Communities which are most likely in need of solutions to concerns related to sustainability.
Based on own professional experiences from the University of the Faroe Islands and work done there in conjunction with attempts to introduce sustainability within the university, and me extensive work with and within the Arctic region, I question definitions of sustainability in terms of local contexts and search for actionable frameworks that can aid in sustainability adoption and implementation.
I propose that solutions are likely found in two overlapping academic spheres–in terms of adoption in how the concept of sustainability is defined in a local context, and in terms of implementation based on actionable and operational frameworks that are in line with such definitions. Therefore, this thesis addresses the following research question:

> ***How can we explain and understand the potential benefits and barriers for small Arctic institutions of higher learning to implementing sustainability as a Fourth Mission?***

This line of questioning is engaged from four different angles, in four different academic papers each with increasing scalar focus: Paper **A** takes a historical lens to the University of the Faroe Islands in order to investigate a fissure between institutional and organisational structures that see it lacking, amongst other things, in sustainability implementation. Paper **B** looks to the Arctic and engages very small institutions of higher learning in order to understand what sustainability means to them. Paper **C** is a systematic literature review with a global perspective, focusing on publications concerned with sustainability implementation through the use of innovation and entrepreneurship. Paper **D** is an attempt to produce a sustainability-focused framework or checklist that can be used in conjunction with projects (intended for the defunct *Centre for Innovation* at the University of the Faroe Islands). Working paper **E**, summarises papers A-D into a concluding portion.

With a constructivist perspective informed by Flyvbjerg's *phronesis* and Bourdieu's symbolic capital, these papers are deconstructed to reveal recurring themes. Four themes stand out; the concept of sustainability itself as an idea, the analytical lens of transscalarity, university mission statements and how they shape modern-day academia, and the emergence of a new, fourth, mission statement.

I find that academic institutions within the Arctic often play an outsized role of identity creation within communities and are symbols of progress and autonomy. They are perceived as custodians of culture, history and language and due to how tightly they are woven into the fabric of the identity and aspirations of these communities, they can be slow to change. I point to how sustainability within the Arctic is often perceived in terms that differ markedly from how it is defined elsewhere, and note that it is often political and contingent on time, place and identity. This is not a rejection of sustainability itself–but rather a rejection of terms. I introduce a burgeoning paradigm of post-sustainability as a means to come to terms with how sustainability can be better understood contextually within the Arctic. It is also explained that there exists an emerging global trend that rejects current operational modes in order to escape the confines and restrictions of conventional academia. This move beyond historically established academic missions, takes the form of co-creation with local stakeholders. As of yet, it is still a novel concept that is not widely practised within academia, but I point to a number of small Arctic institutions that have long since adopted this manner of operating.

0.2.2 Danish summary

Den afhandling beskæftiger sig med, hvordan små arktiske uddannelsesinstitutioner kan arbejde med at implementere bæredygtighed som en operationel faktor. Jeg er af den overbevisning, at systemisk implementering af bæredygtighed indenfor akademien kompliceres af de komplekse sammenkoblede problemer, som det adresserer. Universiteter er ofte bygget op omkring stive og skarpe afgrænsninger mellem forskellige fagområder og ignorerer tit tværfaglige samarbejder og dialog, ikke kun mellem forskellige akademiske områder, men også i forhold til kommunikation med de samfund, der omgiver dem. Samfund, som sandsynligvis har brug for løsninger på bekymringer vedrørende bæredygtighed. Baseret på egne erfaringer fra Færøernes Universitet og det arbejde, der er udført dér i forbindelse med forsøg på at introducere bæredygtighed på universitetet, samt mit omfattende arbejde med og i Arktis, stiller jeg spørgsmålstegn ved definitioner af bæredygtighed i forhold til lokale sammenhænge og søger efter anvendelige rammer, der kan hjælpe med bæredygtighedsadoption og -implementering. Jeg foreslår, at løsninger sandsynligvis findes inden for to overlappende akademiske områder – hvad angår accept, hvordan bæredygtighedsbegrebet defineres i en lokal sammenhæng, og hvad angår implementering baseret på anvendelige og operationelle rammer, der er i overensstemmelse med sådanne definitioner. Derfor besvarer denne afhandling følgende forskningsspørgsmål:

> ***Hvordan kan vi forklare og forstå potentielle fordele og barrierer for små arktiske uddannelsesinstitutioner ved at implementere bæredygtighed som en "Fjerde Mission"?***

Dette spørgsmål udforskes fra fire forskellige vinkler i fire separate akademiske artikler, hver med en stigende fokus på forskellige skalaer: Artikel **A** tager en historisk tilgang til Færøernes Universitets historie for at undersøge kløften mellem institutionelle og organisatoriske strukturer, der blandt andet har resulteret i manglende implementering af bæredygtighed. Artikel **B** retter blikket mod Arktis og ser på små uddannelsesinstitutioner for at forstå, hvad bæredygtighed betyder for dem. Artikel **C** er en systematisk litteraturgennemgang der med et globalt perspektiv fokuserer på publikationer om bæredygtighedsimplementering ved brug af innovation og iværksætteri. Artikel **D** forsøger at udvikle en bæredygtighedsfokuseret ramme eller tjekliste, der kan anvendes sammen med projekter (til det nu nedlagte *Center for Innovation* på Universitetet på Færøerne). Working paper **E**, opsummerer udgivelserne **A-D** i et konkluderende afsnit.

Med en konstruktivistisk tilgang informeret af Flyvbjergs phronesis og Bourdieus symbolske kapital, dekonstrueres disse artikler for at afsløre tilbagevendende temaer. Især fire temaer går igen: selve bæredygtighedsbegrebet som idé, tværskalaritet, universiteternes missionserklæringer og hvordan de former nutidens universiteter, samt dannelsen af en ny, fjerde missionserklæring.

Jeg konstaterer, at akademiske institutioner i Arktis ofte spiller en meget stor rolle i identitetsskabelse inden for deres samfund og er symboler på fremskridt og autonomi. De er vogtere af kultur, historie og sprog, og på grund af hvor tæt vævet ind i identiteten og ambitionerne i disse samfund de er, kan de være langsomme til at tilpasse sig forandringer. Jeg peger yderligere på, hvordan bæredygtighed i Arktis ofte defineres på måder, der adskiller sig markant fra, hvordan det defineres andre steder, og bemærker, at bæredygtighed ofte er politisk og betinget af tid, sted og identitet. Dette er ikke en afvisning af selve bæredygtigheden – men snarere en afvisning af betegnelser. Jeg introducerer paradigmet for *post-bæredygtighed* som en måde at forstå, hvordan bæredygtighed bedre kan forstås kontekstuelt i Arktis. Jeg forklarer også, at der er opstået en global trend, der afviser nuværende driftsformer, for at undslippe begrænsninger fundet i moderne universiteter. Denne bevægelse henover ellers etablerede akademiske missioner tager form af samskabelse med lokale interessenter. Indtil videre er dette stadig en relativt ny idé inden for akademien, men jeg peger på flere små arktiske institutioner, der længe har indarbejdet denne måde at operere på.

0.3 Publications

The theoretical work presented is based on the following two published peer-reviewed manuscripts (**A-B**), two papers that are under review at the time of submission (**C-D**) and one working paper that will function as the thesis conclusion and has not been submitted for review (**E**). All publications have been formatted to fit the layout of this volume, but are available in their original form online.

> **Paper A**: Olsen, MM. (2020) *University of the Faroe Islands: From Nation-building to Nation-branding*. Økonomi & Samfund 93(4), pp. 86-101; Special issue on the Faroe Islands, Blaxekjær, LØ (ed). Djøf Forlag: Copenhagen [Translated from the original Danish publication].
>
> **Paper B**: Olsen, MM. (2021) *An Academic Lead in Developing Sustainable Arctic Communities: Co-Creation, Quintuple Helix, and Open Social Innovation*. Chapter 7 (pp. 123-148) in: Natcher, D. and Jokela, T. (eds) (2021) *Renewable Economies in the Arctic*. Routledge.
>
> **Paper C**: Olsen, MM. (under review) *"Sustainability is having enough midwives and teachers": A Survey of the Sustainability Practices of the Smallest Institutions of Higher Learning in the Arctic*. Arctic Yearbook, Akureyri: Northern Research Forum and UArctic Thematic Network on Geopolitics and Security.
>
> **Paper D**: Olsen, MM. & Rosati, F. (forthcoming) *Universities as Agents for Entrepreneurship and Innovation for the Sustainable Development Goals: A Systematic Literature Review*.
>
> **Paper E**: Olsen, MM. (Working Paper) *Fourth Mission and Post-Sustainability Oriented Innovation in the Arctic*. [*Not submitted for review at the time of writing*].

This thesis also draws on these two publications (**F-G**). While they are linked to the practical work produced in and around the onset of this thesis project, and are the main source of inspiration for the narrative of the thesis, they are *excluded* from the overall thesis.

> **Paper F**: Blaxekjær, L., Olsen, MM. et al. (2018) *The Sustainable Development Goals and Student Entrepreneurship in the Arctic*. Arctic Yearbook 2018, Akureyri: Northern Research Forum and UArctic Thematic Network on Geopolitics and Security.
>
> **Paper G**: Lauritsen, S. E., Olsen, MM. et al. (2019) *Educating Arctic Entrepreneurs: The next generation of sustainable pioneers*. Nordregio report on student entrepreneurship in the Arctic. Nordic Council of Ministers.

0.4 Table of Contents

0.5 List of Figures and Tables

2.2 – Research Design

3.2 An Essay on Concepts

3.3 Conclusion: the Fourth Mission and Post-Sustainability Oriented Innovation in the Arctic

4.1 University of the Faroe Islands: From Nation-building to Nation-branding

4.2 “Sustainability is having enough midwives and teachers”: A Survey of the Sustainability Practices of the Smallest Institutions of Higher Learning in the Arctic

4.3 Universities as Agents for Entrepreneurship and Innovation for the Sustainable Development Goals: A Systematic Literature Review

0.6 Abbreviations

ABS	Chartered Association of Business Schools
ABDC	Australian Business Deans Council's Journal Quality List
DESD	[United Nations] Decade of Education for Sustainable Development
DTU	Danmarks Tekniske Universitet, Technical University of Denmark
ESD	Education for Sustainable Development (UNESCO)
EU	European Union
FSF	Fróðskaparsetur Føroya/University of the Faroe Islands
FT	Folketinget/Danish Parliament
HEI's	Higher Education Institutions
ISO	[standard] International Organization for Standardization
MIT	Massachusetts Institute of Technology
MP	Member of Parliament
NGO	Non-Governmental Organisation
NIS	National Innovation Systems
NORA	Nordic Atlantic Cooperation/Nordisk Atlantsamarbejde
OECD	Organisation for Economic Co-operation and Development
OSI	Open-Social Innovation
PICO	[framework] Patient/Intervention/Control/Outcome
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PRME	Principles for Responsible Management Education
RME	Responsible Management Education
SDGs	Sustainable Development Goals
SOI	Sustainability Oriented Innovation
UArctic	University of the Arctic
UFI	University of the Faroe Islands
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization

0.7 Acknowledgements

The inception of the following PhD thesis was, as are many PhD projects I am sure, an arduous affair for all parties involved. It relied on a number of people just to get off the ground. My thanks go to the rectors of the University of the Faroe Islands and the Technical University of Denmark; Sigurð í Jákupsstovu and Anders Bjarklev for their efforts and interest in initiating the project. Similarly, without the relentless tenacity, friendship and support from Lau Øfjord Blaxekjær this thesis would never have become a reality.

To that, I would like to add my warmest appreciations to those who provided support to the project and myself in its initial stages. My deepest appreciations to Sune Nordentoft Lauritsen, Hanne Thomasen and Niels Andersen from DTU Space and Kristoffer Buch and Pål Simon Fernvall from DTU Skylab for allowing me to be a part of the projects that led to my current interest in the Arctic, social innovation and entrepreneurship. Thank you for your trust and kindness. Adding to that, the kindness, encouragement and support from Jay Friedlander from the College of the Atlantic, David Natcher from the University of Saskatchewan and Leslie King from Royal Roads University meant more to me than they probably realise.

During this thesis I was fortunate to be surrounded by a small army of supervisors who were greater than the sum of their individual parts. Each brought to the project their own perspectives, advice, expertise and kindness. In the Faroes, Lau Øfjord Blaxekjær and Jens Christian Svabo Justinussen. In Denmark, Jason Li-Ying and Francesco Rosati. My gratitude knows no bounds. Thank you all for pushing me to do better.

A huge thank you also to Jes Broeng, Sannie Fisker, Marianne Ærsøe and the rest of the fantastic team of people at DTU Entrepreneurship. Thank you all for opening your doors to me during my time in Denmark. Thank you for all your time, assistance and kindness.

Without the love and patience of my small family; Jana, Hannah and Jónas, this project would likely never have been completed. Thank you all three for allowing me to do this. You are everything to me.

1.1 Introduction

One very early, very cold, autumn morning in a very nice Reykjavík hotel in 2019, I was talking to a Canadian colleague over breakfast. We were, along with thousands of other academics, students NGOs, politicians and industry leaders, in Iceland for the annual *Arctic Circle Assembly* conference that had grown into a veritable *who's-who* of Arctic issues–a three day, all-day, marathon of sessions and presentations pertaining to anything imaginable related to the Arctic region. As we were scrolling through the upcoming programme on our respective iPads, running well over one hundred pages, overwhelmed by choices and themes, she remarked how many of the sessions and events included references related to the idea of *sustainability* in some form or another. Curiously, a discourse analysis of *Arctic Circle Assembly* programmes for the years 2013-2016 is available (Johansdóttir, L. & Cook, D. 2017) and compares both the background of speakers participating during those first four years of the conference–and the topics of their presentations. In those first four years, the concept of *sustainability* does not even feature as one of the top ten most recurring terms (in session titles). Some of the most common themes were: *Development*, *Security*, *Global*, *Research*, *Energy*, *Challenges* and *Future* (see ibid:278). The astute reader will no doubt point out that these are all themes that are related to the core elements of *sustainability*, but at the time the concept had yet to permeate, in this case, the *Arctic Circle Assembly* conference. While the concept of *sustainability* does indeed feature prominently in the founding documents and discussions related to the establishment of the Arctic Council (see: Bloom, ET. 1999), it could be argued that the mentioned *Arctic Circle* conferences were pivotal in introducing and maintaining focus on *sustainability* within the Arctic–at least as it relates to a broader, varied, audience.

Precisely these two emerging movements, a rapidly *increasing renewed interest in the Arctic region* from both inside and outside of the region (f.ex. Olsen, IH. & Shadian, JM. 2016), and an equally rapidly growing *focus on–and dissemination of–the ideals of sustainability* (especially formulated through the SDGs) travelled in parallel and eventually intersected. With the Arctic Circle Assembly conferences (of which I attended the majority) acting as a focal point, one could not discuss the *Arctic* without considering *sustainability*. During that very cold autumn morning in Iceland, I was involved in the *West Nordic Studies Masters' programme* at the University of the Faroe Islands with my colleague Lau Blaxekjær (see section 1.2 below). On the one hand, we were focused on the pedagogy and didactics of introducing sustainability into the curricula and syllabuses of our classes–but, more to the point herein, we had an equal interest in introducing *sustainability* into the core operations of the University of the Faroe Islands, which at the time was devoid of any such focus.

An almost daily challenge during that time was our work with an unconventionally structured Masters' programme that leaned heavily into stakeholder involvement. We were, and I still am, convinced that for universities to make a difference in the realm of sustainability–to be at the forefront of practical solutions to complex problems, they would need to engage their local communities and surrounding regional partners in dialogue. However, financial constraints, lack of internal support and managerial decisions to eventually merge the programme with a different programme led to its demise.

Preparations for this thesis were made in parallel with the slow decline of the Masters' programme and for a short time, the eventual demise of all our previous hard work intersected with the initiation of a new project in the form of the following thesis. The organisational mismanagement of our best intentions and hard work was, of course, a bitter pill to swallow–but further strengthened my resolve in trying to make sense of how our attempts to introduce aspects of sustainability and innovation into Farose academia failed so badly. I was curious to unearth whether we as researchers, educators, and sustainability agents were at fault, or if this failure was somehow tied to the organisational and institutional makeup of the university where we had been working. As my colleague Lau Blaxekjær sought new opportunities abroad, we still kept up a discussion in trying to understand what went wrong, what one might learn from it and how others might avoid such barriers down the road.

1.1.0 Research Question

Based on past experiences, this thesis asks the following research question:

> ***How can we explain and understand the potential benefits and barriers for small Arctic institutions of higher learning to implementing sustainability as a Fourth Mission?***

This is explored further in the thesis formulation in section 2.1 below.

1.1.1 State-of-the-art

In the following I will give a brief overview of recent trends within the literature. A major theme of this thesis revolves around the concept of sustainability, or rather the definition thereof. Due to scope, this section will focus on the definitional aspects of sustainability. Here I will cover and point to relevant advances in the literature. First the concept of sustainability will be covered, leading into work related to critical theory paradigms and eventually what will be denoted as post-sustainability herein. Below that, I will outline some key literature on mission statements and especially the focus on going beyond the third mission.

Sustainability

As a concept *sustainability* has evolved over recent years to such a degree that the field can be hard to navigate academically. This definitional failure has been extensively explored for a number of years by authors such as Newton and Freyfogle (2005); Johnston et al (2007); Vos, RO. (2007); Thiele (2013); Ramsey, JL. (2015), and Farley & Smith (2020) to name a few. All deal with the problem of application without clear definition. Ramsey, as an example, argues that "*[m]eaning–and the lack thereof –matters*" (2015:1076, emphasis). Without a clear definition, sustainability as a concept has become "one of the least meaningful and most overused words in the English language" (Owen 2011:246 [cited in Ramsey, JL. 2015:1082]). Defining the constituent components of sustainability, according to Ramsey (2015:1081), requires social context in order to make linguistic and normative sense. Ramsey, at least from a semantic point of view, embraces the varied and undefinable nature of the concept (ibid:1086). From an institutional, organisational or collaborative perspective, this form of relativism is bound to be unproductive. His central point (ibid:1085, emphasis) is that "*[m]eaningful definitions—ones that people understand in the sense of being able to follow and implement them—presuppose a social context in which one can give a definition*". While Ramsey argues that we need to work with the concept of sustainability in order to facilitate sensemaking, based on context-based needs, there are others, such as Benson & Craig (2014), who argue for a wholesale abandonment of the concept of sustainability. Their argument is very much in line with what is presented in Dennis Meadows' work of both 1972 (Meadows et al. 1972) and their updated version 30 years later (Meadows et al. 2004) in that we are very much late to the game and sustainability as an actionable ideal is getting us nowhere very fast. Written prior to the adoption of the SDG (and attempts at measuring sustainability, as such), their argument is one of failures to formulate goals based on metrics that rely on a concept that is as fluid, contextual and broad as that of sustainability. They, rather, argue for a shift towards employing the concept of *resilience* in place of sustainability, as it, according to Carpenter et al. (2001), allows for much more granular control over metrics, and thus likely also successful progress.

Following such exploratory ventures into the concept of sustainability, Purvis, Mao & Robinson (2019) present an historical analysis of the three-pillared sustainability model that is also used below (social, economic and environmental). They conclude that there seems to be no singular source within the literature from where this model seems to derive, and that where it is used, definitions and goals often

vary markedly. They call for a critical examination of the models we currently use to deal with issues of sustainability, especially due to the political nature of sustainability and how reproduction of models, without careful consideration, can have unhelpful consequences (ibid:691-2). This political facet of sustainability, especially with regards to the Arctic region is most recently covered in detail by Gad and Strandsbjerg (eds. 2020) with an entire volume on the politics of sustainability in the Arctic. Theirs is a volume that reveals the political nature of sustainability through a focus on issues that are not commonly found in sustainability-based debates in the literature; indigenous peoples' identity politics, history, resilience, self-determination and autonomy, and post-colonialism (I especially deal with these concerns in section 3.2.2 and section 3.3).

These sentiments are also echoed in Natcher and Koivurova (eds. 2022), in which I provide a chapter (see section 4.4), where concerns of indigenous knowledge resources, socially sustainable projects, energy justice and the focus of art in cultural sustainability are explored (amongst others). Volumes and articles on Arctic sustainability are markedly different in scope and focus from what might be considered conventional debates on the issues coming out of continental Europe or the United States. They tend to take on issues based on rural/peripheral concerns, and combine them with often highly localised political realities concerning identity, autonomy and resource-based sovereignty–often with a post-colonial twist (I deal with this in section 3.3).

There are, in a similar theme, an increasing number of scholars applying critical theory approaches to sustainability in a broader sense. These tend to be activist, Marxist, post-colonial, gendered, racial or ethnically justice-oriented and reveal sides of sustainability that transcend the more well-trodden aspects of the concept–Rose and Cachelin (2018), among them, convincingly argue for a greater focus on *critical sustainability* based on social and environmental justice. Even further in this line of exploration, Misiaszek (2020a;2020b) calls for *ecopedagogy* to be adopted within institutions of higher learning as a means to advance critical socio-historical understanding and counter growing political "*post-truthism*" (i.e. climate-denial etc). In this same sphere, there are also increasingly vocal corners of the academic world pressing for more radical catalysts for change through post-growth, post-consumerism and post-capitalism (see especially: Blühdorn, I. 2017) and, in parallel, others that attempt to sum up our collective failure to react under the umbrella of *post-sustainability* (Foster, J. 2018; Sconfienza, UM. 2019). While the term *post-sustainability* does exist and is used, it does not yet have a widely recognized or established definition, but deals with the transition into new paradigms where priorities are reevaluated. It leans into environmental and social resilience through social and technological evolution and calls for critical reflection (post-sustainability is covered in section 3.2.3 and further in section 3.3).

Mission statements, co-creation

The second major theme is the systemic adoption of sustainability within academia. Here the focus will be on universities and institutions of higher learning within the Arctic region. That is to say that most of the accompanying papers found in the appendix make use of the Arctic region as a setting. This is primarily due to the nature of my professional focus leading up to this project, publications that came before this, and the networks that we had developed during that time, to wit: a reliance on what was familiar and easily accessible. This does not mean that the analyses and findings found below are necessarily *Arctic* in nature. My hope is that they will be broadly applicable, but acknowledge that a considerable portion of what I will be dealing with is likely more recognisable to institutions that find themselves on the periphery; be it geographic, ethnic, political or based in resources.

All but one of the appended papers rely on work by Gregory Trencher and his colleagues (Trencher et al. 2014a) on university mission statements (being *teaching*, *researching* and *disseminating*) and how

the concept of *sustainability* can be difficult to implement holistically within academia, if we are to rely on these, often siloed, components of academic organisational and institutional operations. Their work has been highly influential and has influenced a debate on "co-creation for sustainability" where universities are to take a leading role in cementing partnerships with local and regional stakeholders in order to speed up positive solutions to critical problems. Trencher further develops this notion with others (Trencher et al 2014b) and the idea of co-production and co-design is further picked up by a number of scholars such as Rinaldi et al (2017), Wakkee et al (2019), Purcell et al (2019) and Filho et al (2021) who stress the need to acknowledge that universities and institutions of higher learning play a crucial part in the production of solutions and future agents of change that might steer the agenda of sustainability in the right direction going forward. These are all scholars that focus on collaboration and stakeholder engagement within local communities and areas surrounding universities as a means to make sense of relevant pressing issues. Most of them rely on some form of entrepreneurial focus fused with social innovation and critical theory-based concerns relating to development and more broadly, highlighting an equal need for concern towards elements of environmental-, economic-, and social issues (I focus more on this in section 3.2.5 and in section 3.3).

1.1.2 Knowledge gaps

My research question is concerned with how we can explain and understand the benefits and barriers for small Arctic institutions of higher learning in implementing sustainability as a 4th mission. These knowledge gaps are simultaneously pragmatic and practical, and theoretical and general.
To a degree, this thesis is a sense-making exploration of something experienced, namely the lingering question of why dealing with sustainability at the University of the Faroe Islands was so fraught with complications as it turned out to be, when sustainability was in high demand from students and the stakeholders in the surrounding community. In some ways it is an oddly personal knowledge gap, but also one that I expect has impacted other scholars. I approach this gap with an assumption that there can be a better, locally contextual, way of understanding the concept, which might explain the reason behind the struggles experienced. The definitional problem surrounding the concept of sustainability is expected to be something that can influence initial adoption of the tenets of sustainability, but an additional knowledge gap concerns the practical implementation of actionable frameworks and systemic daily operations–being the practical performance of the benefits that are outlined in 4th mission statement paradigm proposals, that of *co-creation for sustainability*.

1.1.3 Research objectives

I aim to close these gaps through an exploration of four different research objectives, all of which are found in the articles included below. Some of these objectives are recurring and dealt with in more than one article, while others are mainly focused on within the confines of individual publications.
In order to cover the different elements of the research question, and effectively close the mentioned knowledge gaps, I have sought to better understand them based on the following objectives:

A contextual sense-making exploration of *small-scale* academic institutions, locally and within the Arctic–consisting of examples of *identity-* or *culture-based* institutions, *necessity-based* institutions and what I refer to as *hybrid-institutions*. This is especially covered in section ***4.1*** on the organisational and institutional schism at the University of the Faroe Islands, in section ***4.2*** on small Arctic institutions and in section ***3.3*** as a concluding remark.

Examples of academic implementation of sustainability in other parts of the world that might be comparable to our prior attempts using innovation and entrepreneurship. This in an attempt to uncover similarities and differences in barriers and drivers. This is covered in section ***4.3*** as a

systematic literature review on global attempts to incorporate sustainability within academia through the use of entrepreneurship and innovation, and in section ***3.3*** as a concluding remark.

A conceptual definition of *"sustainability"*, especially as it relates to Arctic academia and more particularly how it relates to small Arctic institutions of higher learning. This objective was a late addition, since it became apparent that it was by no means always clear what was meant by the concept of *sustainability* when engaging with different actors and further how the concept of *sustainability* can be used as a politicised narrative, woven into discourses of independence, autonomy, culture and historical wrongs that can be confrontational rather than productive by governance stakeholders, and how the UN's Sustainability Goals might be used as a proactive and diffusive tactic. Covered in section ***4.2*** through interviews with Arctic institutions and further expanded upon in sections ***3.2*** and ***3.3***.

An exploration of possible solutions, workable frameworks or novel theoretical approaches that might help to aid in future implementation of sustainability. The chapter in section ***4.4*** attempts to set up a framework for how best to incorporate social innovation and UN's SDGs as a means to introduce sustainability into academia. An main theme of the thesis is one of lacking systemic academic concern with propelling sustainability-based initiatives forwards. In the articles herein, the concept of a new academic mission statement is used to describe the need for *co-creation for sustainability*, or a *4th mission statement*. This is first explored historically in section ***4.4***, then comparatively in section ***4.2*** where I point out that small Arctic institutions, through necessity, adhere to the paradigms listed in the 4th mission framework, in section ***4.3*** where we note that universities around the world are adapting novel teaching methods and didactics that mirror these same paradigms, and finally in section ***3.2*** and section ***3.3*** as a closing remark. Similar to how the framework of *co-creation for sustainability* runs through the narrative majority of this thesis, the emerging theoretical approach of *transscalarity* is woven in throughout most of the sections, in some capacity or other. Its tenets can be seen in all four articles below, as I try to engage with the different issues from more than one scale at a time. Conceptually, it is explored in section ***3.2*** and then used in section ***3.3*** as a form of connective tissue fixing the remaining concepts in place.

1.1.4 Key findings

I find that very small universities and institutions of higher learning within the Arctic play an outsized role of identity creation within their communities and are often symbols of progress and autonomy. They are seen as custodians of culture, history and language and because they are tightly woven into the fabric of the identity and aspirations of these communities, they can be slow to adapt to change.
I further point to how sustainability within the Arctic is often defined in terms that differ markedly from how it is defined elsewhere, note that it is often political and contingent on time, place and identity. This is not a *rejection* of sustainability itself–but rather a rejection in terms. I introduce the paradigm of *post-sustainability* as a means to come to terms with how it can be understood contextually.

It is noted that there is an emerging global trend that rejects current operational modes in order to escape the confines and restrictions of conventional academia. This move beyond the historically established missions takes the form of co-creation with local stakeholders. As of yet, it is still a novel concept within academia, but I point to a number of small Arctic institutions that have long since adopted this manner of operating.

1.1.5 Thesis structure

The thesis is structured such that the articles produced have been appended towards the end of the book. The book consists of ***four*** parts, *Introduction*, *Formulation*, *Thesis* and *Publications*:

Introduction (pages 003-026)

1

0.2 Summaries – are presented in *English* and *Danish*.

1.1 Introduction – presents a brief introductory section that covers state-of-the-art, knowledge-gap, research objectives and key findings.

1.2 Personal and Academic Motivations – first explains the motivation for initiating this project, along with a summary of very early findings that kindled an interest in how entrepreneurship and innovation centred academia might be a solution to many of the issues facing the Arctic (and the world) – and led to the pursuit of practical solutions that form the basis for this thesis.

1.3 Hurdles, Barriers and Chronology – This project was conducted over a period of four years and resulted in a number of unfortunate events. This section outlines some of the hurdles and accounts for the tonal shift between the four papers produced.

Formulation and Design (pages 027-040)

2

2.1 Thesis formulation – where the overall thesis is formulated and the research question is presented, along with research objectives and a thesis structure overview.

2.2 Research design – covering paradigmatic, axiological, ontological and epistemological considerations, as well as methodology and methods.

Thesis (pages 041-092)

3

3.1 Introducing concepts and conclusion – a brief introduction to sections 4.2 and 4.3.

3.2 A Conceptual Essay on Making Sustainability Actionable for Small Arctic Universities Features a section, in essay form, on the different theoretical perspectives and recurring conceptual themes that feature heavily within the four articles presented in the appendix.

3.3 Fourth Mission and Post-Sustainability Oriented Innovation in the Arctic – The thesis itself; summarises the publications and conceptual themes, further elaborates on findings and implications, and finally leads into a conclusion.

Publications (pages 093-175)

4

4.0 Appendix: Publications – Here the different articles produced in conjunction with this project have been included. While they can be read in any order, they have been listed here in a sequence that leads the reader from something very local, to something regional, to something global and finally to an exploration of possible solutions.

4.1 University of the Faroe Islands: From Nation-building to Nation-branding

4.2 "Sustainability is having enough midwives and teachers": A Survey of the Sustainability Practices of the Smallest Institutions of Higher Learning in the Arctic

4.3 Universities as Agents for Entrepreneurship and Innovation for the Sustainable Development Goals: A systematic literature review

4.4 An academic lead in developing sustainable Arctic communities: Co-creation, quintuple helix, and open social innovation

1.2 Personal and Academic Motivation

Rounding out my penultimate year as a Master's student at the University of Aberdeen in 2012, I was offered a chance to be placed in their *Master of Research* programme intended for prospective PhD-candidates. In this programme, my MA-thesis would be considered an initial draft for a possible PhD-thesis application and project description. While I completed the MRes degree and did consider the possibility of continuing my academic career in Scotland, I was eventually drawn to an offer to work on a number of projects initiated by the Nordic Council and the Nordic Council of Ministers operated by the Confederation of Nordic Organisations located in Copenhagen (Foreningerne Nordens Forbund; fnfnorden.org). The work consisted mainly of lobbying crossed with regional activism. The position was unfortunately hampered by the fact that culture and civics-based NGO work is hardly known for being flush with money. When I was offered the chance to return to academia in 2016, working alongside Lau Øfjord Blaxekjær on the University of the Faroe Islands' brand new West Nordic Studies Masters' programme, I jumped at the chance and returned home to the Faroe Islands after being away for some eight years.

The inclination and interest in continuing efforts to pursue a PhD-candidacy was sparked almost right away. The West Nordic Studies programme was a joint Masters programme shared between the University of Greenland, the University of Akureyri, the University of Iceland, the University of Bodø and the University of the Faroe Islands. The programme consisted of four semesters, of which at least one was to be completed at one of the participating universities. The different universities focused on different aspects of West Nordic (Greenland, Iceland, Faroe Islands and Norway) issues; civics and indigenous rights in Greenland, Polar law in Iceland, geopolitics in Norway and sustainability in the Faroe Islands. From its inception, the Faroese portion of the programme was constructed in such a way as to maximise student engagement with the surrounding community. Students were required to complete non-academic outreach, work with local NGOs, and produce papers and theses that tackled local issues pertaining to sustainability. In this, we consciously and purposely advocated for academic activism rooted in sound empirical backing. The goal, we agreed, was for the University of the Faroe Islands to produce graduates that would engage with society and the community as agents of sustainability-grounded change. Lau Blaxekjær's account of his experiences were later published in the University of the Arctic's *Shared Voices* magazine (Blaxekjær, LØ. 2019).

The resulting classes, projects, excursions, workshops, trips abroad, seminars and collaborations were truly something else. The work we were engaging in was so satisfying and interesting that my conceptualisation of how a possible future stint as a PhD-candidate might look pushed me to pursue it with vigour. To my good fortune, this work brought me into contact with the delightful people at the Technical University of Denmark (DTU) who revel in–and embrace experimental approaches to problems. My work with DTU Space, Arctic DTU and DTU Skylab opened my eyes to possibilities for engagement with sustainability, innovation, co-creation with a multitude of stakeholders, sustainability oriented entrepreneurship and finally – the Arctic. The institutional and organisational differences between DTU and the University of the Faroe Islands were so far apart that I decided immediately that any possible PhD work would need to focus on practical improvements relating to the University of the Faroe Islands and on similar small-scale institutions of higher learning within the Arctic region.

My time as research assistant and eventually, briefly, course coordinator for the West Nordic Studies course started just as the UN's Agenda 2030 and Sustainable Development Goals were adopted (in 2015) and with Lau Blaxekjær's keen and infective interest in these developments, reports such as the Earth Summit in Rio (United Nations. 2012) and UNESCO's Education for Sustainable Development (ESD, 2014) naturally came to play a central role in informing curriculums, syllabuses and general ethos of the didactic process along with the SDG's. While the programme was and remained focused

on the West-Nordic region, this period also saw an global increase in interest in the Arctic (Young, OR. 2016). As the West-Nordic region is a sub-region of the Arctic region, there was a natural shift toward Arctic issues in terms of interest, scope and research. Having mainly been concerned with the impact of a handful of smaller universities and their impact on sustainability – there was now a much larger pool of institutions to engage with and learn from. The majority of this networking was conducted through the University of the Arctic (UArctic) network, and notably the, then, newly established Arctic Circle Assembly conference in Reykjavík, where we had the opportunity to, for example, interact with students and staff from Alaskan Iñupiat in the west to Sápmi Sámi in the east.

The ideas for this thesis came about piecemeal with each new experience, each new travel destination and visit, each new encounter with colleagues from around the Arctic region. The emerging realisation that the very small institutions of higher learning we were interacting with, in often highly remote parts of the region, did not operate in the same manner as larger more established and conventional institutions situated in densely populated centres. While an initial instinct–likely from being situated on a remote island in the Atlantic–was to turn to Islands Studies literature, especially in the vein of Godfrey Baldacchino (see for example: Baldacchino, G. 2006) in search for answers. The concept of islands or–island*ness* even, is intriguing and there are good arguments to be made for very small and isolated communities within the Arctic exhibiting traits of being islands upon themselves, while not being surrounded by water–but wilderness or distance.
Our focus during operating the West Nordic Studies Programme, and the foundational tenets of all the other work that was completed during that time, such as the massively successful conferences on Faroese fisheries reform, Renewable Energy reform and the Green Growth Dialogue conferences on sustainable shipping, responsible tourism, alternative food production and smart cities–all which were focused on the Arctic–brought us into contact with stakeholders and academics that encouraged me to look beyond my own locally situated islandness. I had the good fortune to meet with, and learn from people such as chief Gordon Planes of the T'Sou-ke Nation (see: www.tsoukenation.com), representatives from the Finnish Sámediggi (www.samediggi.fi), young eager students from the University of Greenland and a whole host of others. Especially fortunate interactions with distinguished academics that all nudged me to take on a thesis project, such as Prof. Oran R. Young (1992), Leslie King (Murray, G. & King, L. 2012) and Nicolas Kosoy (et al. 2012) were instrumental in tipping the scales from islandness towards sustainability. Collaborations with the Technical University of Denmark (DTU Space) sealed the deal and funding came about with the establishment of the new centre called DTU Entrepreneurship and the help of Lau Blaxekjær.

Some of these experiences were detailed in works published prior to the start of this project (Blaxekjær, L., Olsen, MM. et al. 2018; Lauritsen, S. E., Olsen, MM. et al. 2019) and deal with an underlying interest in trends emerging within Arctic academia, especially within the small-scale institutions mentioned; sustainability and the Sustainable Development Goals, co-creation between academia and local communities–and novel forms of innovation and entrepreneurship education. A crucial point that is touched on at this early stage, and would go on to inform large parts of the work included herein, is also how academic *mission statements* that typically underpin older established institutions: teaching, research and knowledge dissemination often tend to be siloed off from one another, hindering progress. Similarly, we noticed that novel ways of introducing collaborations that lean towards sustainability do not belong in any one of these academic silos–but rather come from combining teaching, research and dissemination and transgressing disciplines into an operational mode that goes beyond this three-pronged mission structure. One such attempt to conceptualise an additional mission comes from Trencher et al (2014) in the form of *Co-Creation for Sustainability*, a tearing down of silos that results in a systematic and cohesive progression from teaching to research to dissemination of knowledge working to enhance local sustainability.

This thesis, then, was initially predicated on the idea that for these smaller and younger institutions not having to wrestle with very rigid academic traditions, combined with an already existing need to serve the local community – would actually put them at an advantage in terms of pivoting more nimbly towards implementation of sustainability and local stakeholder engagement, and that the sustainability oriented innovation (SOI) and entrepreneurship focused education that we had experimented with would be the ideal catalysts for a modern academic mission statement focusing on sustainability and the many problems facing not only Arctic communities, but the world at large. This was the initial outset, premise and motivation for the thesis and basis the original project description. It was, however, not entirely to be.

1.3 Hurdles, Barriers and Chronology

This thesis was originally structured as a collaborative effort between three parts; the University of the Faroe Islands, the newly formed centre at the Technical University of Denmark (DTU Entrepreneurship) and the Municipality of Tórshavn. The collaborative nature of the project was intended to be financial and practical. While there were no trilateral agreements between the parties, there were bilateral efforts in place that would have benefitted all three parties to some extent. The agreement between the University of the Faroe Islands and DTU was one of rekindling previous agreements of cooperation that were never fully utilised by either party. It was agreed that the thesis would take on a practical element related to joint funding applications and ventures. Between the University of the Faroe Islands and the Municipality of Tórshavn, an agreement was made to share insights into efforts towards institutional sustainability and partly also how this would relate to the construction of a new campus for the university. To contain this effort, a new Center for Innovation was launched at the University of the Faroe Islands. This new centre was initially staffed by myself and one other person. The mandate was to slowly build up knowledge and capacity on sustainability within the institution and how it related to sustainability within the surrounding community–or in my case, the surrounding municipality and as the thesis evolved, how it related to the Arctic region.

The initial choice of taking on the University of the Faroe Islands as a practical case study was due to the complete lack of institutional and organisational engagement with sustainability beyond the work that was completed by Lau Blaxekjær and myself. The University of the Faroe Islands had no formal or informal strategy or policy related to sustainability in any capacity at all. At the time of writing, no such policy has been produced or is expected to be produced either. The fact that the only university in the Faroe Islands was in no capacity engaged in efforts to introduce sustainability at a systemic level at all was seen as fertile ground for systematic research into the reasons for this lack of interest in a world where sustainability and sustainable development was discussed in all corners abroad and increasingly also locally in the Faroe Islands.

Action research (Heron & Reason. 2006; Gadotti & Torres. 2009) was decided as an optimal approach methodologically for this endeavour, especially Andrew H. Van de Ven's *Engaged Scholarship* (Van de Ven. 2007) was seen as the best overall strategy to work with matters while operating as an agent embedded within the trenches of the university management. Van de Ven's Engaged Scholarship is a research approach that emphasises collaboration between researchers and practitioners to address practical problems and create meaningful social change. Engaged Scholarship goes beyond the traditional "ivory tower" model of academia, which often focuses on producing knowledge for its own sake, and instead seeks to create knowledge that can be applied to real-world situations. He argues that *Engaged Scholarship* requires a partnership between practitioners characterised by mutual respect, shared goals and communication. Through this, researchers can gain a better understanding of challenges faced by practitioners and work collaboratively to develop innovative solutions to these

challenges. Engaged Scholarship involves a cyclical process of research, action, and reflection. Researchers work with practitioners to identify a problem, develop and implement an intervention, and then evaluate its effectiveness. The process is iterative, with each cycle informing the next, leading to ongoing learning and improvement. Overall, Engaged Scholarship aims to create a more democratic and inclusive model of knowledge production, in which researchers and practitioners work together to generate knowledge that is relevant, impactful, and responsive to the needs of communities and society at large (ibid). The methodology of Engaged Scholarship (and Action Research wholly was eventually replaced by Flyvbjerg's phronetic research).

The Centre for Innovation was to take on this type of approach as a guiding principle and work closely with university leadership, management and staff in order to better engage with local stakeholders in a mutually beneficial effort to further the SDGs and sustainability broadly. Projects aimed to facilitate this work were established both locally and regionally in order to bolster institutional focus on sustainability and support the empirical portion of the thesis. Unfortunately, the Center for Innovation was in reality never introduced on an administrative level and existed, unbeknown to me for close to two years, entirely as a part of my thesis–and not as any formal part of the university structure. Initially, the unit was set up and staffed with one full-time employee, and two part-time employees (of which I was one). It is fairly common in the Faroe Islands (though this is changing) not to produce written descriptions of staff's mandates and descriptions of organisational purpose. During this time, there was also a change in rectorship. In fact, there was no mandate for anything and no support for any of the initiated projects. The Centre for Innovation non-existed for roughly a year and a half, but produced no work despite efforts to salvage and retrofit its components. The Centre was, in short, a spectacular waste of time and resources. So much so, that it nearly sunk to this project along with it.
Article 4.4 - An Academic Lead in Developing Sustainable Arctic Communities: Co-Creation, Quintuple Helix, and Open Social Innovation (Olsen, MM. 2021) was produced during this tumultuous time (and only published some time after the Centre for Innovation was shuttered) as an attempt to make sense of how the university might better work with sustainability. It was inspired by Van de Ven and sought to bridge the lacking collaborative environment between the university and local stakeholders. *Article*

4.1 – University of the Faroe Islands, From Nationbuilding to Nationbranding (Olsen, MM. 2020) was written during the final months of what had by then turned into a highly unpleasant spat over breaches of contract and failure to live up to agreements with external parties.
In Japanese corporate culture, there is a phenomenon known as *oidashibeya* (追い出し部屋), which translates into "expulsion" or "banishment" room (Kopp, R. nd). This is often a white windowless room, where members of staff who have fulfilled their purpose are warehoused. Stripped of their status and daily interactions with colleagues–given no meaningful work, these employees will likely quit out of shame and boredom. As a resignation would be considered voluntary, companies are not subject to legal responsibilities related to a layoff. This phenomenon is also practised in the US. Not wanting to engage in drawn-out battles with teachers' unions over negotiations, schools often opt for placing affected teachers in so-called *Rubber Rooms* (Brill, S. 2009), where they are expected to clock-in every day, and do nothing until they resign. If departments merge, priorities are shifted or staff end up too demanding, this tactic is a great way for the organisation to save face. This is also a common tactic in small places such as the Faroe Islands where a high level of decorum is expected in order to maintain social stability. The irony–writing an article analysing the organisational failures of a dysfunctional university while simultaneously engaging in heated disputes with the very same organisation–was not lost on me.

Halfway through the four-year stint, the research project was forced to cut ties with the University of the Faroe Islands, save for the reliance on supervisors who were already contractually obligated to work on the project. I was still employed, but warehoused in my home office and able to fulfil any

remaining obligations for the remainder of the period, As there was never anything practical to engage with, the *engaged scholarship* approach was discarded, along with all facilitating projects and affiliated collaborations. The project description had to be entirely rewritten and collaborations with the Municipality of Tórshavn were also no longer part of the plan – and the project took on a decidedly Arctic perspective that was *not* rooted in the University of the Faroe Islands.
Articles 4.2 – "Sustainability is having enough midwives and teachers": An exploration of Sustainability Practices of the Smallest Institutions of Higher Learning in the Arctic (Olsen, MM. under review) and *4.3 – Universities as Agents for Entrepreneurship and Innovation for the Sustainable Development Goals: A Systematic Literature Review* (Olsen, MM., Rosati, F. forthcoming) were written after the break with the UFI and represent a departure from any focus on the Faroe Islands and its university. To some extent, this thesis consists of two half-completed theses merged into a single product. This fissure, or split, causes a noticeable shift in tone.

From the outset, this thesis was always intended to consist of four published articles focusing on four different scales of practice; one local, one regional, one global and one organisational/institutional. Luckily, I was able to complete this structure through some unexpected and unintended approaches. The cost of having to dodge the challenges mentioned above was (aside from chronological disparity in terms of production and publication) the lack of a possible unified methodological and theoretical approach repeated within each of the respective publications. Initially the four articles were intended to be wrapped in Van de Ven's Engaged Scholarship as an overarching methodology and build on each other in increasing geographic scales–from the very local to the regional–from *a to d* if you will. While the intended logical step-by-step progression of the articles was scrapped, the original premise of the thesis still stands–*how small Arctic universities deal with sustainability*. Structurally, the thesis has been refitted and re-organised in such a manner that **part 3** (see thesis structure in 1.1.5), will function as a core body of the text, and the four articles have been relocated towards the end of the publication as ***appendices***. Rather than having the four articles make up the bulk of the text chronologically, I will rather draw on insights from each of them into a single, and hopefully more coherent, presentation.

References

Baldacchino, G. (2006) *Islands, Island Studies, Island Studies Journal*. Island Studies Journal, Vol. 1, No. 1, 2006, pp. 3-18.

Blaxekjær, LØ. (2019) *Establishing West Nordic Studies in the Land of Maybe*, in *Shared Voices Magazine 2019*. UArctic International Secretariat, University of Lapland. Available online here: uarctic.org/shared-voices/shared-voices-magazine-2019/establishing-west-nordic-studies-in-the-land-of-maybe.

Blaxekjær, L., Olsen, MM. et al. (2018) *The Sustainable Development Goals and Student Entrepreneurship in the Arctic*. Arctic Yearbook 2018, Akureyri: Northern Research Forum and UArctic Thematic Network on Geopolitics and Security.

Benson & Craig (2014) *Policy Review: The End of Sustainability*. Society and Natural Resources, 27:777–782.

Bloom, ET. (1999) *Establishment of the Arctic Council*. The American Journal of International Law, 93(3), 712–722.

Blühdorn, I. (2017) *Post-capitalism, post-growth, post-consumerism? Eco-political hopes beyond sustainability*. Global Discourse, Volume 7, 2017 - Issue 1: After Sustainability - What?

Brill, S. (2009) *The Rubber Room: The battle over New York City's worst teachers*. Published by The New Yorker Magazine, August 24, 2009: newyorker.com/magazine/2009/08/31/the-rubber-room.

Carpenter et al (2001) *From metaphor to measurement: Resilience of what to what?* Ecosystems 4(8):765–781.

Farley & Smith (2020) *Sustainability: if it's everything, is it nothing?*. Routledge.

Filho et al (2021) *A framework for the implementation of the Sustainable Development Goals in university programmes*. Journal of Cleaner Production 299 (2021) 126915.

Foster, J. (ed) (2018) *Post-Sustainability: Tragedy and Transformation*. Routledge:London.

Gad and Strandsbjerg (eds) (2020) *The Politics of Sustainability in the Arctic: Reconfiguring Identity, Space, and Time*. Routledge: London.

Gadotti & Torres (2009) *Paulo Freire: Education for Development*. Development and Change, Vol. 40(6).

Heron & Reason (2006) The practice of co-operative inquiry: Research 'with'rather than 'on'people. *Handbook of action research: Concise paperback edition*, 144-154.

Johansdóttir, L. & Cook, D. (2017) *Discourse analysis of the 2013-2016 Arctic Circle Assembly programmes*. Polar Record, Vol 53:3, pp. 276-279.

Johnston et al (2007) *Reclaiming the definition of sustainability*. Environmental Science and Pollution Research International, 14, 60–66.

Kopp, R. (nd) *Oidashibeya – Japanese Purgatory*. Originally published in Global Manager magazine, available on Japan Intercultural Consulting: japanintercultural.com/free-resources/articles/oidashibeya-japanese-purgatory/

Kosoy, N. et al. (2012) *Pillars for a flourishing Earth: planetary boundaries, economic growth delusion and green economy*. Current Opinion in Environmental Sustainability 2012, 4:1–6.

Lauritsen, S. E., Olsen, MM. et al. (2019) *Educating Arctic Entrepreneurs: The next generation of sustainable pioneers. Nordregio report on student entrepreneurship in the Arctic*. Published in conjunction with the Nordic Council of Ministers.

Meadows et al (1972) *The Limits to Growth; A Report for the Club of Rome's Project on the Predicament of Mankind*. New York: Universe Books.

Meadows et al (2004) *The Limits to Growth: the 30-year Update*. White River Junction, Vt :Chelsea Green Pub. Co.

Misiaszek (2020a) *Countering post-truths through ecopedagogical literacies: Teaching to critically read 'development' and 'sustainable development'*. Educational Philosophy and Theory, Vol. 52:7, 747–758.

Misiaszek (2020b) *Ecopedagogy: teaching critical literacies of 'development', 'sustainability', and 'sustainable development'*. Teaching in Higher Education, Vol. 25:5, 615–632.

Murray, G. & King, L. (2012) *First Nations Values in Protected Area Governance: Tla-o-qui-aht Tribal Parks and Pacific Rim National Park Reserve*. Hum Ecol (2012) 40:385–395.

Natcher and Koivurova (eds) (2022) *Renewable Economies in the Arctic*. Routledge:New York.

Newton & Freyfogle (2005) *Sustainability: a Dissent*. *Conservation Biology,* 19.1 (2005): 23-32.

Olsen, IH. & Shadian, JM. (2016) *Greenland & the Arctic Council: Subnational Regions in a Time of Arctic Westphalianisation*. Arctic Yearbook 2016, Akureyri: Northern Research Forum and UArctic Thematic Network on Geopolitics and Security.

Olsen, MM. (2020) *Færøernes Universitet: Fra Nationsbygning til Nationsbranding*. Økonomi & Samfund 93(4); Special issue on the Faroe Islands, Blaxekjær, LØ (ed). Djøf Forlag: Copenhagen.

Olsen, MM. (2021) *An Academic Lead in Developing Sustainable Arctic Communities: Co-Creation, Quintuple Helix, and Open Social Innovation*. Chapter 7 in: Natcher, D. and Jokela, T. (eds) (2021) *Renewable Economies in the Arctic*. Routledge.

Olsen, MM. (2023) *"Sustainability is having enough midwives and teachers": A Survey of the Sustainability Practices of the Smallest Institutions of Higher Learning in the Arctic*. Arctic Yearbook 2023, Akureyri: Northern Research Forum and UArctic Thematic Network on Geopolitics and Security.

Olsen, MM., Rosati, F. (forthcoming) *Universities as Agents for Entrepreneurship and Innovation for the Sustainable Development Goals: A Systematic Literature Review.*

Purcell et al (2019) *Universities as the engine of transformational sustainability toward delivering the sustainable development goals: "Living labs" for sustainability*. International Journal of Sustainability in Higher Education Vol. 20 No. 8, 2019 pp. 1343-1357.

Ramsey, JL. (2015) *On Not Defining Sustainability*. J Agric Environ Ethics (2015) 28:1075–1087.

Rinaldi et al (2017) *Universities and Smart Specialisation Strategy: From Third Mission to Sustainable Development Co-creation*. International Journal of Sustainability in Higher Education. 19(1), 67-84.

Rose and Cachlin (2018) *Critical Sustainability: Incorporating Critical Theories into Contested Sustainabilities*. Journal of Environmental Studies and Sciences. Vol.8, pages 518–525.

Sconfienza, UM. (2019) *The post-sustainability trilemma*. Journal of Environmental Policy & Planning, 21:6, 769-784.

Thiele, L. (2013) *Sustainability*. Malden, MA: Polity Press.

Trencher, G. et al. (2014a) *Beyond the Third Mission: Exploring the Emerging University Function of Co-Creation for Sustainability*. Science and Public Policy, Vol. 41:151-197.

Trencher et al (2014b) *University partnerships for co-designing and co-producing urban sustainability*. Global Environmental Change 28 (2014) 153–165.

Vos, RO. (2007) *Perspective. Defining Sustainability: A Conceptual Orientation*. Journal of Chemical Technology and Biotechnology, 82:334-339.

Van de Ven (2007) *Engaged Scholarship: A Guide for Organizational and Social Research*, Oxford University Press, Oxford.

Wakkee et al (2019) *The university's role in sustainable development: Activating entrepreneurial scholars as agents of change*. Technological Forecasting and Social Change, 141, 195-205.

United Nations (2012) *The Future We Want, in: Outcome Document of the United Nations Conference of Sustainable Development*, Rio de Janeiro, Brazil, 20-22 June. United Nations.

UNESCO (2014) *Shaping the Future we want: UN Decade of Education for Sustainable Development*, Final Report. UNESCO Publishing, Paris.

Young, OR (1992) *Arctic Politics: Conflict and Cooperation in the Circumpolar North*. University Press of New England: London.

Young, OR (2016) *The shifting landscape of Arctic politics: implications for international cooperation*. The Polar Journal, Vol:6(2).

2.1 Thesis formulation

This thesis is informed and inspired by a number of factors. In the sections on personal and academic motivation (1.2) and the hurdles and barriers experienced during my time on this project (1.3) I touch on my previous professional experiences that have been foundational to my pursuance of the themes covered throughout these pages. It has been further informed by experiences and discussions with former students, colleagues, project partners, supervisors and colleagues at the Technical University of Denmark. My curiosity concerning sustainability was especially formed by engaged participation in a number of different projects, involvement in conferences–especially within the Arctic, as well as work-related travels in a number of Arctic countries over the years.

That work considered sustainability from a variety of different angles, as we were involved in projects as diverse as new sustainable and renewable energy policies, sustainable fisheries laws, responsible and sustainable tourism policies, local food production initiatives and regional efforts to introduce sustainably conscious entrepreneurship and innovation education within Arctic universities. We were highly productive and successful at introducing sustainability to external partners and stakeholders, but struggled to convince our own small Arctic institution of higher learning to adopt and implement tenets of sustainability.

This project set out to understand how, not only the University of the Faroe Islands, but other smaller institutions of higher learning in the Arctic that might struggle with the same implementation (and hopefully also other regions of the world) can take on greater responsibility towards solving complex sustainability-based problems.
The solution, I venture, is to be found in two places. One is how the definitions of sustainability can be made to better suit the contextual realities of small places so as to speak to their specific histories, cultures and values. The other is in the practical implementation of sustainability within very small institutions of higher learning. Based on experience, I found that efforts to introduce sustainability into projects and ventures often necessitated a shift away from pedestrian faculty-based tasks such as purely teaching, researching or disseminating knowledge through presentation. We were forced to combine all these efforts simultaneously and traverse them into unexplored territory where we rarely had access to frameworks to guide us.

Based on these experiences and insights, this thesis asks the following research question:

> ***How can we explain and understand the potential benefits and barriers for small Arctic institutions of higher learning to implementing sustainability as a Fourth Mission?***

My references within this thesis to the "*implementing of sustainability*" are numerous. Overwhelmingly this phrasing is used in conjunction with an underlying adoption of *co-creation for sustainability*, or the Fourth Mission, as a new academic mission statement. In that context, sustainability is understood as foundational and systemic considerations for the tenets of sustainability within daily operations. This means as an actionable framework that informs organisational and institutional guidelines, policies and activities concerning external stakeholders, which makes the university as a sustainability change agent in, with, and for society..
Attempts to produce one such framework is presented in one of the appended articles, but this should not necessarily be considered to be an applicable solution, as it was developed for a specific use case and time. The arguments made for reliance on definitions based in a *post-sustainability paradigm* do not lend themselves well to the creation of broadly applicable meta-frameworks.

2.2 Research Design

The following will present an overview of the research elements contained within this thesis. Below is first a visualisation matrix (Table 1) intended to introduce the structural components used. Following this, reasons for my choice of paradigm are given along with paradigm positions on selected issues. This in order to demonstrate the direction of axiology, ontology, epistemology and methodology. The section is rounded off with an overview of the research methods employed.

Table 1 (below) visualises the different research elements contained within this thesis. How these elements were decided on is presented in the following subsections (2.2.1-2.2.6). Each column here represents a paper or section that adheres to the overall paradigm of *constructivism*. Based on this paradigmatic choice, each paper or section is then informed by certain considerations in terms of values, ethics, perspective, position on the nature of reality and type of knowledge employed.

	ESSAY SECTION 3.2	**PAPER E SECTION 3.3**	**PAPER A SECTION 4.1**	**PAPER B SECTION 4.2**	**PAPER C SECTION 4.3**	**PAPER D SECTION 4.4**
RESEARCH APPROACH	Essay	Analysis	Case study	Surveys	Systematic Literature Review	Framework building
CORE CONCEPTS	- Phronesis/Power - Symbolic Capital - Sustainability - Post-Sustainability - Transscalarity - 4th mission	- Arctic - Symbolic capital - Sustainability - Post-Sustainability - Transscalarity - 4th mission	- History - Organisations - Institutions - Nation building - Identity	- Arctic - HEIs - Sustainability - 4th mission	- Entrepreneurship - Innovation - Sustainability - Organisations - Institutions - 4th mission	- Arctic - Sustainability - Helix colab. - Innovation - 4th mission
METHODOLOGY	Heuristic deconstruction	Hermeneutical reconstruction	Hermeneutical	Dialogical	Dialogical deconstruction	Hermeneutical
METHODS	- Conceptual analysis - Literature review	(summary)	- Institutional and organisational analysis - Interview - Textual analysis	- Survey - Interviews	- Lit. review - Data collection - Coding	- Historical analysis - Framework design

Table 1: Research element visualisation matrix.

In order to present axiological, ontological and epistemological considerations, I will first make us of Guba & Lincoln's work (1994) on research paradigms, followed by additional contributors, to show the reader a structural presentation of the chosen paradigm adhered to within this thesis: *constructivism*. This deconstruction/construction process is illustrated through Tables 2, 3 and 4 below. Section 2.2.1 on paradigms leads into, and informs, the considerations on axiology, ontology and epistemology that are found in sections 2.2.2 through 2.2.4. These considerations, then, lead into and inform both the methodology (section 2.2.5) and the methods used (section 2.2.6).

2.2.1 Paradigmatic considerations

Following Guba & Lincoln (1994:105, emphasis) paradigms are "*a set of basic beliefs (or metaphysics) that deal with ultimates or first principles. It represents a vision of the world that defines, for its possessor, the nature of the world, the individual's place in it, and the range of possible relationships with that world and its parts. For example, cosmologies and theologies*". In other words, they define a paradigm as "*a basic set of beliefs that guide action*" (Guba and Lincoln, 2017:195; see also Guba,

1990:17)[1]. Initially Guba and Lincoln (1994) outline four different base views of research: *positivist*, *postpositivist*, *critical* and *constructivist*. Later, following Heron (1996), and Heron & Reason (1997), they add a *participatory/cooperative* paradigm (Guba and Lincoln, 2017:215-219) as well as give updated credence to a multitude of competing perspectives such as postcolonial-, gendered- and queer theories. Adapted from Guba and Lincoln (2017:217) these five perspectives on academic research can be presented in simplified form as seen in Table 2 below. The following research design makes use of these separations going forward, in order to build a cohesive structural foundation.

Basic beliefs of Alternative Inquiry Paradigms

	POSITIVISM	POSTPOSITIVISM	CRITICAL THEORY	CONSTRUCTIVISM	PARTICIPATORY/ COOPERATIVE
ONTOLOGY: THE POSITION ON THE NATURE OF REALITY	Naive realism –"real" reality but apprehendable	Critical realism– "real" reality but only imperfectly and probabilistically apprehendable	Historical realism –virtual reality shaped by social, political, cultural, economic, ethnic, and gendered values, crystallise over time	Relativism–local and specific constructed realities	Participative reality–subjective- objective reality, co-created by mind and given cosmos
EPISTEMOLOGY: THE VIEW ON WHAT CONSTITUTES ACCEPTABLE KNOWLEDGE	Dualist/objectivist findings true	Modified dualist/ objectivist; critical tradition/community, findings probably true	Transactional/ subjectivist; value-mediated findings	Transactional/ subjectivist; co-created findings	Critical subjectivity in participatory transaction with cosmos; extended epistemology of experiential, propositional, and practical knowing; co-created findings
METHODOLOGY: THE MODEL BEHIND THE RESEARCH PROCESS	Experimental/ manipulative; verification of hypotheses; chiefly quantitative methods	Modified experimental/manipulative: critical multiplism; falsification of hypotheses; may include qualitative methods	Dialogic/ dialectical	Hermeneutical/ dialectical	Political participation in collaborative action inquiry; primacy of the practical; use of language grounded in shared experiential context

Table 2: Basic beliefs of Alternative Inquiry Paradigms. Adapted from Guba and Lincoln, 2017:217.

For each research paradigm (*positivist*, *postpositivist*, *critical theory*, *constructivist* and *participatory*), Guba and Lincoln plot corresponding *ontologies*, *epistemologies* and *methodologies* associated with each respective paradigm. While this siloed approach to defining paradigms is certainly helpful as a way to illustrate some of the more concrete differences in perspective and approaches to research, it can also be somewhat misleading and restrictive. As Gube and Lincoln themselves point out as they deal with these categorisations, their own position is within that of the constructionist camp, "*loosely defined*" (ibid:219:emphasis).

Nevertheless, for the sake of *picking a paradigmatic lane* (so to speak) in order to ground this thesis in an ordered approach – the subject matter herein necessitates a *non-positivist* approach. Due to the situational and personal nature of the thesis, the stakeholders involved and expected outcome of the research, I cannot claim to be objective or a mere observer. My past history with being situated within the walls of a university–along with close ties to other similar universities within the region, render me unable to act as a "*disinterested scientist*" removed from normative and subjective reflexivity and therefore excludes the two ***positivist paradigms*** as listed in Table 2. Additionally, ***critical theories paradigms*** (here combined into a single umbrella term) provide some utility but tend to focus on historical revisionism, empowerment, emancipation and righting wrongs of the past through alternative academic lenses. While there are parts of my thesis that deal with analysing localised realities of the Arctic region and how they might relate to history, autonomy, culture and resource allocation–it does not do this within the conventional ethos of *critical theory* per se.

[1] It should be noted that I am aware of the paradigm wars, the mixed-method controversies and the third methodological moment (Teddlie & Tashakkori, 2003:ix-7; Guba and Lincoln, 2017:34-44; and Guba, 1990). However, these will not be covered here.

Paradigm Positions on Selected Issues + Critical Issues of the Time

	CRITICAL THEORY	CONSTRUCTIVISM	PARTICIPATORY/COOPERATIVE
NATURE OF KNOWLEDGE	structural/ historical insights	Individual reconstructions coalescing around consensus	Extended epistemology: primacy of practical knowing; critical subjectivity: living knowledge
KNOWLEDGE ACCUMULATION	Historical revisionism; generalisation by similarity	More informed and sophisticated reconstructions; vicarious experience	In communities of inquiry embedded in communities of practice
GOODNESS OR QUALITY CRITERIA	Historical situatedness; erosion of ignorance and misapprehension; action stimulus	Trustworthiness and authenticity	Congruence of experiential, presentational, propositional, and practical knowing; leads to action to transform the world in the service of human flourishing
VALUES	included–informative		
ETHICS	Intrinsic–moral tilt toward revelation	Intrinsic–process tilt toward revelation	
INQUIRER POSTURE		"passionate participant" as facilitator of multivoice reconstruction	Primary voice manifest through aware self-reflective action; secondary voices in illuminating theory, narrative, movement, song, dance, and other presentational forms
TRAINING	resocialization; qualitative and quantitative; history; values of altruism and empowerment		co-researchers are initiated into the inquiry process by facilitator/researcher and learn through active engagement in the process; facilitator/researcher requires emotional competence, democratic personality and skills
AXIOLOGY	propositional , transactional knowing is instrumentally valuable as a means to social emancipation, which as an end in itself, is intrinsically valuable		Practical knowing about how to flourish with a balance of autonomy, cooperation and hierarchy in a culture is an end in itself, is intrinsically valuable
ACCOMODATION AND COMMENSURABILITY	incommensurable with positivist forms; some commensurability with constructivist, criticalist, and participatory approaches, especially as they merge in liberationist approaches outside the West.		
ACTION	found especially in the form of empowerment; emancipation anticipated and hoped for; social transformation, particularly toward more equity and justice, is end goal	intertwined with validity, inquiry often incomplete without action on the part of participants; constructivist formulation mandates training in political action if participants do not understand political systems	
CONTROL	often resides in "transformative intellectual"; in now constructions, control returns to community	shared between inquirer and participants	shared to varying degrees
RELATIONSHIP TO FOUNDATIONS OF TRUTH AND KNOWLEDGE	foundational within social critique	antifoundational	nonfoundational
EXTENDED CONSIDERATIONS OF VALIDITY (GOODNESS CRITERIA)	action stimulus (see above); social transformation, equity, social justice	extended constructions of validity	see "action above"
VOICE, REFLEXIVITY, POSTMODERN TEXTUAL REPRESENTATIONS	Voices mixed between researcher and participants	voices mixed, with participants' voices sometimes dominant; reflexivity serious and problematic; textual representation an extended issue	voices mixed; textual representation rarely discussed, but problematic; reflexivity relies on critical subjectivity and self-awareness

Table 3: Adapted from Guba and Lincoln, 2017:217 (their tables 6.4 and 6.5 combined).
‡ *Positivism* and *Postpositivism* removed for further simplification.

On the other end of the spectrum, the ***participatory (or cooperative) paradigm*** (Heron, 1996; Heron and Reason, 1997) is similarly in line with the overall inquiry within this thesis. While it allows for critical subjectivity and the reliance on *practical knowing* (such as the phronetic approach put forward by Flyvbjerg (2001) emphasising practical wisdom and judgement), governance participation and an embeddedness in communities of practice–being defined as a grouping of people who "share a concern or a passion for something they do and learn how to do it better as they interact regularly" (see: Lave & Wenger.1991; and Wenger.1998)–the participatory paradigm is generally predicated on at least two, or more, people researching a topic in parallel and cooperatively reflecting on their findings dialectically, and thus falls outside of the solitary nature of a (or this) PhD thesis.

The following thesis, then, finds itself situated within a ***constructivism research paradigm*** at its core, but as with Guba and Lincoln above, it does so loosely in the sense that it also draws on some of the beneficiary elements from the *critical theory-* and *participatory* paradigms. Ontologically, the thesis will rely on contextual and relational realities found within the Arctic region as these, as will be explored below, can be argued to be unique. Epistemologically, the thesis is transactional in nature, in that it deals in different acceptable forms of knowledge–it builds on conventional academic arguments, by borrowing insights from less conventional (indigenous, peripheral, marginalised) sources. Due to the rather fragmented nature of the inquiry, and the often poorly defined concepts this thesis is concerned with, the methodology is multi-faceted and explorative. It dips into both hermeneutical and dialectical processes, and eventually relies on heuristic approaches in order to make sense of the material.
Returning to Table 2 above[2], adherence to the constructivist research paradigm is only loosely defined in that the chosen approach bleeds in both neighbouring paradigms, borrowing from critical theory and the participatory paradigm.

If we follow Guba & Lincoln further, they present positions on selected issues found in these distinct paradigms in Tables 6.4 and 6.5 (see 2017:217) in a manner that allows for convenient comparison. I have simplified and combined their work in Table 3 found below in order to illustrate how this thesis branches out from a constructivist paradigm, adding certain relevant positions (highlighted in grey) from *constructivism's* neighbouring paradigms.

These paradigmatic positions, as outlined in Table 3, set the parameters for the research conducted within this thesis. The constructivist approach chosen, is in line with the nature of the project in that it takes on a non-positivist agenda-driven approach to social change facilitated by (see above) a "passionate participant". Accumulation of knowledge herein is, as I have mentioned above, based on reconstructions of experience and embeddedness within multiple communities of practice and the actions taken to complete the inquiries would not be possible without engagement with (and voicing of) varying stakeholder opinions. The values are intrinsic to the process and align themselves with interpretivism and pragmatism insomuch as they seek to influence the outcome for the greater good, in the best way possible.
Dealing with the values, views on reality and knowledge, employed methodology and methods–we can further condense Table 2 and Table 3 into a simplified matrix of these paradigms. Following Guba and Lincoln (1994) from before, combined with similar syntheses by Saunders et al (2009), Hallebone and Priest (2009) and Saliya (2017), I have synthesised Table 4 below in order to condense each paradigm along with their respective positions–and how my chosen approach fuzzily bleeds into the neighbouring paradigms.
In the later publications that deal with similar syntheses of research paradigms (i.e. Saunders et al 2009; Hallebone and Priest 2009; Saliya 2017), the **constructivist paradigm** is meshed with the almost identical tenets of **interpretivism,** and the **participatory paradigm** is fused with the ethos of

[2] Note that Tables 1-3 are here intentionally represented with greyed-out sections, and heavy outlines around those sections that are in focus. Note also that in Tables 2 and 3, sections dealing with the positivist paradigms have been removed for the sake of space and simplicity.

pragmatism. Table 4 also lists the four different components (Axiology, Ontology, Epistemology and Research Methodology) of the research design in the order they will be dealt with below. The terms *etic* and *emic* used in Table 4 are based in linguistics and refer to studies that deal with cross-cultural differences (etic) and studies dealing with no cross-cultural focus (emic).

Research paradigms, simplified

Fundamental beliefs	CRITICAL THEORY	**CONSTRUCTIVISM (INTERPRETIVISM)**	PRAGMATISM AND PARTICIPATORY PARADIGM
AXIOLOGY: THE ROLE OF VALUES IN RESEARCH AND THE RESEARCHER'S STANCE	Value-bound and emic. Research is value laden; the researcher is biased by world views, cultural experiences and upbringing.	Value-bound and emic. Research is value-bound, the researcher is part of what is being researched, cannot be separated and so will be subjective.	Value-bound and etic-emic. Values play a large role in interpreting the results, the researcher adopting both objective and subjective points of view.
ONTOLOGY: THE POSITION ON THE NATURE OF REALITY	Historical realism-Virtual-reality shaped by social, political, cultural, economic, ethnic, and gender values, crystallised over time.	Socially constructed, subjective, may change, multiple realities.	External, multiple, view chosen to best achieve an answer to the research question.
EPISTEMOLOGY: THE VIEW ON WHAT CONSTITUTES ACCEPTABLE KNOWLEDGE	Transactional/ Subjectivist; Value-mediated Findings.	Subjective meanings and social phenomena. Focus upon the details of the situation, the reality behind these details, subjective meanings and motivating actions.	Observable phenomena and subjective meanings can provide acceptable knowledge dependent on research questions. Focus on practical applied research, integrating different perspectives to help interpret the data
RESEARCH METHODOLOGY: THE MODEL BEHIND THE RESEARCH PROCESS	Dialogic/ Dialectical	Qualitative	Quantitative and qualitative (mixed or multi-method design)

Table 4: Based on Saunders et al (2009); Guba and Lincoln (1994); Hallebone and Priest (2009); Saliya (2017).
‡ *Positivism* and *Postpositivism* removed for further simplification.

Following this, sections 2.2.2–2.2.4 will explore these mentioned components of the research design: Axiology, Ontology, Epistemology and Methodology in further detail, as well as draw on the research objectives as outlined in section 2.1, before concluding the research design section by going over the methods in section 2.1.1.

Throughout this thesis I am informed by Flyvbjerg's definition of phronetic research (2001) Phronetic research, also known as practical wisdom research, is an approach that focuses on knowledge that is relevant, actionable, and useful for addressing real-world problems and improving societal conditions. The term "phronetic" is derived from the Greek word "phronesis," which refers to practical wisdom or practical reasoning. It emphasises the importance of combining empirical research with ethical considerations and practical insights. Key characteristics of phronetic research include:

Contextual understandings of real-world situations within their specific contexts. It acknowledges that social phenomena are embedded in unique circumstances that require careful normative and ethical considerations. Engagement and collaborations with stakeholders, practitioners, and communities affected by the research topic. This engagement ensures that research findings are informed by practical experience and relevant concerns. Relevance and actionability in order to produce actionable insights that lead to positive changes. Critical reflections on the societal and ethical implications of research findings and interventions. Interdisciplinary approaches in order to gain a comprehensive understanding of complex issues, and narrative and storytelling presentations to capture lived experiences and perspectives of individuals and communities.

2.2.2 Axiological considerations

The term *axiology* represents an attempt to bring together, and examine, a variety of already existing and overlapping questions related to the essence of goodness, right conduct, value, and obligation (see: Hiles, D. R. 2008) It addresses questions related to that which is valued and considered to be desirable or *good* for humans and society (Biedenbach, T. & Jacobsson, M. 2016:140). Axiology, or as it is also referred to, *Axiological ethics* in research, aims to function as a reflexive tactic that requires a researcher to consider the nature of their work in terms of utility, conduct, value and ethics.
In following with the paradigmatic direction outlined above in Table 4, I note that the research being done is value-bound in that I as a researcher have been actively involved in large parts of what is being studied prior to the initiation of the project itself. As is outlined in the introduction, the lead-up to this thesis was the product of a series of interconnected events. The preparation leading to the launch of the project was tied to existing research, academic work and existing networks all dealing with the governance of sustainability. The ground-work that was done in preparation for this thesis, thus, was entirely coloured by already established value-bound perspectives. Not only is the research biassed based on existing experiences, professional training and connections with previously established stakeholders, it is also situational and leads to both objective and subjective points of views. This reality naturally moulds the underlying structure of the research design.

An additional consideration is the *etic-emic* reality of some of the research. In short, *etic* and *emic* are terms used especially in linguistics and in anthropology. *Emic* refers to an insiders' perspective on beliefs, values, and practices of a particular culture–from the perspective of the people who live within that culture. *Etic*, on the other hand, refers to the perspective of an outsider looking in on a particular culture and their values and practices. This outsider, in academic terms, is likely a researcher or some form of observer (for more on this, see rather: Mostowlansky & Rota (2020).
Personally, I straddle both these terms. As does the focus of this thesis. Having lived on the border of the Arctic, in the Faroe Islands, as well as having grown up within the Arctic proper–along with having worked professionally within both places since completing a Masters degree in Scotland, I take on the *emic* role of an insider. However, my academic training relies on conventional non-local understanding that brings with it an *etic* mindset, often removed and at odds with my situational and lived reality. I see this as a strength, not an ethical issue. It allows for reflexivity and brings these two perspectives together in such a way that one is able to both deconstruct and reconstruct meaning and solutions.

2.2.3 Ontological considerations

Ontology is the position one takes on the nature of reality (f.ex: Hofweber, T. 2020). In a constructivist paradigm there are multiple socially constructed realities that are in flux and subjective in nature. This means that there is no one definable reality, and that we ourselves (for example through a thesis such as this one) take part in the creation of realities. This also means that realities are relational–that they can co-exist and influence each other where they intersect, that they are also contextual–in that realities can be defined based on location, linguistics, culture and so on. It also means that realities can be defined by or through time, that they are temporal, in terms of historical realities based in the past, in the present and in the future. Realities can be anchored in history (pre-colonial) and aim for certain modalities in the future (post-colonial) via the present-day. Realities can similarly be informed by the mentioned *etic-emic* dichotomy, where the world can be perceived through different lenses depending on values, cultural beliefs and practices. Climate, access to resources, political stability and economic development are also all examples of factors that can influence ontological modes.
Such relational ontology considers relationships between entities as fundamental, as they shape the nature of those entities themselves. This challenges traditional metaphysical views that often depict reality as collections of discrete entities. It promotes holistic understanding of reality, highlighting that

the whole is more than the sum of its parts and entities are seen as integrated within larger systems and networks and these connections which can be material, social, cultural, or conceptual in nature. Relational ontology also challenges hierarchical and linear models of understanding by emphasising the distributed and complex nature of relationships.

The focus of study herein is that of small Arctic institutions of higher learning. However, considering what relational ontology adds, this is equally a study that takes into consideration that these Arctic institutions are integrated and embedded within certain realities, contexts and communities that are part of shaping the communities themselves–as well as the institutions therein. Such relationships are not considered to be hierarchical within this thesis–no one actor is considered as more *valuable* or necessarily more influential.
This thesis focuses on concepts and issues that span not only vast geographic distances, but also cultures, histories, languages and political realities. The conceptual definitions of the "*Arctic*" are as varied as the peoples that inhabit the region (and more often than not, those who do not). A large number of the academic institutions operating in the region, do so in areas where political autonomy is contested–where nationhood or statehood is not taken for granted (*vis-à-vis* Nunavut, Greenland, the Faroe Islands, Sápmi etc) and similarly are also staffed and attended by persons who often have very fluid and subjective notions of *nationality*. Even the etymology, or simply the plain meaning, of the word "*Sustainability*" within the Arctic region is variable and tends to come front-loaded with values related to independence, self-reliance or opposition (this will be explored further in section 4).
This thesis operates on the conviction of social construction and subjectivity. From an ontological perspective it is important to stress that I acknowledge the subjective approach used herein and how it relies on *social constructionism* in a foundational sense–insomuch that I view the conceptual and narrative nature of notions such as (for example) "*the Arctic*", or "*being Greenlandic*", or "*being sustainable*" as both malleable and subject to interpretation through human interaction and agency. Sociologically, I would lean towards Weber and Simmel and their interpretive (or *verstehen*) stances, rather than the adaptive positivism of Comte, Durkheim and Marx (Craib, I. 1997:43-59; Ritzer, G. 2000:39-177; Allan, K. 2005:143-225).

The question of what a *university* is, is one such ontological position that will be dealt with extensively throughout this thesis. It serves as a prime example of an idea that, when verbalised, conjures a likely pre-set definition. In section 4.3 Francesco and I deal with universities as institutions of higher learning and members of staff struggling to work within their mission statements of educating their students, doing research and disseminating that research. In one sense, that is the ontological make-up of a university. In section 4.1, however, I outline how the University of the Faroe Islands as an institution is often relegated to serving a political purpose as a national symbol of autonomy and independence, rather than as an educational institution. Similarly, the missions of some of the institutions of higher learning mentioned in section 4.2 are about taking on the role of communal cohesiveness. The idea of a university might be assumed to be a metaphysical universal; *a thing that does a thing*. But in reality, ontologically, *that thing* does a particular *number of things* depending on where you are, and who you are. This same contextual particularity also holds true for *sustainability*.

2.2.4 Epistemological considerations

Epistemology is a branch of philosophy dealing with the study of knowledge, belief, and justification. It focuses on understanding how knowledge is acquired, the nature of knowledge itself, the limits of knowledge, and the criteria used to distinguish between justified beliefs and mere opinions. As a field it concerns itself with questions such as: What is knowledge? How is it different from mere belief? How do we acquire knowledge? What are the sources of knowledge, and how reliable are they? (taken from Pritchard, D. 2018). Epistemological debates will not be covered here, as the research paradigm

of constructivism had already been chosen. Nevertheless, there is one part of epistemology that will likely aid our understanding of both the fuzziness of following through on any one of the paradigms as listed above (ref. Tables 1 and 3), and also the dualistic nature of knowing and insight that this thesis puts forward. In short, as was famously put forward by Bertrand Russell (see especially: Russell, B. 1905; Russell, B. (2001)[1912]), there is a distinct difference between types of knowledge. Russell was concerned with *propositional* knowledge, *procedural* knowledge and *acquaintance* knowledge. In an effort that will likely give it scant justice, a brief overview will be given:

Propositional knowledge, also "*knowledge-that*" or "*declarative knowledge,*" is a type of knowledge that deals with knowing facts, information, or propositions about the world. It involves knowing that a particular statement or proposition is true. In other words, it's knowledge about the truth or falsity of certain claims. To have propositional knowledge that a statement is true, you would need to believe it, the statement would need to be true, and you would need to have reasons or evidence that support the truth of this proposition (e.g., scientific observations, empirical data, etc.). ***Procedural knowledge***, also known as "*knowledge-how*," is a type of knowledge that involves knowing how to perform certain skills, tasks, or activities. Unlike *propositional knowledge*, which deals with knowing facts and information, procedural knowledge focuses on knowing how to do something. This type of knowledge is often associated with practical abilities and expertise. This type of knowledge is often acquired through repeated practice, hands-on experience, and learning by doing, rather than by studying and memorising information as in the case of *propositional knowledge*. And finally, ***acquaintance knowledge*** is a type of knowledge involving direct, personal familiarity with something or someone. It's a form of knowledge that goes beyond *propositional knowledge* and *procedural knowledge*. Instead, acquaintance knowledge is knowledge of or familiarity with particular things, experiences, or individuals in a way that doesn't necessarily rely on facts or skills. It's a reminder that not all forms of knowledge are about facts or skills; some knowledge is rooted in the direct, personal engagement we have with our environment and the people around us.

As is outlined in Table 4 above, the constructivist paradigm relies on an acknowledgement of all these three forms of knowledge. It takes its initial propositions from *propositional knowledge* in the form of data that can be verified (in our case, geographic locations, historical dates and events, and other forms of empirical data). With its reliance on the *etic–emic* (see above) concern found in its axiology, and the acknowledgement of multiple socially created realities of its ontology, constructivism also relies heavily on *procedural knowledge* that is acquired through hands-on experience and active engagement with the issues under study, especially as it relates to Flyvbjerg's (2001) definition of phronesis as covered above. Further, it also relies on *acquaintance knowledge*, in order to suss out the finer nuances of what is studied–the subjective meanings and social phenomena, focus on details of a situation and the reality behind these details. My personal approach to this project is equally informed by these three types of knowledge. It is based on a certain amount of propositional knowledge that can be pointed to and argued to be factually provable. In parallel, it borrows heavily from my professional hands-on experience with the subject. However, the work on this thesis has also relied tremendously on acquaintance knowledge, more so than I ever assumed that it would. Having experienced the places that are dealt with herein–visited them, lived in them, experienced their local diets, spiritual beliefs, cultural practices and climate, has provided me with a certain kind of insight and knowledge that is not accessible through purely *propositional* and/or *procedural* knowledge.

2.2.5 Methodology

Methodology refers to the broader framework that guides the research process and encompasses the philosophical underpinnings, research design, methods, and overall approach used to conduct study. While the methods section delves into the techniques and procedures used, the methodology section

provides a more comprehensive understanding of the rationale and theoretical foundations behind the research. Above paradigm, axiology, ontology and epistemology are considered, in the following the methodological approaches are covered.

As can be seen in Table 2 above, a constructivist approach calls for a *hermeneutical* and/or *dialectic* methodology. **Hermeneutics** is a field of study focusing on theory and methodology of interpretation, particularly the interpretation of texts, symbols, and cultural phenomena. According to hermeneutics, understanding any form of communication requires taking into account historical, cultural, social, and linguistic contexts. Hermeneutics is especially employed in the interpretation of religious scriptures, the analysis of literary works, and the understanding of historical documents (see f.ex. Gadamer, H.G. 1977). The **dialectical method** is a way of thinking and reasoning that involves exploring and resolving contradictions or opposing viewpoints through a process of dialogue and argumentation. It's a form of discussion and analysis that seeks to uncover the truth by examining conflicting ideas and arriving at a synthesis or resolution that goes beyond the initial contradictions (see f.ex. Hegel.1976; or even Adorno, TW. 1981). Dialectics has been roundly criticised within the literature, notably by Frederick Nietzsche (2009) Karl Popper (1963), and Mario Bunge (2012) for its fuzziness, suppression of reality and artificiality. Reviewing Bunge's critiques, Wan, PY. (2013) nonetheless argues that the dialectical method can still be useful heuristically in some cases. A **heuristic technique**, referred to as a *heuristic*, is a practical problem-solving strategy involving using rules of thumb, educated guesses, and practical methods to solve complex or uncertain problems. Heuristics are shortcuts that help individuals make decisions and judgments more efficiently, even when faced with incomplete information. Examples of heuristic techniques include estimating probabilities with common patterns, making initial judgments based on the first piece of information encountered, and simplifying complex problems by breaking them down into more manageable parts. When deconstructing difficult issues, the dialectical method is a useful tool for surveying the different components through argumentation and dialogue.

As explained in the introduction (1.1) and the thesis formulation (2.1), this project was initially based on work experiences at the University of the Faroe Islands, collaborative efforts with the Technical University of Denmark, the University of Greenland along with others, in an effort to introduce socially oriented innovation and entrepreneurship within academia to combat complex problems through the use of sustainability and the UN's Sustainable Development Goals. It attempts this by utilising a set of different methodological approaches; theoretical analyses, case studies, surveys, interviews, literature review and framework construction that will be considered in the following.

2.2.6 Methods

Methods refer to approaches, techniques, procedures, and tools used to conduct research and gather data. The section should allow readers to understand how conclusions were arrived at and also allow readers to assess validity and reliability of any findings.

In the context of his phronetic approach, Flyvbjerg argues that the criteria of validity and reliability, commonly used in quantitative research methods, are not directly applicable or suitable for qualitative and interpretive research. He suggests that traditional notions of validity and reliability, which originate from the natural sciences, may not accurately capture the complexities and nuances of social and human phenomena. Validity and reliability in the positivist paradigm refer to the accuracy and consistency of measurements and findings. Validity assesses whether a study measures what it intends to measure, while reliability refers to the consistency of results over time or across different observers. Flyvbjerg's phronetic approach, on the other hand, emphasises understanding and interpreting the underlying meanings, motivations, and contexts of human actions and decisions. He argues that in qualitative research, rather than seeking to establish generalizable laws or universal

principles, researchers should focus on gaining practical wisdom about the situations they study. According to him, the validity and reliability criteria are not well-suited to qualitative research because they tend to oversimplify the richness and complexity of human behaviour and context. Instead, he proposes criteria more aligned with phronesis: **Credibility:** Instead of strict validity, credibility is about establishing a deep and nuanced understanding of the phenomenon under study. This involves ensuring that the researcher's interpretations and conclusions are rooted in the context and are seen as plausible by those being studied. **Fidelity:** Fidelity is akin to reliability, but it emphasises consistency and transparency in the research process. Researchers should provide a clear account of their methods, data collection, and analysis, allowing others to assess the reliability of the research. **Validity as Interpretive Adequacy:** Rather than seeking generalizable laws, qualitative research aims for interpretive adequacy. This means that the researcher's interpretations resonate with the experiences and perspectives of the participants and provide a well-rounded understanding of the phenomenon (Flyvbjerg, B. 2001).

The following section presents the different methods employed in order to answer the stated research question and in order to complete the four research objectives. The **conceptual analysis** (3.2) and **exploratory framework** (4.4) were produced based on the review of existing literature and past experiences. Methods employed in the remaining research: the **local case study** (4.1), the **institutional survey and organisational interviews** (4.2) and the **systematic literature review** (4.3) are explained in detail within their respective chapters. For this reason, *this section gives only a cursory overview* of the data collection and analysis.

Additionally, the constructivist approach calls for qualitative research. I have decided to borrow from the neighbouring participatory/pragmatist paradigm, and make use of a **mixed-methods** approach in order to allow for more flexibility due to the varied nature of the different inquiries being made in the different publications produced.

(4.1) The local case study

Consists of three different components in order to make its case. It should be noted that there has never been published any volume on the history of the University of the Faroe Islands. Many of those active in the organisation in the early years are no longer with us, and it seems that my effort presented here, to the best of my knowledge, is what seems to be the very first attempt to formally produce any organisational charts on the structure of the university. Due to the lack of primary sources, some guesswork was needed in order to deduce especially the early structure of the organisation.

1. **An institutional and organisational analysis** of the University of the Faroe Islands based on historical documents was produced. The core texts are produced by staff of the university, historians Jóan Pauli Joensen and Hans Andrias Sølvará, and linguist (and former Rector) Malan Marnersdóttir – all long-term employees of the university. Additional insights are garnered from official parliamentary documents and their commentary. This data is, along with informal inquiries, used to construct a historical timeline of how the organisational structure of the University of the Faroe Islands has changed over time. Organisational diagrams were produced using the software OmniGraffle.
2. **A single formal interview** was conducted with the head of the board of directors, Mr. Ólavur Ellefsen in order to discuss the decision to pick someone external to the Faroe Islands to fill the role of rector. The interview was conducted over phone, not recorded, with notes taken. The interview was semi-structured and fairly brief (15 minutes or so).

3. **A textual analysis** was also conducted on a series of newspaper articles written by the rector of the University of the Faroe Islands and the five departmental deans of the university. These articles were published in the summer of 2020. The raw text from all articles was fed into the online parsing software Voyant Tools (www.voyant-tools.org) and coded to parse out five different sentiments; *Faroe Islands/Faroese*, *Research*, *Society*, *University of the Faroe Islands* and *International*. The corresponding figure presented in the article was exported from Voyant Tools.

(4.2) Institutional survey and organisational interviews

The empirical inquiry that was the basis for this article was split into two distinct parts based on necessity. As the number of intended respondents was fairly low from the outset (n=56) and the response-rate was even lower (n=20), it was decided that additional follow-up interviews would be able to compensate for the, relatively, low numbers.

1. **The institutional survey** was conducted using the software SurveyXact (www.survey-xact.dk). A list of respondents was generated from the membership list of the University of the Arctic (www.uarctic.org/member-profiles), consisting of a number of variables such as contact information, number of students, geographic placement and type of institution. This list was sorted by the size of the student body, resulting in a contact sheet of 56 institutions in the Arctic with 5000 or fewer students.
   The survey consisted of 34 different questions (Q01-Q34), and consisted of a mixture of multiple-choice questions, 5-point Likert scales and 5-point sliders. Prior to sending out the survey, it was tested on three different respondents , and their feedback was used to simplify and remove any confusing or misleading questions or wordings. Due to the slow uptick in responses to the survey, respondents were given 6 months to reply to the survey. Two follow-up reminders were distributed in this period. Once closed for respondents, the results were exported into Excel and synthesised.
2. **The organisational interviews** were added onto the article at a later stage to compensate for the relatively low response-rate. Of the (n=20) respondents, six were picked out for follow-up interviews. The interview guide was produced with the help of my supervisors. These interviews were conducted as structured interviews both online and in person depending on circumstance and access. They were recorded, transcribed, coded and made possible to synthesise through a matrix set up in Excel.

(4.3) Systematic literature review

The systematic literature was conducted in three steps; *data collection*, *reading and coding*, and *synthesis and analysis*.

1. An *a priori* set of review questions was established in conjunction with Francesco Rosati. **Data collection** was then conducted by searching five different academic databases: *Web of Science*, *Scopus*, *Science Direct*, *Google Scholar* and *EBSCO* using a search string template consisting of the key search terms in syntax specific for each of the databases. The initial searches resulted in a combined 995 articles that were scrubbed for duplicates, resulting in 860 unique published journal entries. These resulting articles were all exported from their respective databases and imported into a Google Documents spreadsheet. Working with Francesco Rosati, a primary screening based on title was conducted to eliminate obvious false positives, resulting in 163 articles deemed acceptable for our purposes – this was

followed by an additional secondary screening based on abstracts, resulting in a final dataset consisting of 77 articles.

2. **Reading and coding** was conducted by feeding the 77 articles into a review matrix consisting of a vertical list of articles, coupled with a horizontal array of different relevant variables such as article *objectives*, *methodologies*, *radical proposals*, *context*, *drivers and barriers*, *stakeholder definitions*, *contributions* and *limitations*. As reading progressed, the review matrix was populated by data garnered from the articles.
3. **Synthesis and analysis** were completed through comparative analyses of the different variables–i.e. a vertical reading of the review-matrix, allowing for strict focus on specific aspects of how authors present their findings.

Resources

Adorno, TW. (1981/1966) *Negative Dialectics*. Continuum Publishing: London.

Allan, K. (2005) *Explorations in Classical Sociological Theory: Seeing the Social World*. Pine Forge Press: London.

Biedenbach, T. & Jacobsson, M. (2016) *The Open Secret of Values: The Roles of Values and Axiology in Project Research*. Project Management Journal, 47(3): 139-155.
Bunge, M. (2012) *Evaluating Philosophies (Boston Studies in the Philosophy and History of Science, 295)*. Springer; London.

Craib, I. (1997) *Classical Social Theory: An Introduction to the Thought of Marx, Weber, Durkheim, and Simmel*. Oxford University Press: New York.

Flyvbjerg, B. (2001) *Making Social Science Matter: Why Social Inquiry Fails and How It Can Succeed Again*. Cambridge University Press: London.

Gadamer, HG. (1977) *Philosophical hermeneutics*. [Ed. & Transl. Linge, DE.] University of California Press; Berkeley.

Guba, E. G. (1990) *The Paradigm Dialog*. Newbury Park, CA: Sage.

Guba, E. G., & Lincoln, Y. S. (1994) *Competing paradigms in qualitative research*. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp.105-117). Thousand Oaks, CA: Sage.

Guba, E. G., & Lincoln, Y. S. (2017) *Paradigmatic Controversies, Contradictions, and Emerging Confluences, Revisited*. In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE Handbook of Qualitative Research* (pp.213-263). Thousand Oaks, CA: Sage.

Habermas, J. (1979) *Communication and the Evolution of Society*. Toronto: Beacon Press.

Hallebone, E.L., & Priest, J. (2009) *Business and Management Research: Paradigms & Practices*. Palgrave Macmillan: London.

Hegel (1976/1807) *Phenomenology of Spirit*. Cambridge Hegel Translations, Oxford University Press.

Heron, J. (1996) *Cooperative inquiry: Research into the human condition*. Thousand Oaks, CA: Sage

Heron, J., & Reason, P. (1997) *A participatory inquiry paradigm*. Qualitative Inquiry, 3, 274-294.

Hiles, D. R. (2008) *Axiology*. In L. M. Given, (Ed.). The Sage encyclopaedia of qualitative research methods. Thousand Oaks, CA: Sage Publications.

Hofweber, T. (2020) *Logic and Ontology*. The Stanford Encyclopedia of Philosophy. Metaphysics Research Lab, Stanford University. Retrieved 23 May 2023. Available online at: https://plato.stanford.edu/entries/logic-ontology/.

Lave & Wenger (1991) *Situated Learning: Legitimate Peripheral Participation*. Cambridge: Cambridge University Press.

Mostowlansky & Rota (2020) E*mic and etic*. In: *The Open Encyclopedia of Anthropology*, edited by Felix Stein. The Cambridge Encyclopedia of Anthropology.

Nietzsche, F. (2009/1889) *Twilight of the Idols, or, How to Philosophize with a Hammer*. Oxford University Press; Reissue edition (February 15, 2009).

Pooper, K. (2002/1963) *Conjectures and Refutations: The Growth of Scientific Knowledge*. Routledge; 2nd edition.

Pritchard, D. (2018) *What is this thing called Knowledge?* 4th ed. Routledge; London.

Ritzer, G. (2000) *Sociological Theory*. Fifth Edition. McGraw-Hill Higher Education: New York.

Russell, B. (1905) *On Denoting*. Mind, 14(56), 479–493.

Russell, B. (2001/1912) *The problems of philosophy* (2nd ed.). Oxford University Press.

Saliya, C. A. (2017) *Doing Qualitative Case Study Research in Business Management*. Case Studies Journal. Vol. 6:12.

Saunders, M. et al (2009) *Research methods for business students*. Pearson education.

Teddlie, C., & Tashakkori, A. (2003) *Major issues and controversies in the use of mixed methods in the social and behavioral sciences*. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed-methods in social and behavioral research* (pp. 3–50). Thousand Oaks, CA: Sage.

Van de Ven, A. (2007) *Engaged Scholarship: A Guide for Organizational and Social Research*. Oxford: Oxford University Press.

Wan, PY. (2013) *Dialectics, complexity, and the systemic approach: toward a critical reconciliation*. Philosophy of the Social Sciences. 43 (4): 411–452.

Wenger (1998) *Communities of Practice: Learning, Meaning, and Identity*. Cambridge: Cambridge University Press.

3.1 Introducing concepts and conclusion

Above are found introductions, thesis formulation and research design. Below these sections, are the appended articles that make up the bulk of the book (4.0 through 4.4). These following sections (3.1, 3.2, and 3.3) are a half-way point in this book. Since the articles produced for this thesis have been appended at the very end, depending on how one might decide to look at it structurally, these sections can be seen as either the tail-end of the thesis where the analysis and the conclusion are to be found–or as an effort to bridge those two halves into a single coherent narrative.

As the articles in the appendix do not read in any predefined sequential order, they do not slot easily into an overall narrative. To some degree, the reading order is somewhat arbitrary and the reader is invited to dip in and out of sections as seen fit. However, I point out in the *thesis structure* (1.1.5) that this book consists of four ***parts*** of content: *1. Introduction*, *2. Formulation and Design, 3. Thesis*, and *4. Publications*. One might choose a reading order of 1-3 and then to go through the different publications in any order. Another reading order might be 1-2 then going through the publications (4) and returning to this section for a conclusion (3). I have chosen to view the project as consisting of parts 1-3 – with the appended publications acting as contextual pieces of work that help to inform the overall concluding arguments.

This portion will draw on findings from the appended articles below, informed by the considerations presented in the research design above, will answer the research question and conclude the thesis. However, it will not be a synthesis of those four publications with an added conclusion. As projects such as this are often wont to do, the process itself has introduced an eventual departure from the initial intent due to iterative reflections, in this case on both the process and the intent themselves. Within such departures, based on iterative processes of realisation, lies the advancement of learning. It is only through the plodding and methodical rotation of each puzzle-piece that a final picture can emerge. Sometimes that final picture looks nothing like the picture on the box. The fact that the puzzle I have assembled looks markedly different from the picture on the box is, I would argue, due to the nature of the research design. Leaning into the paradigmatic considerations of constructivist and critical theory building blocks, has allowed for a highly iterative and flexible approach to the subject matter. Drawing on personal experience along with approaches to both multiple fields and emerging theories, concepts and paradigms, has resulted in this final picture looking altogether different than what I was expecting.

This introduction is followed by two sections. The first section (3.2) takes the form of a conventional essay in the style found in the English tradition. As the appended articles were produced as such, they are of limited scope and do not lend themselves well to lengthier conceptual explorations. The articles themselves rely on a number of recurring concepts (such as *Sustainability*, *Academic Mission Statements*, *Co-creation* and *Transscalarity*) that there is a need for additional analysis and exploration of aspects that are important to answering the research question and in concluding the thesis.

Considerations from each of the concepts dealt with in the essay then go on to inform the further analysis and eventual conclusion of the thesis. This final analysis and conclusion (found in section 3.3) has been intentionally structured as an academic journal submission. This has been done as an exercise in coherence and explanatory power of the concepts and paradigm introduced therein.

3.2 A Conceptual Essay on Making Sustainability Actionable for Small Arctic Universities

What follows is informed by four very different articles found in the appendix. Each of which was either published, or under review, in very different academic fora, one in a specialist journal aimed at a Danish audience (Olsen, MM. 2020), one as a chapter in a book focusing on renewable economies in the Arctic (Olsen, MM. 2021), the third in a dialogue-heavy and cross-disciplinary Arctic specialist journal (Olsen, MM. 2023, under review), and the fourth in an international journal focusing on management and sustainability (Olsen, MM. & Rosati, F. forthcoming). They are also products of the time they were written in and each is structured as an academic article that concerns itself with a fairly narrow focus on a specific question. This means that not all of the concepts covered within the pages of those articles are always adequately defined or explored.

Throughout those four papers, there are a number of recurring themes, concepts and ideas. What follows is an attempt to explore those themes further. This exploration takes the form of an essay in the English tradition that aims to collect a multitude of concepts and tries to put everything in its place–a *mise en place* for concepts if you will, before they are combined in the concluding section (3.3). As these concepts are dealt with in a manner quite unlike how they are covered within the articles, additional theoretical lenses are introduced that do not feature elsewhere, but are needed to form a coherent argument.

The essay is structured in a manner that aims to guide the reader sequentially through each of the topics, as to better reveal their interconnectedness. It starts by introducing two theoretical approaches that will inform the subsequent analysis of these themes, namely Flyvbjerg's *phronesis* (2001), and Bourdieu's concept of *symbolic capital* (1998). The essay then deals with the *conceptual idea of sustainability* in order to understand how it can be defined and employed within the final concluding portion of the thesis. It then goes on to introduce a concept that does not feature explicitly in any of the articles or in the research design–that of *transscalarity* (f.ex. Scholte 2014; 2019; 2021). The concept of transscalarity is alluded to and occasionally hinted at in some places, but it is never codified or defined and is, I argue, an important theoretical tool. The history of academic *mission statements* will then be outlined, before moving on to an expanded overview of the emerging fourth mission statement known as *co-creation for sustainability (Trencher et al. 2014)*. The section concludes with a short summary of key insights.

Since the initial motivation for this thesis was birthed out of a fundamental curiosity of why the University of the Faroe Islands is a laggard in terms of adopting sustainability and in implementing it within syllabuses and curricula–the resulting articles revolve around this same fundamental line of questioning. To varying degrees they all engage with recurring themes that expand upon that primary line of questioning, but on different scales. The articles broadly consist of these overall structural parameters:

- *different definitions of sustainability*
- *from the vantage point of institutions of higher learning*
- *within varying geographic ranges and operational scales*
- *explored through case studies*

- *to make sense of structural implementation of sustainability*
- *in organisational and/or institutional settings that are unable to accommodate it*
- *in the face of adversity, but resolved through resilience*

All four articles depend on case studies. The case study of the University of the Faroe Islands [**4.1**] and the organisational analysis and framework building [**4.4**] consist of a single case study each, while the Arctic surveys on sustainability [**4.2**] and the global systematic literature review [**4.3**] are build on similar cases, i.e. case studies of two collections of cases. None of the articles make explicit mention of the fact that they are such, nor do they elaborate on much of the literature. Nevertheless, they all take their inspiration from Bent Flyvbjerg's work (for example: Flyvbjerg, B. 2001 and 2006) and, as a matter of fact, take for granted the value inherent in conducting case studies as a means to immerse oneself within a specific topic–no matter how small or niche. Replacing Van de Ven's work (as was the initial intent, see section 1.3 for more on this) with Bent Flyvbjerg's work seemed to be an obvious choice in that they both champion using practical wisdom and judgement to address complex social problems.

3.2.1 Flyvbjerg and phronesis

Flyvbjerg famously argues (2001) that social science research should be more relevant to the real world and should be used to address practical social problems. He critiques the dominant social science research paradigm, that he calls the "*technical rationality*" approach. This technical rationality approach emphasises use of quantitative methods, formal models, and controlled experiments to produce objective knowledge. However, he argues that this approach is limited in its ability to address real-world problems, as it overlooks the subjective and contextual aspects of social phenomena. Instead, Flyvbjerg advocates for a *phronetic* approach to social science research.

A phronetic approach, he contends, emphasises practical wisdom, sound judgement, and expertise in addressing complex social problems. Phronetic research is grounded in real-world situations and is guided by an understanding of the context and particularity of each situation. It also involves reflexivity and critical examination of one's own assumptions and biases. Further, he argues that phronetic social science research can contribute to social change by providing insights and solutions that are relevant to the real world. He provides several case studies to illustrate the potential of this approach, including studies on urban planning, environmental policy, and public management (see ibid). Flyvbjerg's arguments highlight the need for social scientists to engage with real-world situations and to develop solutions that are grounded in the particularities of each given situation.

He calls for a pragmatist approach to his field of planning, as opposed to the dominant normative or utopian paradigms. He calls for a singular focus on addressing "*problems that matter to groups in the local, national, and global communities in which we live*" and that "*results of research should be communicated effectively and dialogically to fellow citizens*" (Flyvbjerg, B. 2004:284). I will not expand on Aristotelian definitions of *episteme*, *techne* and *phronesis* (for more see ibid:285ff), as well as any elaborations on the foundational scholarly lineage he makes use of in his arguments of power (i.e. Machiavelli, Nietzsche), as an engagement with these additional underlying theoretical perspectives would needlessly complicate matters (Flyvbjerg, B. 2002 lists examples).

Here it will be sufficient to focus on the fact that Flyvbjerg's phronetic approach is novel in the sense that it centres on the machinations of power as a means to make sense of pitfalls within planning and management. For Flyvbjerg, power is an inherent and pervasive feature of social relations and is central to understanding and addressing social problems. To him, power can take many forms, including economic, political, and social–and can be wielded by individuals, groups, and institutions.
Flyvbjerg (2004:289ff) calls for four key questions to be asked and answered for specific instances of phronetic planning research, all of which are couched within the context of power dynamics. These questions require a critical examination of power relations and a willingness to challenge dominant discourses or practices that may perpetuate inequality and injustice. They involve developing alternative visions and strategies to empower marginalised groups and challenge the status quo:

1. *Where are we going with (in Flyvbjerg's case it is "planning") activity X?*
2. *Who gains and who loses, and by which mechanisms of power?*
3. *Is this development desirable?*
4. *What, if anything, should we do about it?*

Flyvbjerg argues that phronesis requires an awareness of power dynamics and an understanding of how power is distributed and exercised in specific social contexts. This involves recognising interests and agendas of different actors and stakeholders, as well as the structures and systems that enable or constrain their actions. This approach to power is thus closely linked to his broader emphasis on context, particularity, and reflexivity. By acknowledging the role of power in shaping social relations and problems, phronetic social scientists can develop more nuanced and effective solutions that address the underlying causes of social issues and promote greater equality and justice. He goes on to define power as consisting of the following six characteristics (paraphrased and summarised from 2004:293 for the sake of simplicity):

1. *Power is productive and positive, not only restrictive and negative.*
2. *Power is a dense net of relations and not only localised in centres, organisations and institutions–or as something one can possess.*
3. *Power is ultra-dynamic, not something that is appropriated–but something that is re-appropriated and exercised using strength, tactics and strategies.*
4. *Power produces knowledge and knowledge produces power.*
5. *How power is exercised is the central question, not merely who has power and why.*
6. *Power is especially studied with a point of departure in small questions, not only with a departure in big questions.*

Citing his inspirations for the above definitions of power, Flybjerg calls on a mix of Nietzschean and Foucauldian interpretations of power (i.e. what "governmental rationalities" are at work when those who govern govern?) with a Weberian/Dahlian (i.e. Robert Dahl's 1961 "who governs?" transmuted from Max Weber) (Flyvbjerg, B. 2004:293; see also Dahl, R.A. 1961), absent from this definition is Bourdieu (albeit he figures heavily in Flyvbjerg's work). I would argue that Bourdieu's work on symbolic capital is in line with Flyvbjerg's definition, in that symbolic capital has very similar latent properties in the context of organisations and institutions and in that regard, the two can play off each other.

3.2.2 Bourdieu and symbolic capital

Bourdieu argues that organisations or institutions, like individuals, can accumulate and use *symbolic capital*, which refers to the prestige, status, and reputation they possess in a particular field or society. Symbolic capital can be generated through the recognition and validation of an organisation's or institution's competence, excellence, or authority by relevant social actors or audiences, such as peers, clients, or the public. For instance, a prestigious university can accumulate and use symbolic capital to attract students and scholars, and enhance its reputation and influence in its field or domain (for example: Bourdieu, P. 1998). As in Flyvbjerg's definition of power, symbolic capital can indeed be both productive and restrictive, it can reside in individuals as well as institutions. Symbolic capital, when accumulated within an institution or an organisation, is dynamic and can be re-appropriated. Just as power is dynamic and fluid, symbolic capital is highly contextual and variable–while a small local Arctic institution of higher learning can be the source of immense pride and beacon of important symbolism to the local population–it can be equally as unknown and immaterial to people in the next country.

As *people* (United Nations Secretary-General), *objects* (Declaration of Independence), *places* (The Great Barrier Reef) and *institutions* (Médecins Sans Frontières) can act as containers of symbolic capital–so can concepts and ideas. Ideas and concepts that are considered important and valuable in a particular society or field can generate symbolic capital, which can be used to establish or reinforce prestige, reputation, and authority of individuals, groups, or institutions. Theoretical frameworks or schools of thought, such as Marxism, Feminism, or Postmodernism, can be imbued with high symbolic capital, recognized as influential and innovative. The use and mobilisation of theoretical frameworks such as these can confer symbolic capital and enhance the legitimacy and reputation of scholars or institutions who adopt and apply them. Moreover, in the political and cultural field, ideas and concepts can also have symbolic capital and be used to legitimise or even challenge power relations and dominant discourses. For instance, concepts such as democracy, freedom, or human rights can have high symbolic capital and be invoked to mobilise social and political movements, legitimise political programs or ideologies, or criticise oppressive or authoritarian regimes (see Bourdieu, P. 1984; Bourdieu, P. 1986).

The notion of *sustainability*, in a broader sense, is one such concept that lends itself to the machinations of symbolic capital. As will be dealt with in the following part, I argue that sustainability is an *essentially contested concept* (Gallie, WB. 1955) and that this lacking definition renders it malleable and open to interpretation and interference. It is not that the word is contested in the colloquial "*what do you mean by sustainability*" sense–it is *also* that–but rather in terms of power relations and symbolism. It is a term that is open to (I refrain from calling it *hijacking,* as in the case of Adrian, P. 2009) appropriation by stakeholders, who in turn can re-appropriate that capital into power. The contest is not so much about the definition of the term itself, but more about the potential output of power that it lends itself to.

3.2.3 The *idea* of Sustainability

In three of the appended articles the term *sustainability* is referred to without much actual definition. Only the article dealing with Arctic surveys (4.2) focuses on an actual definition of the term. References to the "*idea of sustainability*" herein are generally to be taken to mean a colloquially common usage of the word, a verbalisation of a broadly conventional understanding of the term. Academically, this is not specific enough, but "*sustainability*" in and of itself is such a broad term that it is easy to make use of it as a shorthand for something highly complex, without much consideration or afterthought. However, I find it valuable that we, academically speaking, recognise the fact that it is widely used as a catch-all term in everyday conversation. That there is an (however flawed) expectation, on my behalf, that you are aware of my intent when I refer to the *idea* of *sustainability*–an assumed shared understanding. In some sense, interactions involving "*sustainability*" often inadvertently create a *shibboleth* out of the term, a way to make recognizable members of an in-group through a secret passphrase (see f.ex. Mcnamara, T. (2005) on shibboleths). I'm not the first to equate sustainability with a shibboleth, see Glasby, GP. (2002); Ogunleye, F. (2003); Mazı, F. (2009) and Hulme, M. (2009a). Arrifin, Y. (2010) even denotes sustainable development as being either a shibboleth or an oxymoron, as does Lempinen , H.(2017).

The original meaning of a *shibboleth* is biblical in nature (found in Judges 12:5–6 in the KJB), and refers to the word being used as a passphrase (based on dialect) and as a way to identify a member of an out-group. In that sense, there is a correct and a very incorrect way to pronounce the word *shibboleth*–the wrong way, in this case, resulting in murder. The term has in modern times still retained that use (Mcnamara, T. 2005) but has generally morphed into a belief in truism in jargon and beliefs that identify speakers as members of a particular subculture. Within subcultures, this access-card in the form of internalised jargon and group-think works, because there are very clearly defined boundaries for what you might need to adhere to (certain colours and chants, years that important matches were played and names of important footballers–as an example for football-fan in-groups). Sustainability however, is often so poorly defined that, if anything, it is more of a *faux-shibboleth*.

I rely here on interactions with colleagues and other stakeholders when participating in international conferences and similar gatherings. Especially the Arctic Circle Assembly conference in Reykjavík has been one such venue where the *idea of sustainability* as a *faux-shibboleth* was on near constant display. It is such a large gathering of eclectically mixed participants from the entire world; indigenous elders from the remotest parts of Alaska, engaging with high-level dignitaries and industries from the largest economies in the world, all preoccupied with discussing sustainability, that definitional consensus would be highly unlikely. There I took part of discussions between members of Arctic minorities on the one hand, and representatives of larger nation states on the other, where it was uncomfortably clear that their respective perceptions of what constituted *sustainability* were *not* in line–yet a very good natured and polite *faux-shibboleth* was adhered to. In other instances, very clear differences in perspective were made obvious as actual definitions were contested. Sessions with titles such as: "*Just, Equitable, And Sustainable Development In The Arctic: Lessons From The Justnorth*" and "*Youth In The Arctic – Creating Attractive Living Conditions*" or "*Ileqqussaasut: An Ethical*

Framework For Research In Greenland" (Arctic Circle. 2022) are just three examples from 2022 where the conventional concept of sustainability was clearly contested. In fact, in sessions such as these, there seems to be a fairly clear attempt at conjuring up a competing shibboleth. An unapologetic rejection of conventional definitions of, mostly, mainland or *non-peripheral* usage of the term, by marginalised stakeholders such as indigenous groups, ethnically isolated peoples, civics groups, youth groups and so on.
In this context, it becomes clear that the *idea of sustainability* is what is termed an *essentially contested concept*.

In short, an *essentially contested concept* is a term or concept that is deeply debated and subject to ongoing disputes and differing interpretations among scholars, experts, and practitioners. The term was coined by political philosopher W.B. Gallie (see Gallie, WB. 1955). Such concepts tend to have multiple meanings and are characterised by the fact that people can have widely differing or conflicting viewpoints about definitions, significance, and implications. An essentially contested concept is contentious because it embodies different values, ideologies, and perspectives, leading to ongoing debates that often cannot be definitively resolved. The disagreements arise from differences in philosophical, political, cultural, and contextual interpretations of the concept.
Examples of essentially contested concepts include terms like "democracy," "justice," "freedom," "equality," and "art." Each of these terms has a multitude of interpretations and meanings, and different individuals or groups may emphasise various aspects of these concepts, leading to ongoing debates about their nature and implications.

Sustainability has become such an *essentially contested concept* since it has evolved to encompass a wide range of meanings, interpretations, and perspectives that give rise to ongoing debates and disagreements. Different individuals, organisations, disciplines, and cultural contexts can all work to emphasise various aspects of the term, leading to diverse and sometimes conflicting understandings. There are, as far as I am able to tell, seven main contentions that contribute to this contested nature of sustainability.

> Diversity in disciplines: Sustainability is studied and discussed in a variety of academic fields, including *Environmental Science* (f.ex. Jared Diamond, E.O. Wilson and Paul Ehrlich), *Ecology* (f.ex. Gretchen Daily, Carl Folke and Ann Kinzig), *Economics* (see f.ex. Jeffrey Sachs, Amartya Sen and Joseph Stiglitz), *Engineering* (f.ex. Mark Jacobson, John Elkington and Kristina M. Johnson), *Politics* (see f.ex. Oran R. Young, Michael E. Mann and Robyn Eckersley), *Educational* (ex. Fritjof Capra, Juliet Schor and Svante Björck) and *Sociological* (see f.ex. Hannah Holleman, Ulrich Beck, William R. Catton Jr.)–to mention a few. Within sociology, as an example, there are a greater subsets of approaches; *Environmental Sociology*, *Social Movement Theory*, *Political Ecology*, *Human Ecology* and *Systems Theory*–again to mention only a few. Depending on the field, the idea of sustainability can have wide-ranging and even contradictory definitions. As such definitions slowly filter their way out of academic circles and are disseminated into the world, they also become part of wider vocabularies.
>
> Policy and Practice Implications: Different stakeholders, including governments, businesses, NGOs, and communities, often have different agendas and interests related to sustainability. This can lead to debates about the best strategies and

approaches to achieve sustainable outcomes. In this case, concerning the Arctic, we see a number of different stakeholders in play. A large contingent of these are peoples on the margins of governmental control or state boundaries such as the Faroese, Inuit, Saami and other indigenous or self-autonomous groups with often markedly different interpretations of sustainability from their affiliated governments.

Cultural and Contextual Variability: Varying differences in cultural, regional, or contextual factors can influence how the term of sustainability is defined. What is considered sustainable in one context might not be applicable in another due to differences in values, practices, and especially in needs.

Trade-offs: A needs-based pursuance of sustainability can result in trade-offs between different dimensions. For example, environmental conservation might be seen as conflicting with economic development or economic development might be seen as disruptive towards cultural preservation. Determining which such trade-offs are acceptable, or even needed, and how to balance them can be a subject of contention both within local communities and in relation to external stakeholders.

Evolving Understandings: As our understanding of environmental and social issues evolves, so does the concept of sustainability itself too. New challenges and perspectives can reshape how people think about and define sustainability over time. New actors can enter the field and shift the narrative

Media and post-truth: Just as academia, governance stakeholders, industry and cultural communities work to influence the definition of sustainability, there is a very important force to be found in how the media plays a part in the conceptual development of sustainability. Especially notable is how social media can act as a defining, and very often divisive, factor.

Multidimensionality: In its most common variation, sustainability is defined as encompassing economic, environmental, and social dimensions. Depending on perspective, emphasis might be placed on economic growth, environmental conservation, social justice, or a combination of these factors. This can lead to differing interpretations and priorities.

Of these seven main contentions, I would argue that it is this last one, revolving around *multidimensionality*, that is the most common understanding of sustainability. This is the definition, albeit informed by Brundtland's argument of *meeting the needs of the present without compromising the ability of future generations to meet their needs,* that in common daily usage takes the form of a Shibboleth.

According to Robert Vos (see: Vos, RO. 2007) this contemporary conceptualisation of sustainability came about in the 1990's and has developed markedly since. He argues that there is little agreement on what constitutes sustainability as a concept. According to him, we would benefit from asking what it means to be *un-sustainable* rather than

trying to define sustainability itself (ibid:335). Vos synthesises an number of different definitions of sustainability, and finds that they share three distinct core elements:

A. First, they all tend to present environmental problems in relation to society and economy. This is a common definition that is also employed within some of the articles appended below. It is the conventional "*people, planet, profit*" perspective, sometimes defined as "*economy, environment, and society*" or "*equity, ecology, and economy*" (ibid). In the articles appended below, I refer to it as "*economic, cultural, and environmental*" sustainability. The metaphor that I have employed didactically is one of a three-legged stool that will tip over or wobble unless all three legs are of the same length. The point of this definition is to elicit an understanding of systemic connections.
B. A second shared element is a focus on intergenerational equity (this is a main argument found in the Brundtland report). This almost *longue durée* approach to sustainability acknowledges both the distant past and equally the distant future in terms that might make us question the *here-and-now* benefits of overconsumption.
C. Third, Vos argues that definitions of sustainability embody an understanding that to make a difference, we will need to work together beyond mere compliance with current localised laws and regulations in order to make a lasting difference.

Written in 2007, Vos' text is an interesting look into the recent past, pre-SDG. Already in 2007, Vos argues that definitions of sustainability "must number in the hundreds" (ibid:335). While I do agree with his definitions–shallow definitions, such as this, open themselves to being contested. As pointed out above, concepts imbued with symbolic capital, such as sustainability, are contextual and variable to the degree that they are rendered essentially contested. The concept of *sustainability* might mean one thing within the context of the European Parliament building in Bruxelles–but is likely to mean something wholly different at the Arctic Council Secretariat in Tromsø.

To make sense of this, I rely on Mike Hulme, who in his volume on why we disagree on *climate change* (Hulme, M. 2009b) puts forward arguments that are equally adaptable to the contentious nature of *sustainability*. In fact, these two concepts are often almost interchangeable within Hulme's work. His volume delves into the multifaceted nature of climate change as a social and cultural phenomenon, rather than focusing solely on the scientific aspects, Hulme's aim is to explore the diversity of perspectives and values that underlie the climate change debate and provide insights into why disagreements about the issue persist. He argues that climate change is not only a scientific matter but a product of societal or cultural contexts, political ideologies, and individual values. He discusses the role of differing worldviews, narratives, and interpretations in shaping how people perceive and respond to climate change. Hulme concludes by arguing that climate change–and by my own extension herein, *sustainability*, is not a problem that needs solving, but rather a revelatory idea that informs us about different (individual and collective) beliefs, attitudes and values concerning how we might live in this world.

A fitting example of how the different aspects of sustainability can function as maps upon where we can navigate beliefs and values, can be found in the case of languages.

According to The Language Conservancy, founded in 2005 by American first nations educators and language activists (see: TLC.nd.a), 9 languages die out every single year and by 2080 that number is expected to be as high as 16 languages a year (TLC.nd.b; and Simons, GF. 2019). Out of the roughly 7000 languages spoken on the planet currently, around 2.900 or 41% are endangered and at current rates about 90% of all languages will become extinct within the next 100 years. Of these 2.900 endangered languages, the overwhelming majority are those belonging to marginalised peoples on the periphery such as aboriginals, in conflict-zones within central Asia, sub-Saharan Africa and central-America, First Nations regions within America and Canada and indigenous communities across Scandinavia and the Russian Federation[3] (ibid).

While languages are only a part of any given (here Arctic) culture–they are still a vital component, along with cultural customs, local insights into subsistence lifestyles and a sense of self. Sustainability, *the idea of sustainability*, within the Arctic very much encompasses these traits–cultural continuation and survival through resilience. We could say that the three-legged stool of "*economy, culture and environment*" should be a four-legged chair of "*economy, culture, environment and continuation*"–but then this notion of trifurcating sustainability or having three aspects of sustainability fork off into distinct concepts of their own is often largely anathema to life in the Arctic. For most Arctic cultures (speaking here as a native Faroese man who grew up in northern Greenland), the environment and the climate itself is the culture–it is the source of food, spiritual guidance, storytelling, clothing, tools, and transport. Similarly, Arctic culture is often the economy itself through subsistence ways of life and the informal sharing of resources and collective work. Arctic culture, to keep going, is generally a shared sense of survival and continuation, at the mercy of the climate and the environment, overcome by pooling resources. Life in the Arctic, then, is sustainability at its very core. Similarly (returning to Vos, RO. 2007 above), moving towards the future within the Arctic, is always inextricably linked to the past. Navigating the climate and the geography into the future necessitates conservation of culture, as culture is the economy. Lastly, Vos' argument that to make a difference we will need to come together in order to make a lasting difference with regards to the many complex issues facing the world–the Arctic has a number of intergovernmental organisations and forums all working towards the same or similar goals: The Arctic Council, the University of the Arctic, the Arctic Circle Assembly, Arctic Frontiers, International Congress of Arctic Social Sciences, the High North Dialogue and even an upcoming 2024 Arctic Congress that unites all of these actors into one enormous gathering of stakeholders.

Sustainability within the Arctic, I will assume in other peripheral regions of the world as well, is a very holistic concept that is often defined by identity, space and time. The three-legged definition is not ideal here, as there are often no distinct lines to be made between each of these three legs; economy, culture and environment. They are aspects of the same thing and exist on a continuum along with cultural identity, as well as both temporal, spatial, and political considerations.

[3] For an up-to-date overview of the state of Arctic indigenous languages, see the Arctic Indigenous Peoples Languages and Revitalization project (www.arctic-indigenous-languages-uito.hub.arcgis.com)

> "*In 20 years, I will be definitely speaking my language. I will definitely be tanning caribou hyde every summer. I will definitely be teaching my kids how to thrive off the land. People tend to say that we survived a really really harsh environment by living in the high Arctic. We didn't just survive, we thrived*"
>
> - Jordan Peter, Gwich'in Tribal Council (Arctic Council. nd).

As alluded to above, the idea of *sustainability* (in terms of symbolic capital) fits within the narrative sphere of legitimising or challenging power relations and discourses, and can be argued to be an essentially contested concept. Bourdieu's work often engages with similar concepts, and he explores how they are shaped by social contexts, power dynamics, and cultural capital, and how their contested nature also influences social practices and structures. Analysing sustainability through the lens of symbolic capital in this manner, of legitimising or challenging power relations and discourses, brings us into the sphere of Flyvbjerg's definitions of power and power relations. An important thing to note is that power, in Flyvbjergs conceptualisation, is not necessarily negative or restrictive–it can be equally productive and positive. The fact that sustainability is an essentially contested concept is not necessarily negative or restrictive, but can in fact be productive and informative.

For Hulme (above) a lacking definition for sustainability does not need to be an issue *per se*, rather it can lead to more openness and further inquisitive explorations of what it means to be human in a variety of different contexts. For others, this definitional and conceptual lack is problematic. Scholars such as Johnston et al (2007), Vos (Vos, RO. 2007) and also in Ramsey (JL. 2015) deal with this. Ramsey (2015:1076) argues that "[m]eaning–and the lack thereof–matters". Without clear definition, sustainability as a concept has thus become "one of the least meaningful and most overused words in the English language" (Owen 2011, 246 [cited in Ramsey, JL. 2015:1082]).

There is truth in this from an institutional, organisational and collaborative perspective that is at the core of this thesis. The successful implementation of sustainability within academia certainly needs to rely on clearly defined parameters–especially if there is to be any hope of external collaboration with local and regional stakeholders. Ramsey calls for "*[m]eaningful definitions—ones that people understand in the sense of being able to follow and implement them—presuppose a social context in which one can give a definition*" (ibid:1085, emphasis).

Ramsey (like Hulme) argues that we can actively work with, and learn from, a lacking definition of sustainability in order to facilitate sensemaking based on context-based needs. Others, such as Benson & Craig (2014) argue for an *end to sustainability* and an abandonment of the concept all together. This, they argue, due to the fact that reliance on the concept has resulted in no discernible progress. While it can be tempting to simply discard the notion of sustainability like a broken toy, there are scholars that are working to rectify this apparent failure by applying critical theory approaches. These are activist, Marxist, post-colonial, gendered, racial or ethnically justice-oriented and often reveal sides of sustainability that go beyond the conventional understanding of the term. Rose and Cachelin (2018), among them, argue for a greater focus on *critical sustainability* based on social and environmental justice, Misiaszek (2020a;2020b) calls for an academic adoption of *ecopedagogy* to advance critical socio-historical understanding and counter growing political "*post-truthism"*. There are increasingly

vocal corners of the literature calling for radical change through post-consumerism and post-capitalism (see: Blühdorn, I. 2017). Along with this, there are also those that attempt to sum up this failure under the novel moniker of *post-sustainability* (Foster, J. 2018 and Sconfienza, UM. 2019). Post-sustainability is yet poorly defined and not in wide use, but deals with the transition from one paradigm to another where priorities are reevaluated. It leans into social resilience and calls for critical reflection.

I am rather fond of this junction between old and new. It allows us to shed some weight and leave those parts of the concept that are unhelpful behind. Not discard it entirely but rather rework it. Blühdorn (2016) argues that *sustainability* as a paradigm has failed and is unlikely to provide structural change needed to prevent ecological collapse and serious social conflicts. Blühdorn's focus is on how liberal consumer societies have managed to move the goalposts of the sustainability agenda and in turn morphed it into a prevailing politics of *unsustainability*. He later elaborates on this (Blühdorn, I. 2017). Blühdorn's argument is, in fact, not actually that the paradigm of sustainability has been exhausted, but rather that it has succeeded in its inaction as its current form plays into the hegemonic requirements of developed consumerist countries.
Per definition, *post-sustainability*, then, is a departure from an old paradigm towards a new understanding of the term. A paradigm shift. This is not to say that the concept of sustainability is no more, rather we should expect it to be retained into the future as it serves the needs of politics of unsustainability.

As there is no definition of the burgeoning paradigm of *post-sustainability* available, I will attempt one myself. It should be noted that any such definition will be informed in terms of the themes contained within this thesis, especially with regards to the implementation of sustainability within Arctic academia. *Post-sustainability*, then, should at least include the following considerations:

> Global definitions of sustainability, especially as they have developed through the actions of developed consumerist nations have resulted in abstract goals that so far have not produced much in terms of results. Local definitions, defined by local needs, and available resources are likely to be more precise and actionable.
>
> Shibboleths (especially *faux-shibboleths*) should be discarded and the concept of sustainability should be embraced as an essentially contested concept. Only by acknowledging that sustainability is contextual, fluid and multi-faceted from the outset, can we enter into honest dialogue between stakeholders.
>
> Sustainability is a source of symbolic capital. Through invoking sustainability as a course of action, actors are able to enhance their legitimacy and reputation in order to challenge discourses. The product of this symbolic capital manifests as power. Sustainability, then, is a mechanism for transforming or re-appropriating symbolic capital into power that can be wielded by participating stakeholders.
>
> Post-sustainability must be characterised by a focus on resilience and adaptation to changes that have already occurred, acknowledging that some environmental and social impacts may be irreversible. It should be acknowledged that this will have political implications that will only further add to the contested nature of sustainability.

3.2.4 Transscalarity or *the map is not the territory*

All of the four appended articles deal with the concept of *transscalarity*. Some make more direct references to the concept than others–but they are all built around ideas of operations on different scales and how ideas and resources are transmitted between them. None of the articles make explicit elaborations on the theoretical implications of transscalarity–generally this is due to constraints on length and the complexity of the concept. In order to make sense of why it repeatedly figures within the four articles, it deserves to be untangled here. It should be noted that transscalarity as a term is used fairly widely, and is generally poorly defined. To my knowledge, there exists no authoritative definition of the term and no overarching framework for how to conduct transscalar analysis. The following is a definition–but also very much *my* definition, used in the context of this thesis.

Transscalarity as a concept, when used in social sciences, refers to the idea that social phenomena, such as values, practices, and institutions, can be understood at multiple scales of analysis at once. These scales may include individuals, groups, organisations, communities, nation states, and the world itself. Transscalarity suggests that social phenomena are not limited to one particular scale, but rather they interact and affect other levels of analysis. For example, a global economic crisis can impact the values and practices of individuals within a community, which in turn may affect the policies and decisions of organisations and governments that govern in that community. The concept of transscalarity emphasises the importance of analysing social phenomena from multiple scales and recognizing the interconnectedness between them. It also emphasises the need to understand the ways in which social phenomena can be scaled up or down to different levels of analysis and how this can affect their meaning and impact. Transscalarity does not, yet, stand as a theoretical approach, but is used by a number of scholars and practitioners in different fields as a sense-making tool. This concept was also used as a practical tool in a number of projects we were involved in while the West Nordic Studies programme was active. A common tactic was to involve students on a university-level in work done in either city-level through municipalities or other similar local actors, on a national level through governmental offices or sector research such as the Faroese Geological Survey or the Faroese Agricultural Agency and on a regional level. Often this work was also conducted regionally within the Arctic or the West Nordic Region–as was the case with the collaboration with the Faroese Geological Survey that saw local students participating in a national project to produce education materials for the Arctic region.

Scholte (across a number of publications: 2014; 2019; 2021) deals with the definition of the term. In his work he distinguishes between *multilevel* and *transscalar* analysis. Multilevel analysis explains politics by examining many geographical spheres (local, national, regional, global) as ontologically distinct and separate from each other and factors within them do not overlap and imply hierarchy, meaning that a global level is likely to be presented as more important than national or local level. Transscalarity is a way for Scholte to avoid the trap of attaching implicit hierarchical norms to the field of study. Multilevel analysis stands in contrast to *transscalarity*, where scales overlap and are interrelated (Scholte, JA. 2019:494-5). We see this in effect with the adoption of the SDGs, which are filtered from the global to the local–and in multilevel analysis the SGDs would be more important than local Arctic interpretations of sustainability. In a transscalar analysis - both would be equally important in their own right.

The example of architecture makes for a tangible insight into how transscalarity can be thought of, as in the case of architect Andrés Jaque (Dean at Columbia University Graduate School of Architecture, Planning and Preservation). In a recent interview (Architect's Newspaper. 2023) he notes: "[i]n the past, architecture was understood as the art that acted at the scale of buildings; now architecture is necessarily transscalar". In ecological terms, architecture can no longer be seen as facilitating construction of something new, everything that a building encompasses should be considered in terms of materiality and how materials move around the world, are commercialised, installed and then removed. According to Jaque, "[a]rchitectural materiality operates through societal, ecosystemic, and climatic realities–it is entangled within them". This kind of reasoning, Jaque argues, transforms architectural projects from being purely objectual into something relational and contextual.
A building becomes situated in a certain reality that operates on different time-scales in that it replaces something that was there before and exists within a certain frame of time before it might be demolished. It also exists within its own footprint, but at the same time becomes part of a neighbourhood and a town and a country. The materials are, typically, produced in different parts of the world, using raw materials that are extracted by some people and refined by others. Yet more are involved in transporting, selling, installing and recycling materials. The construction of a building touches on different scales at once; ecological, social, cultural, economic and environmental, but also *traverses* scales, is made *transscalar*, through time and geographic distances.
'Similarly, persons can be transscalar–their actions and and their symbolic capital can be transscalar. Consider Swedish activist Greta Thunberg. Simultaneously, she is a bratty know-it-all with Asberger's skipping school as she sits in front of the Swedish Parliament and also a global symbol for intergenerational activism. At the same time, she wields power through her own actions and also shifts the power dynamics of the entire world when it comes to sustainability.

Transscalarity is also used to make sense of globalisation, operating at the intersection between the global and the local (the *glocal).* An example of *transscalar glocality* would be local governments implementing the UN Sustainable Development Goals in response to universally agreed upon initiatives to further sustainability (for example: Mihr, A. 2022). The SDGs themselves are a great example of transscalarity in action, as they aim to address global challenges and issues that cut across different scales and levels of analysis. The SDGs were adopted by the United Nations in 2015, and are a set of 17 goals and 169 targets that aim to promote sustainable development and address some of the world's most pressing social, economic, and environmental issues.
The SDGs are divided into 17 goals and 169 sub-targets, and presented using simple recognisable iconography and colours. The "goals" are not intended to be understood as distinct issues in need of *ad hoc* fixing, they are intertwined and components of a larger mission in that they: "*recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests*" (UN.nd, emphasis). One might sort the goals into economic-, cultural-, or environmental sustainability – but this would produce a false dichotomy of terms as each distinct goal is contingent on the success of each of the other goals. Similarly, it would not make sense to silo off one sustainable development goal to focus on.

Breaking down complex ideas into smaller components is very human, and it helps us to simplify and better understand difficult concepts. However, interactions between humans can over time create new, and perhaps unhelpful, mental representations of reality as the larger picture is fragmented into smaller elements that take on a life of their own (cf. Berger and Luckman 1966). Institutionalised conceptualisations have staying-power and can result in unhelpful side effects that work against holistic understanding. Just as Greta Thunberg exists as a transscalar figure imbued with symbolic capital, global power relations and discourse employ such capital depending on which agenda is par for the course. She is either called a "*brat*" by Jair Bolsonaro (FoxNews. 2019) and she is also at the same time crowned person of the year by Time Magazine (2019). She is, of course, not only one of these things–not a Schrödinger's Thunberg awaiting inspection. She is both at the same time–and so much more (see DeSmog.2019) in a transscalar sense.

The concept of sustainability is similar to these examples of Greta Thunberg and the SDGs in that they can be dismantled into smaller components, each of which can be influenced through power dynamics to get at their inherent symbolic capital. Each disassembly and subsequent re-assembly of the term infuses the concept with new meaning–resulting in the hundreds of definitions as stated by Vos above (Vos, RO. 2007:335). Over time, some of these constructed institutionalised conceptualisations solidify and become embedded within a broader definition.
A case in point is the aforementioned trifurcation of sustainability as consisting of distinct elements (economic, cultural, and environmental). One could argue that breaking down the concept of sustainability into smaller constituent parts simplifies analysis–or we can argue that it in fact does the opposite. If we silo off components, as we might choose to focus only on a single sustainable development goal or claim that Greta Thunberg is simply a "brat", we risk not understanding the totality of the issue.

As has been dealt with above, the dismantling of sustainability into discrete parts makes little sense to some communities and cultures. For a Saami reindeer herder, the environment is the economy and the culture–just as the culture is the environment and the economy...and so on. Separating them simply makes no sense. They are one and the same. This binary understanding, between nature and culture, is something that has been critiqued by French philosopher Bruno Latour. One of Latour's key focuses is on actor-network theory, which posits that social reality is composed of a network of relationships between both human and non-human actors. These actors can be understood as entities that are capable of action, and they are connected through a web of relationships that Latour refers to as "associations." Latour argues that these associations can be understood at multiple scales or levels of analysis, and that they are constantly shifting and changing as new actors are added or removed from the network. He suggests that understanding the transscalar nature of these associations is crucial for understanding how social phenomena operate and how they are influenced by various factors. For example, in his book "We Have Never Been Modern" (Latour, B. 1993), Latour argues that the traditional divide between nature and culture is a false dichotomy that obscures the complex interactions between humans and non-humans. He suggests that we need to move beyond this binary and adopt a transscalar approach that takes into account the multiple scales of analysis at which these interactions occur.

Latour (ibid) argues that the dichotomy between nature and culture assumes that these are two separate and distinct spheres, and that human beings are separate from and superior to the natural world. This, he suggests, is a fundamentally flawed view, as it ignores the ways in which humans are deeply embedded in, and dependent on, the natural world. Instead, he suggests that nature and culture are deeply intertwined, and that humans are not separate from but rather part of the natural world. He argues that the idea of "nature" is itself a cultural construct, shaped by a range of social, political, and economic factors. Latour's argument about the false dichotomy between nature and culture is part of a broader critique of modernity and its assumptions about the separation of humans and the natural world. He suggests that we need to develop new ways of thinking about and engaging with the natural world, which acknowledge the complex interrelationships between humans and the environment.

In some sense, this not entirely unlike Alfred Korzybski's *map-territory relation* (Korzybski, A. 1933) arguing that "*the map is not the territory*" or sometimes defined as "*the model is not the data*" or, in a more dressed down version (attributed to Alan Watts) as "*the menu is not the meal*". Sustainability, and for that matter the concept of the Arctic that is used herein, are both models of an ideal–but they are not the *things themselves*. *Sustainability* and the *Arctic* both are highly diffuse concepts and when combined become even more so. Sustainability is, as has been discussed at length, not a static or singularly definable phenomena. Issues related to sustainability; climate change, environmental degradation, economic despair, health issues, and the decline of culture, operate within these spheres all at once. They are local, national, regional and global in nature simultaneously. They are also at the same time environmental, cultural and economic in nature. To complicate it even further, they are also political, symbolic and highly contentious and they, within the Arctic region, are also historical, ethnic, linguistic, territorial, cultural and so on. But, they are not the thing itself.

What Korzybski was getting at, is that maps are only models of reality. Our models of sustainability are only crude approximations that can not assume to be considerate of all the different factors at play within that reality. Models of sustainability within the Kingdom of Denmark (being Denmark, Greenland and the Faroe Islands) are not even remotely close. For each of these countries, the factors mentioned are weighted wholly differently, but are from a transscalar perspective, part of the same fabric. The map (the model for sustainability in the Kingdom of Denmark) is not the territory.

A multilevel analysis of sustainability results in silos on each analytical level, be it geographic, economic, environmental or cultural. Using a transscalar lens lets us take a top-down perspective to the issues in their totality. However, while this approach is much more comprehensive, it is also far more complicated. What does complexity such as this mean for institutional and organisational adoption of sustainability within academia? It necessitates collaboration and co-creation with stakeholders on all of the mentioned scales. Universities, which are the focus here, will need to actively engage with sustainability as their mission on local, national, regional and global levels. In their mission statements, they will need to ensure that there is room for a transscalar approach to co-creation of the definitions needed to engage with sustainability.

3.2.5 University mission statements

Another recurring theme in the appended articles, is that of a *4th mission statement*. This idea takes on a number of names throughout the papers, but in shorthand I broadly refer to it as *the 4th mission*. In some instances, it is referred to as *going beyond the 3rd mission*. In other cases it is linked to the idea of *transformative universities*, and finally it is referred to as *co-creation for sustainability*. All of these terms are taken from Trencher et al (2014), an article that features as a foundational text throughout this thesis.

The notion of academic mission statements is not particularly common in everyday parlance within academia, but generally denotes the core operational pursuits of modern universities around the world; teaching, researching and disseminating. These three activities are the foundational pillars of what we expect an institution of higher learning such as a university to embody and strive towards. Staff are expected to split their time between:

- ➔ **Educating** new specialists for the workforce (or, in some cases, train future academics).
- ➔ **Researching** and advancing science within their field through publications and presentations.
- ➔ **Disseminating** their newfound insights into the world for practical purposes.

Generally speaking, these missions are featured on most university websites and other promotional materials in some capacity. They are not necessarily referred to as mission statements or listed in this specific order–more often than not, they are described alongside other ideals such as the institution's history, its vision or values. While some institutions might have rigid, codified and systematic approaches to such missions, others might not. Depending on available resources, type of university or local needs, focus on each of these might not be equally divided in an operational sense. While some institutions might need to focus their energies on education due to staff shortages, others might have the capacity to employ a lot of academic researchers to share the burdens of educating and so on.

It is pertinent to note that these academic missions have a very long history and that the academic system that we have today has evolved from centuries of development. As time has passed, and societies have changed, academic institutions have grown alongside their needs. The missions mentioned should not be seen as rigid modes of operation, but rather as malleable guidelines held in check by rigorous scientific traditions that have been formulated over a similarly long period of time.

Teaching

The passing down of knowledge from generation to generation has, of course, existed since the dawn of humanity and is arguably a defining part of that humanity. Societies and civilisations throughout history have made use of both schools and culture in order to transfer knowledge and insights through time. This is by no means novel to the western kind of academic institution that is their focus herein.

Nevertheless, the first institutions to be acknowledged as “universities” grew out of cathedral and monastic schools of late mediaeval Europe[4]. These were the University

[4] It turns out that my source here is incorrect. Rather, the first institutions that can accurately be called “universities are located in the Middle East and North Africa–in Iran, Morocco and Egypt. For more on this, see Devarajan, S. (2016).

of Bologna and the University of Paris, established in the eleventh and twelfth centuries, respectively. These institutions and the more than one hundred similar institutions established around Europe during this time, were based in the rapid expansion of the Catholic Church and its need for a systematic approach to educating and instructing an increasingly expanding clergy in all matters relating to church operations such as theology, law and medicine (Arbo & Benneworth, 2007, p. 19). During the mediaeval period and well into the Enlightenment, the mission of these early proto-universities was that of teaching, of systematically transferring religiously sanctioned knowledge to pupils within the broader operational sphere of the church.

Research

Following the Enlightenment, a genuine demand for academic reform was raised in the established European academic institutions that had their start in the middle ages. The Enlightenment, but also the French Revolution, the increasingly transformative Industrial Revolution and the ever growing field of natural sciences brought with them immense societal changes. The older institutions were increasingly seen as part of the *l'ancien régime* and following the all-out destruction and carnage from the Napoleonic Wars, a renaissance was to hit the Prussian academic establishment that would cement the second mission of research as a cornerstone of academia. Brought on by the shuttering of a number of prominent Prussian universities during the wars and a renewed sense of nationalism following the wars, the establishment of the Berlin University in 1810 was guided by the "ideals of Bildung, academic freedom and the collective research process as its corner-stones" (Östling, 2018, pp. 23–9).

The notion of Bildung, meaning self-creation or cultural and personal maturation, has generally been attributed to Wilhelm von Humboldt, and the transition from an academic environment focused purely on teaching, to one of teaching and research were to be codified in what became known as the Humboldtian Reform or the Humboldtian Model (see Wittrock, 1993; Östling, 2018) which dictated a more holistic approach to academic education where students were given academic autonomy to pursue interests and engage with the world through reason and self-determination. A core ideal of this approach was the tenet that knowledge should be available to all and aim to change the world for the better independent of economic interests. In other words, the second academic mission emphasised curiosity and the production of knowledge for the sake of knowledge itself (Östling, 2018; Anderson, 2004).

A defining component of academic research is the publication and presentation of new findings and insights. In the context of mission statements, *transmission* of research differs from the notion of *dissemination*. The active transmission of research through publication in academic journals and volumes, presentations at conferences and so on, is an assumed and central part of this second mission statement.

Dissemination

Dissemination, or sometimes referred to as technical transferal, on the other hand, is distinct in the sense that it takes place following transmission of research. While transmission and dissemination are generally linked and part of a coherent process, in terms of the mission statements dealt with here–they are considered as different processes. One is theoretical and descriptive, the other is practical and implementable. If the mission statement of research produces new insights on how to 3D print novel

types of materials – the mission statement of dissemination aims to realise industrial production and use of such solutions in the real world. It constitutes the technical transfer from within academia to a practical external application. This holds true for any of the scientific fields or disciplines (E3M Project, 2012).

Similar to the academic transformations that came in the wake of the Napoleonic Wars, the rise of this part of this third mission emerged from Vannevar Bush's 1945 conceptualisation of a "university-industrial complex" following World War 2 (Bush, 1945). Bush's blueprint for academia was meant to "establish a link between university research and business innovation" in order to "advance economic well being" (Zomer & Benneworth, 2011, p. 83). As Clark (1998) and Etzkowitz (2002) point out, the connection between academia and industry within a third mission formulation dates back to European agricultural universities and the American land-grant universities of the Industrial Revolution. However, Bush's university-industrial complex did not pick up speed until the 1980s, helped along with the passing of the Bayh-Dole Act of 1980 that allowed researchers to claim ownership of federally funded inventions and technical advancements through patents (Mowery, 2007 as cited in Trencher et al., 2014). This new law was instrumental in the capitalising, commercialisation, and commodification of knowledge (Zomer & Benneworth, 2011, p. 84; Etzkowith, 1998, p. 826). This commodification, in turn, gave rise to the Entrepreneurial University (see for example: Clark, 1998; Etzkowitz, 1998; Etzkowitz et al., 2000), where external funding often dictates the direction of research and applied sciences in order to maximise profits outside of the university. Led by MIT and Stanford—for the Entrepreneurial University, "identifying, creating and commercialising intellectual property have become institutional objectives [with the aim of] improving regional or national economic performance as well as the university's financial vantage and that of its faculty" (Etzkowitz et al., 2000, p. 313 as cited in Trencher et al., 2013, p. 151).

As is argued by Trencher et al. (2014, pp. 156–157), the term "social contribution is a useful synonym for describing the core notion of the third mission." However, they go on to argue that "the idea of societal contribution is today widely perceived and promoted as being chiefly an economic contribution" championed by OECD efforts to "emphasise the economic benefits and gains in international competitiveness for governments when universities focus their third-stream activities on innovation transfer and spurring regional development" (ibid).

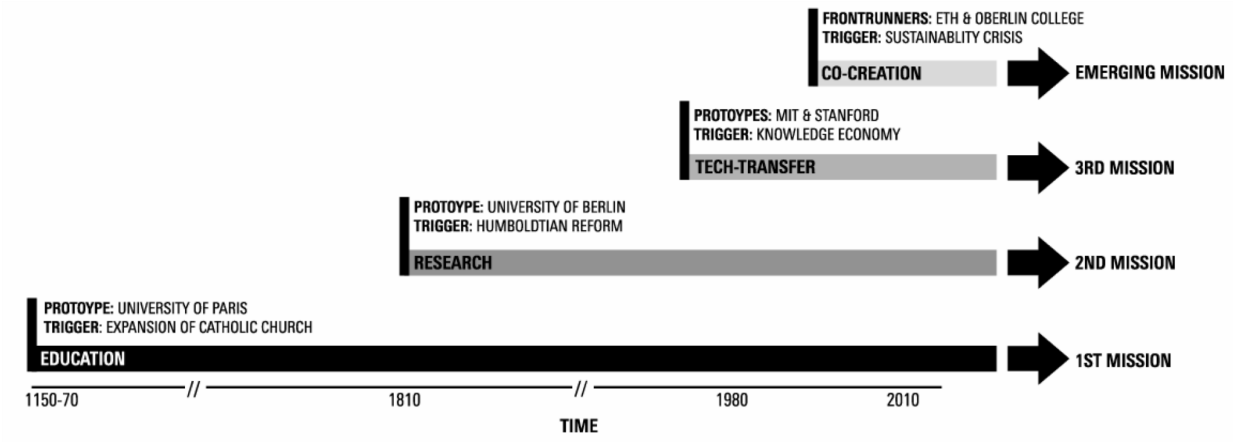


Figure 1: Timescale of mission statements, from Trencher, G. et al (2014).

3.2.6 Co-creation for sustainability

For universities to actively engage with sustainability on a wide transscalar operational mode, one that takes into account engagement with sustainability as an essentially contested concept, they will need to focus their efforts both inwards and out in parallel. In order to allow for external engagement, it will be necessary to reconsider how they are structured organisationally and institutionally.
Here an organisation will be defined as a grouping of people who are working together towards a common goal and the underlying managerial structure that facilitate this (Scott og Davis, 2007: 38). An institution is then understood as the rules, norms, value and culturally aware elements combined with the overall activities and resources that result in stability and purpose (Scott, 2014: 56).

Currently, the conventional academic institutional structure is crystalised through the broadly applicable mission statements that are dealt with above. These generally take the form of the three academic missions of *teaching*, *researching* and *disseminating*. How missions are weighted in terms of daily operations will differ from university to university, but these are considered the general functions of most universities. As has been outlined above, each of these missions has historic precedence and each builds on the next throughout history. As university staff will most likely attest to, these missions are generally considered to exist within their own domains or silos. Even further, it is common to see little to no interaction between different fields and disciplines within a given university. Even within my own university, the University of the Faroe Islands, a university that would rank amongst the smallest in the world, it is common for faculty to never interact professionally. Efforts to counter this problems are available in the literature, Cox & Richlin (Eds.) (2004) have produced a volume on establishing FLC's (Faculty Learning Communities) that aim to provide intentional strategies for breaking down barriers between faculty and encouraging interaction; Björklund et al (2019) also suggest a similar method by an internal establishing of so-called *Design Factories* intended to act as hubs for faculty co-creation.
Broadly speaking, the siloing of university missions, along with a sub-siloing of fields and disciplines tends to be the norm. In some cases, as is argued in article 4.1 below, there are also unfortunate instances of siloing between management and faculty–and even fissures between organisation and institution.

Article 4.3 appended below deals with this issue at length. Ávila et al (2017), who are featured therein, provide notable examples of how this kind of siloing and sub-siloing of universities complicates the implementation of sustainability. The reason seems to be, when looking at the examples used in article 4.3, primarily that the three-pronged mission statement structure is not conducive to a broad application of sustainability precisely due to the walled-off nature of academia. Because sustainability itself is such a broad concept, it struggles to gain traction beyond only the individual efforts of single members of the faculty. Since sustainability is generally not engaged with and enforced on a systemic level, interactions with otherwise willing external stakeholders suffer.
If we argue that sustainability is a transscalar concept that flows between boundaries and borders of scale, we can equally argue that most universities are mired in a siloed *non-transscalar* operational reality. The foundational underpinning of these academic missions results in them becoming a round hole to sustainability's square peg.

In all but one of the appended articles, this non conducive feature of academic mission statements to introduce sustainability is considered the help of Gregory Trencher and his colleagues work (Trencher et al. 2014a) on university mission statements and how the concept of *sustainability* can be difficult to implement holistically within academia. The concept they are dealing with takes on different monikers within the appended articles. Sometimes it is simply referred to as the *4th mission*. Elsewhere it is referred to as going *beyond the 3rd mission*, or simply *co-creation*. In the following, it will be referred to as *co-creation for sustainability* for the sake of coherency.

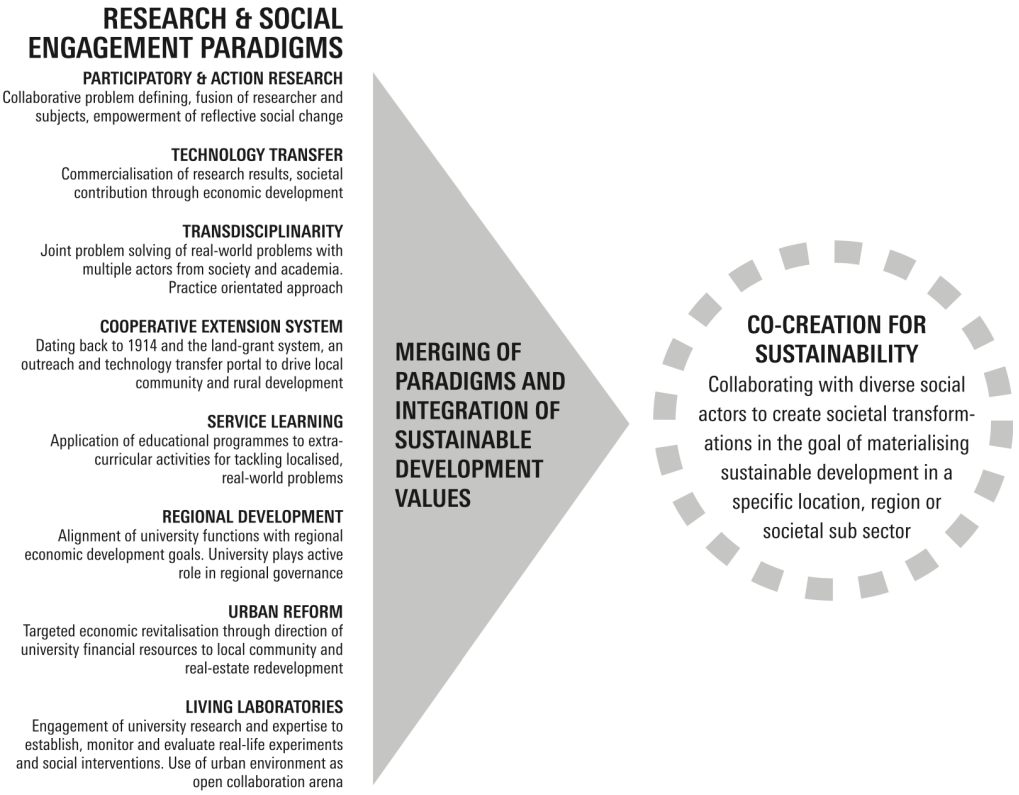


Figure 2:Key properties of co-creation for sustainability Taken from Trencher et al. 2014a:154.

According to Trencher et al (ibid:153), *co-creation for sustainability* (represented in Figure 2 above), is an amalgamation of research and social engagement paradigms that have figured in the literature in recent years. These paradigms of social involvement and community engagement focus on the concept of sustainability from an operational perspective that goes far beyond that of climate change alone. According to Trencher et al (ibid:152), these eight paradigms are deliberately included due to their multi-scalar focus[5]. On a planetary scale, challenges such as climate change and degradation of the environment, along with food scarcity and security, conflicts over resources and so on are a main concern. These are the grand wicked problems that can be inordinately hard for central and local governments–even more so, universities, to tackle. Tied to this, for individual communities and regions, there are an additional host of compounding problems to contend with such demographic ageing and shifting population dynamics,

[5] Trencher et al do not make use of *scale*, but curiously refer to the, clearly, cross-scalar operations they mention, as *levels*. I feel that this is a linguistic, rather than theoretical, choice.

issues with infrastructure (often due to degradation and climate change), ageing and non-compliant buildings and transport systems, pollution, economic decline and so on. According to Trencher et al (ibid: 153), universities are places that can act as gathering places and draw in local and regional stakeholders in order to build alliances and reach potential solutions to problems that are found at these local and regional scales. This is a sentiment that is echoed widely within the literature, they further point to: M'Gonigle & Starke (2006); Arbo & Benneworth 2007; Stephens et al. (2008); Bardaglio (2009); Stephens et al. (2009); Molnar et al. (2011); Whitmer et al. (2010); Yarime et al. (2012) and more. Trott, Weinberg & McMeeking (2018:2) put it very eloquently, arguing that:

> *"Not only are higher education institutions (HEIs) hubs for innovation, creativity, and collaboration towards addressing the world's most pressing challenges, they are embedded within communities whose diverse, geographies, and members offer infinite opportunities for partnership, research, and action towards improving the well-being of people and planet"*

This new mission, *co-creation for sustainability*, is an actionable framework that can aid in further implementation of sustainability within academia, but also function as a way to proactively engage with local and regional stakeholders. Whereas missions one and two combined produce a *research university* and missions one, two and three result in what is termed an *entrepreneurial/innovative university*–combining these four mission statements, Trencher et al (2014a:169) argue, would initiate what can be classified as a *transformative university*.
It needs to be made clear, and this is likely due to the siloed nature of academia, that a new mission statement such as the one described should not be understood as being an additional distinct pillar of operations to stand next to the daily work covered in the three other missions that have been mentioned. In fact, in terms of further adoption of sustainability, considering *teaching*, *researching* and *disseminating* as being separate operations is wholly unhelpful. One would benefit from adopting a venn-diagram view of such missions, all intersecting and traversing in scale.

In parallel with this, Trencher along with other colleagues (Trencher et al. 2014b) look further into the practicalities of co-creation and co-production headed by universities. They find that partnership stemming from collaborative efforts most often target local energy needs, retrofitting and design of buildings, and new solutions within the field of governance and social systems. These collaborative efforts take place at city-scales and typically engage governments at national-scale. These efforts also have strong social, environmental and sustainability impacts, without requiring additional funding.
Similarly, Rinaldi et al (2017) find the same beneficial traits in this approach in their Italian analysis of how social sciences and the humanities can take on challenges related to social innovation and sustainable development as agents of change through leadership, collaborative facilitation and generative efforts. Wakke et al (2019) mirror this in their work on how entrepreneurial students can act as better sustainable agents of change through community driven outreach and social engagement in partnerships with local stakeholders, than through conventional commercialization activities–this is also notably much more visible when observed in developing countries. The same can be said for Filho et al (2021) who reiterate the beneficial effects of this approach and propose an operational framework around the concept of co-creation for sustainability.

As noted, the adoption and implementation of a new academic mission statement such as the one described here is not simply an addition of an additional operational column that trails the current work being produced at universities. It is not a case of *teaching*, *researching*, *disseminating* and then *being sustainable*. It is something that is going to require a fundamental restructuring of how many (if not most) institutions of higher learning function. It is a shift away from walled-off, siloed, operations towards more fluid and reflexive takes on operations that actively invites and engages non-scholars and a host of diverse stakeholders within the local and regional community. But as the research mentioned above presents, this might actually be a thing worth doing.

3.2.7 Summary

This essay has dealt with different recurring concepts found in the appended articles produced for this thesis. It has covered Flyvbjerg's qualitative approach of phronesis and Bourdieu's concept of symbolic capital as a means to make sense of these concepts and that both Flyvbjerg's and Bourdieu's work can compliment our understandings of sustainability, transscalarity and the novel mission statement of co-creation. Here I will provide a short summary.

It is pointed out that Flyvbjerg critiques the prevailing technical rationality paradigm which favours quantitative methods, asserting its limitations in addressing real-world complexities. He calls for a phronetic approach that values practical wisdom, context, and expertise in tackling societal issues. I highlight the key role of power in Flyvbjerg's approach, delineating its characteristics, including its productive nature, networked structure, and dynamic exercise. His four power-related questions for planning research are given, rooted in understanding power dynamics. I then underscore the importance of accounting for power dynamics and context to devise effective solutions for societal challenges.

Focusing on work by Bourdieu, I point out that he put forward that organisations and individuals can amass and utilise symbolic capital, denoting the prestige, status, and reputation they hold within a specific society or field. This capital is fostered through recognition from relevant social actors and is dynamic, both productive and restrictive. Just as power is re-appropriated and dynamic, symbolic capital is context-bound and variable. Concepts and ideas can also hold symbolic capital, reflecting their importance in society. Theoretical frameworks and political concepts can accrue symbolic capital, influencing academic directions, and social and political movements.
The concept of sustainability also fits within this framework of symbolic capital. It's an inherently contested concept, adaptable and open to various interpretations and manipulations. Sustainability's malleability isn't just about its colloquial interpretation but also its role in power dynamics and symbolism. Stakeholders can appropriate and re-appropriate this capital, enhancing their own influence. The contest isn't solely about defining the term, but about its potential to yield power over certain outcomes.

The term *sustainability* is used colloquially without clear definitions, yet it is employed in social contexts to represent a broad and complex idea. The concept's contested nature makes it a shibboleth, witnessed in gatherings like the Arctic Circle Assembly, where stakeholders with differing perspectives use the term to present a common front

even if their definitions diverge.
The concept of sustainability is argued to be essentially contested, signifying a concept debated among scholars and experts due to its diverse interpretations. Sustainability holds multiple meanings influenced by philosophical, political, cultural, and contextual factors. It's used in various disciplines and has policy implications, leading to debates on strategies and trade-offs. Its multidimensional nature, evolving understandings, media influences, and cultural variability contribute to its complexity.

I suggest that a lack of a precise definition of sustainability can be both productive and problematic. It opens avenues for exploration and context-based understanding but also hampers communication. A number of scholars propose approaches like critical sustainability, and a burgeoning conceptualisation of *post-sustainability* to reshape and refine the concept. Post-sustainability is seen as a shift from current paradigms to new understandings that embrace local definitions, accept its contested nature, recognize symbolic capital and power relations, prioritise resilience, and adapt to irreversible changes. Ultimately, sustainability's diverse interpretations, contested nature, and evolving significance reveal complex layers of societal beliefs, attitudes, and values in different contexts that should be taken into consideration.

Transscalarity concerns operations on different scales and the exchange of ideas and resources between these scales. In the context of social sciences, transscalarity suggests that phenomena; values, practices, and institutions, can be understood across scales of analysis simultaneously. Such scales encompass individuals, groups, organisations, communities, nation-states, and the global. Transscalarity asserts that phenomena are not confined to a single scale; they interact and influence other levels. This highlights the necessity of analysing social phenomena across multiple scales and recognizing their interconnectedness.

I point out that we can distinguish between multilevel and transscalar analysis, where multilevel analysis would treat geographical spheres (local, national, regional, global) as separate hierarchical entities–transscalarity emphasises their interconnectedness. Transscalarity aids in understanding the glocal nature of globalisation, particularly the interaction between the global and local, as seen in local governments implementing the SDGs. Sustainability is subject to power dynamics that shape its meaning and symbolic capital. I point out that sustainability is a model, and that models aren't the reality they represent. Similarly, models of sustainability are approximations that can't encompass all factors. Sustainability varies across geographic and cultural contexts. A multilevel analysis would compartmentalise it, while transscalar approaches would view it holistically. However, holistic complexity would also challenge institutions to collaborate across scales for effective sustainability engagement. Universities, in particular, should adopt a transscalar approach in their mission statements, allowing co-creation of sustainable definitions.

Academic missions outline universities' core pursuits, such as teaching, research, and dissemination of knowledge. These activities have deep historical roots which have evolved alongside changing societal needs. They guide the allocation of resources and priorities for universities, but their emphasis can vary depending on factors like institutional type, resources, and local needs. Teaching has a very long history of

transferring knowledge, while research gained prominence after the Enlightenment. The Humboldtian Model was pivotal in promoting teaching and research, emphasising academic autonomy and pursuit of knowledge for its own sake. Dissemination, distinct from transmission, involves practical application of research findings. It aims to transfer knowledge into real-world solutions. The mission of dissemination emerged after World War 2, connecting academia with industry for economic advancement. The Bayh-Dole Act of 1980 allowed researchers to patent federally funded inventions, leading to commercialization of knowledge and rise of the Entrepreneurial University.

The concept of the fourth mission represents a university's transformative role beyond traditional missions. It encompasses societal contributions beyond economic benefits. The OECD emphasises economic gains from innovation transfer and regional development as part of the third mission. However, the 4th mission recognizes that universities should also address broader societal challenges and co-create solutions for sustainability. This mission aims to go beyond the traditional missions of teaching, researching, and disseminating, and focuses on actively engaging with sustainability through collaboration with local or regional stakeholders. Co-creation for sustainability calls for a transformative university that actively partners with communities to address pressing challenges. Such a mission necessitates a shift in the operational approach of universities, embracing engagement across different scales and disciplines.

Above is an attempt at defining a possible paradigms of post-sustainability. I posit that such a definition should at least include the following considerations:

> Global definitions of sustainability, especially as they have developed through the actions of developed consumerist nations have resulted in abstract goals that so far have not produced much in terms of results. Local definitions, defined by local needs, and available resources are likely to be more precise and actionable.
>
> Shibboleths (especially *faux-shibboleths*) should be discarded and the concept of sustainability should be embraced as an essentially contested concept. Only by acknowledging that sustainability is contextual, fluid and multi-faceted from the outset, can we enter into honest dialogue between stakeholders.
>
> Sustainability is a source of symbolic capital. Through invoking sustainability as a course of action, actors are able to enhance their legitimacy and reputation in order to challenge discourses. The product of this symbolic capital manifests as power. Sustainability, then, is a mechanism for transforming or re-appropriating symbolic capital into power that can be wielded by participating stakeholders.
>
> Post-sustainability must be characterised by a focus on resilience and adaptation to changes that have already occurred, acknowledging that some environmental and social impacts may be irreversible. It should be acknowledged that this will have political implications that will only further add to the contested nature of sustainability.

Having dealt with the additional concepts of *transscalarity* and co-*creation*, I would argue that two further considerations be added to this attempt at definition:

In terms of organisational and institutional implementation of sustainability, and especially as it relates to external collaborations, it must be acknowledged that sustainability is *transscalar* in nature. Meaning that definitions such as the trifurcated focus on (for example) *people, planet, profit*–or a specific time and place can be unhelpful.

A post-sustainable paradigm requires new actionable tools and frameworks that can support its contextually bound and fluid outlook. In order to ground local engagement, novel and inclusive modes of working with sustainability must be developed and implemented.

Through the lens of a new post-sustainability paradigm, sustainability is accessible and applicable as a postmodern transscalar idea. Understanding this paradigm through the definitions of power outlined in the phronetic approach, as well as recognising how it is imbued with symbolic capital, we can gain a new understanding of sustainability and how it can better be implemented.

References

Adrian, P. (2009) *Hijacking Sustainability*. MIT Press; Cambridge.

Architect's Newspaper (2023) *An Architecture of Transscalarity: AN in conversation with Andrés Jaque*. Published in the online version of The Architect's Newspaper, January 19th, 2023: archpaper.com/2023/01/an-in-conversation-with-andres-jaque/

Arctic Circle (2022) *Arctic Circle 2022: Programme*. Published online by the Arctic Circle Assembly, available: arcticcircle.org/assemblies/2022-arctic-circle-assembly.

Arctic Council (nd) *Our Resilience*. Quote from Gwich'in Tribal Council Member Jordan Peter on the Arctic Council website: www.arcticpeoples.com/#intro

Ariffin, Y. (2010) *On the Scope and Limits of Green Imperialism*. Peace Review: A Journal of Social Justice, 22:373–381.

Ávila, L., Filho, W., Brandli, L., Macgregor, C., Molthan-Hill, P., Gokcin Ozuyar, P. & Moreira, R. (2017) Barriers to Innovation and Sustainability at Universities Around the World. Journal of Cleaner Production. 164. 10.1016/j.jclepro.2017.07.025.

Benson & Craig (2014) *Policy Review: The End of Sustainability*. Society and Natural Resources, 27:777–782.

Berger and Luckmann (1966) *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*. Garden City, NY: Anchor Books.

Björklund et al (2019) *Learning across silos: Design Factories as hubs for co‐creation*. Eur J Educ. 2019;54:552–565.

Blühdorn, I. (2016) *Sustainability— Post-sustainability— Unsustainability*, in: Teena Gabrielson and others (eds), The Oxford Handbook of Environmental Political Theory (2016; online edn, Oxford Academic, 7 Mar. 2016).

Blühdorn, I. (2017) Post-capitalism, post-growth, post-consumerism? Eco-political hopes beyond sustainability. Global Discourse, Volume 7, 2017 - Issue 1: After Sustainability - What?

Bourdieu, P. (1984) *Distinction. A Social Critique of the Judgement of Taste*. London: Routledge.

Bourdieu, P. (1986) *The forms of capital*. In Richardson, J. (ed) *Handbook of Theory and Research for the Sociology of Education*. New York: Greenwood.

Bourdieu, P. (1998) *Practical Reason: On the Theory of Action*. Cambridge: Polity.

Cox & Richlin (Eds.) (2004) *Building faculty learning communities*. New Directions for Teaching and Learning, 97.

Dahl, R.A. (1961) *Who Governs? Democracy and Power in an American City*. New Haven, Yale University Press.

DeSmog (2019) *Attacks on Greta Thunberg Are About More Than Anti-Environmentalism*. Published by DeSmog, Sep. 15th, 2019. Available online: desmog.com/2019/09/15/attacks-greta-thunberg-right-wing-free-market-network/.

Devarajan, S. (2016) *The paradox of higher education in MENA*. Published online, June 27, 2016, at the Brookings Institute website: www.brookings.edu/articles/the-paradox-of-higher-education-in-mena/

Filho et al (2021) *A framework for the implementation of the Sustainable Development Goals in university programmes*. Journal of Cleaner Production 299 (2021) 126915.

Flyvbjerg, B. (2001) *Making Social Science Matter: Why Social Inquiry Fails and How It Can Succeed Again*. Cambridge University Press: London.

Flyvbjerg, B. (2002) *Bringing Power to Planning Research : One Researcher's Praxis Story*. Journal of Planning Education and Research 2002 21: 353-366.

Flyvbjerg, B. (2004) *Phronetic Planning Research: Theoretical and Methodological Reflections*. Planning Theory & Practice, Vol. 5, No. 3, 283–306, September 2004.

Flyvbjerg, B. (2006) *Five Misunderstandings About Case-Study Research*. Qualitative Inquiry, vol. 12, no. 2, April 2006, pp. 219-245.

Foster, J. (ed) (2018) *Post-Sustainability: Tragedy and Transformation*. Routledge:London.

FoxNews (2019) *Greta Thunberg called a "brat" by Brazilian president*. Fox News Media, published online Dec. 11, 2019: www.foxnews.com/world/brazilian-president-calls-great-thunberg-brat.

Gallie, W. B. (1955) *Essentially Contested Concepts*. Proceedings of the Aristotelian Society, 56, 167–198.

Glasby, GP. (2002) *Sustainable development: The need for a new paradigm*. Environment, Development and Sustainability. Volume 4, Issue 4, pp. 333-345.

Hulme, M. (2009a) *[Review] The Sustainability Mirage: Illusion and Reality in the Coming War on Climate Change*. The Geographical Journal; London Vol. 175: 317.

Hulme, M. (2009b) *Why We Disagree About Climate Change: Understanding Controversy, Inaction and Opportunity*. Cambridge University Press: Cambridge.

Johnston et al (2007) *Reclaiming the definition of sustainability*. Environmental Science and Pollution Research International, 14, 60–66.

Korzybski, A. (1933) *Science and Sanity. An Introduction to Non-Aristotelian Systems and General Semantics*. The International Non-Aristotelian Library Pub. Co. pp. 747–761.

Latour, B. (1993) *We Have Never Been Modern*. Harvard University Press.

Lempinen, H. (2017) *The Elusive Social: Remapping the Soci(et)al in the Arctic energyscape*. University of Lapland.

Mazı, F. (2009) *Understanding Sustainable Development: Ambiguity And Conflict*. Dumlupınar Üniversitesi Sosyal Bilimler Dergisi. 2009; (23)

Mcnamara, T. (2005) *21st Century Shibboleth: Language Tests, Identity and Intergroup Conflict*. Lang Policy 4, 351–370

Mihr, A. (2022) *The Glocal Between the Local and the Global*. In: *Glocal Governance*. SpringerBriefs in Political Science. Springer, Cham.

Misiaszek (2020a) *Countering post-truths through ecopedagogical literacies: Teaching to critically read 'development' and 'sustainable development'*. Educational Philosophy and Theory, Vol. 52:7, 747–758.

Ogunleye, F. (2003) *Environmental Sustainability in Nigeria: The "Awareness" Imperative*. African Issues, 31/32, 41–52.

Ramsey, JL. (2015) *On Not Defining Sustainability*. J Agric Environ Ethics (2015) 28:1075–1087.

Rinaldi et al (2017) *Universities and Smart Specialisation Strategy: From Third Mission to Sustainable Development Co-creation*. International Journal of Sustainability in Higher Education. 19(1), 67-84.

Rose and Cachlin (2018) *Critical Sustainability: Incorporating Critical Theories into Contested Sustainabilities*. Journal of Environmental Studies and Sciences. Vol.8, pages 518–525.

Sconfienza, UM. (2019) *The post-sustainability trilemma*. Journal of Environmental Policy & Planning, 21:6, 769-784.

Scholte, JA. (2014) *Reinventing Global Democracy*. European Journal of International Relations, Vol. 20(1):3-28.

Scholte, JA. (2019) *Civil Society and Global Governance: Exploring Transscalar Connection*. Interest Groups & Advocacy, Vol. 8:490-498.

Scholte, JA. (2021) *Beyond Institutionalism: Toward a Transformed Global Governance Theory*. International Theory, Vol. 13:179-191.

Scott, R. W. (2014) *Institutions and Organizations: Ideas, Interests, and Identities*, Los Angeles: Sage.

Scott, R. W. og G. F. Davis (2007) *Organizations and Organizing: Rational, Natural and Open System Perspectives*, London: Routledge.

Simons, GF. (2019) *Two Centuries of Spreading Language Loss*. Proceedings of the Linguistic Society of America: 4. 27 (2019), 1–12.

Time Magazine (2019) *TIME 2019 Person of the Year: Greta Thunberg*. Published online by Time Magazine: time.com/person-of-the-year-2019-greta-thunberg/

TLC (nd.a) *The Language Conservancy: About Us/Our History*. Available online at: languageconservancy.org/our-history/

TLC (nd.a) *The Language Conservancy: Language Loss*. Available online at: languageconservancy.org/language-loss/

Trencher, G. et al. (2014a) *Beyond the Third Mission: Exploring the Emerging University Function of Co-Creation for Sustainability*. Science and Public Policy, Vol. 41:151-197.

Trencher et al (2014b) *University partnerships for co-designing and co-producing urban sustainability*. Global Environmental Change 28 (2014) 153–165.

Trott, Weinberg & McMeeking (2018) *Prefiguring Sustainability through Participatory Action Research Experiences for Undergraduates: Reflections and Recommendations for Student Development*. Sustainability. 2018; 10(9):3332.

Vos, RO. (2007) *Perspective. Defining Sustainability: A Conceptual Orientation*. Journal of Chemical Technology and Biotechnology, 82:334-339.

Wakkee et al (2019) *The university's role in sustainable development: Activating entrepreneurial scholars as agents of change*. Technological Forecasting and Social Change, 141, 195-205.

UN (nd) *History*. Published by the United Nations, available online at: www.sdgs.un.org/goals.

3.3 Conclusion: the Fourth Mission and Post-Sustainability Oriented Innovation in the Arctic

This article has *not* been peer-reviewed and has *not* been published.
See: Olsen, MM. (forthcoming) *Fourth Mission and Sustainability Oriented Innovation in the Arctic*.

The Fourth Mission and Post-Sustainability Oriented Innovation in the Arctic

The following paper constitutes a refined version of work completed in conjunction with the authors' PhD project. It rewrites the project as a single uniform narrative that points out the different concepts, theories and analyses featured throughout the thesis in order to function as a conclusion. The paper is intended to be readable in standalone fashion, or as an extension of the thesis itself. To achieve this it replicates much of the existing work in condensed form.

It asks the question: *How can we explain and understand the potential benefits and barriers for small Arctic institutions of higher learning to implementing sustainability as a Fourth Mission?* and concludes that sustainability within the Arctic is often defined in terms that differ markedly from how it is defined elsewhere and on different scales of focus. I argue that sustainability within the Arctic can be better understood through the burgeoning paradigm of *post-sustainability*, that such a paradigm can help universities to adopt and implement their own understanding of the concept and further facilitate the adoption of a novel academic mission statement of co-creation for sustainability.
I conclude that paradigms presented as constituting an academic mission statement of co-creation for sustainability are already to be found within small Arctic institutions of higher learning.

Motivation and aim

In the tail-end of my PhD project, spring of 2022, I was part of a workshop held by *Nordic Sustainable Campus Network* (nordicsustainablecampusnetwork.wordpress.com). I had previously been part of a similar workshop held in the Faroe Islands all the way back in 2016 (NSCN. 2016) when I first started out as a research assistant on the then newly established *West Nordic Studies Master's Programm*e at the University of the Faroe Islands. A lot had happened in the span of those six years. Along with my colleague at the time, Lau Øfjord Blaxekjær, I travelled to Greenland, Denmark, St. Petersburg, Iceland, toured Canada all the way to Newfoundland and co-hosted workshops in Greenland and Iceland and hosted several international workshops in the Faroes–all in an effort to learn as much as possible about how academic networks around the Arctic region were working on implementing sustainability.
Precisely the focus on implementation of sustainability was our *modus operandi*. It was the core of our curricula and syllabuses, it was the theme of a series of increasingly popular conferences under the banner of *Green Growth Dialogue*, and was the focus of a multi-year collaboration with universities from around the Arctic where we focused on understanding how university students might become sustainability agents through the use of entrepreneurship and innovation (see Blaxekjær, L., Olsen, MM. et al. 2018; Lauritsen, S. E., Olsen, MM. et al. 2019). During this time, we had made a clear mark on events beyond that of the university, being involved in new Faroese policies for energy, fisheries and tourism–to name a few. In terms of further implementing sustainability within our own university, we had barely made a dent beyond the Master's programme itself.
Also during this time, I had the good fortune of being offered to start a PhD project at the Technical University of Denmark. Deciding to focus on sustainability and the implementation of sustainability within *smaller institutions of higher learning* in the Arctic region, seemed a fitting choice. Taking part in that Nordic Sustainable Campus workshop in 2022, listening to colleagues from the largest universities within the Nordic countries[6] speaking on their advances was humbling. Since 2016, when my own university had taken part in the network for the first time, and despite its membership over a number of years, there has been little made in terms of systemic progress. Since the initial steps towards a fourth mission that we spearheaded, the university has since backtracked and focused on its traditional operational approach where one might find sustainability in the form of language and history - and vocational education for the local community similar to what we find in other smaller Arctic institutions of higher learning, this kind of sustainability is still within the barriers of a three-mission university to be explained further below.

Research question and objectives

This paper seeks to answer the following question: *How can we explain and understand the potential benefits and barriers for small Arctic institutions of higher learning to implementing sustainability as a Fourth Mission?* The knowledge gap addressed is to some extent personal, in why the implementation of sustainability proved exceptionally difficult at my own university–and more generally it addresses the knowledge gap that lies between a practical performance and potential of what is outlined in 4th mission paradigm proposals (as per Trencher et al. 2014), that of *co-creation for sustainability* and the arguable failure of the concept of sustainability to make much headway within academia in the Arctic region.

This is approached through a set of objectives that are closely related to the work completed as part of my PhD project. An initial sense-making exploration of small Arctic institutions of higher learning will be outlined, using the University of the Faroe Islands as a case. This is followed by examples of

[6] Copenhagen Business School, University of Vaasa, University of Iceland, University of Oslo, KTH (Royal Institute of Technology in Sweden).

the implementation of sustainability within universities in the rest of the world. In order to speak to the implementation of sustainability, it is pertinent to define the concept from an Arctic perspective. This is bookended by an exploration of possible solutions, frameworks or novel theoretical approaches.

Theoretical implications

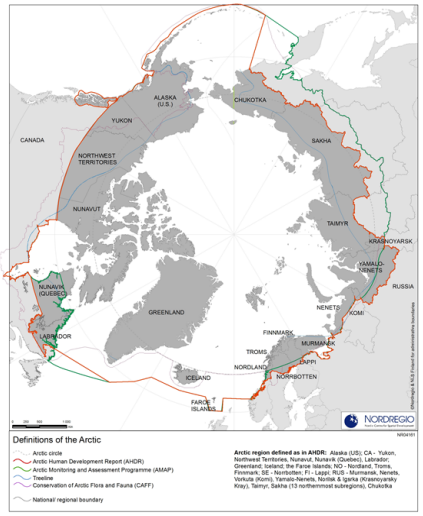
The following relies on Flyvbjerg's (2001) work on *phronesis* and his affiliated definitions of power. A phronetic approach, according to him, emphasises practical wisdom, practical wisdom, and expertise in addressing complex social problems. Phronetic research is grounded in real-world situations and is guided by an understanding of context and particularity of each situation. Arguments for phronesis highlight the need for social scientists to engage with real-world situations and to develop solutions that are grounded in the particularities of each given situation. It further draws on Bourdieu's work on *symbolic capital* (Bourdieu, P. 1984; 1986; 1998), especially how institutions, organisations and even concepts (such as sustainability) can accumulate and make use of symbolic capital. It also makes use of Gallie's (1955) *essentially contested concepts*, terms or concepts that are deeply debated and subject to ongoing disputes and interpretations among scholars, experts, and practitioners–and equates sustainability as being one such concept.
I take a constructivist and interpretivist theoretical stance, but borrow from critical paradigms (Cf. discussion: Guba & Lincoln. 1994; Heron. 1996; Heron & Reason. 1997; Guba and Lincoln. 2017). The experienced and lived nature of the work is value-bound and is both *etic* (referring to the perspective of an outsider looking in on a particular culture and their values and practices.) and *emic* (referring to an insiders' perspective on beliefs, values, and practices of a culture–from the perspective of the people who live within that culture). This results in an ontology that relies on a socially constructed view, and an epistemology that is open to subjective meanings.The paper is further informed by completed works (Olsen, MM. 2020; Olsen, MM. 2021; Olsen, MM. 2023 [under review]; Olsen, MM. & Rosati, F. forthcoming) that utilises mixed-methods approaches; systematic literature review, surveys, institutional and organisational analysis, textual analysis, interviews and textual analysis and coding.

Below is, first, a section that introduces the Arctic region and the institutions that are investigated in the paper. This is followed by a section that discusses how symbolic capital plays a special role for these institutions and their communities. I follow this with a section on the contended nature of sustainability within the Arctic–here I introduce the paradigm of *post-sustainability* (see f.ex. Foster, J. 2018; Sconfienza, UM. 2019). This leads into a section that encompasses an overview of academic mission statements, the novel academic fourth mission statement of co-creation, and the concept of transscalarity (see especially Trencher et al. 2014).

The second wave of Arctic hybrid-institutions of learning

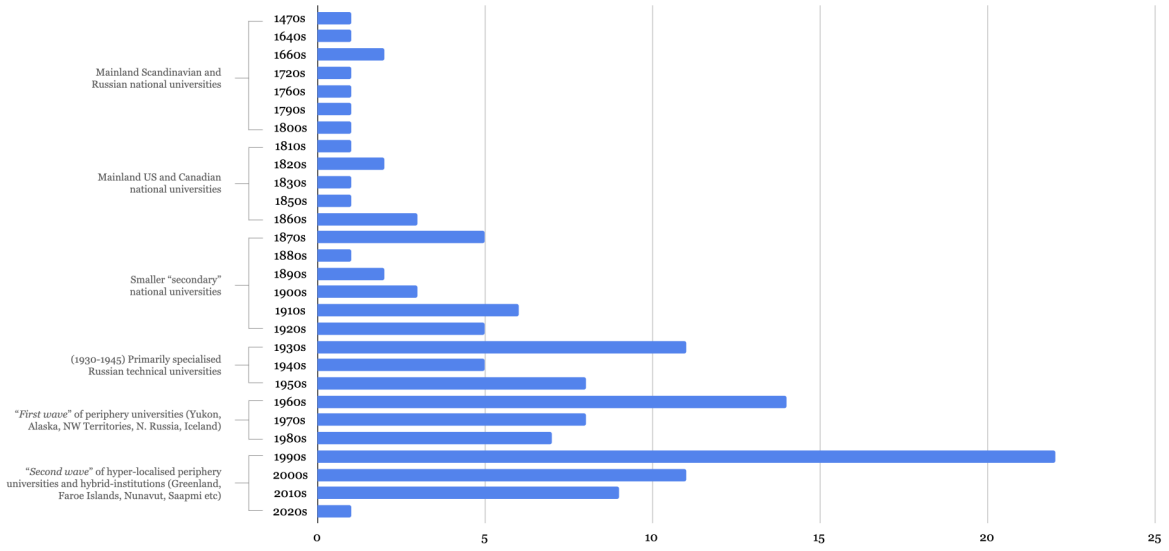
There are a number of ways to define the Arctic region. Geographically, it is defined as being 66° north of the Equator, neighboured by the subarctic in the approximate range of 50°N and 70°N latitude (see Armstrong, Rogers et al. 2023). Other definitions are botanical, climatological or marine-based. According to Ellen Øseth, the Norwegian Polar Institute, the: "definition of what the Arctic is depends on what the definition is to be used for" (BarentsWatch. 2015). Further definitions can be national or political, but what you are most likely to encounter within the Arctic itself, in my experience, is a *cultural* definition.
Depending on definition, the Arctic consists of regions within eight different nation states. These nation states are: Canada, Denmark, Finland, Russian Federation, Iceland, Norway, Sweden, and the United States. These are also the member states that make up the Arctic Council. China has defined itself as a near-Arctic state (Blaxekjær, Lanteigne & Shi. 2018), and in 2013 Japan, South Korea, Singapore, India, and Italy joined the Arctic Council as observers (ArcticCouncil. nb.a). As most of

these nation states extend far below the 66° parallel, it quickly becomes debatable what constitutes "*Arctic*" in terms of national identity[7]. Within this region, covering roughly 5.4 mil. square miles or 14.5 million square kilometres there can be found 4 million people (ArcticCouncil. nd.b). Depending on classification, there are in the region of 40-90 indigenous languages spoken within the Arctic, many of those are designated to be endangered and close to extinction (ArcticCouncil. 2021). In this region, there are about 40 indigenous ethnic groups, and a number of what would be seen as non-indigenous groups, such as the Faroese, the Icelandic etc (Nordregio. 2019).



The collaborative network for arctic academia, University of the Arctic, or *UArctic*, lists about 134 institutions of higher learning within the region[8] and of those, around 60 are institutions with a student body lower than 5000 (see: UArctic, nd; Olsen, MM. 2023). Meaning that around half of all Arctic institutions of higher learning can be argued to be *small*, at least in

Figure 2: UArctic members estalishment sorted by decade and grouped by period



comparative sense. Many of these 60 institutions have far fewer than 5000 students, some even have fewer than 100 students.

Of the roughly 130 or so institutional members of the University of the Arctic network, around half are older and larger national universities, generally situated in capitals predominantly within Scandinavian countries and the Russian Federation established in the period between 1400-1800. Following this, in the period between 1800-1860, there was a proliferation of especially American and Canadian major universities. From the period between 1870 and towards the onset of the war in around 1930, there is

[7] In all fairness, the Arctic is rather made up of the following regions within those nation states: the state of Alaska. Yukon, Northwest Territories and Nunavut in Canada. Greenland and (at times) the Faroe Islands in the Kingdom of Denmark. Northern Ostrobothnia, Kainuu and Lappi in Finland. Iceland. Nordland, Troms, Finnmark, Svalbard and Jan Mayen in Norway. Västerbotten, Norrbotten and Lappland in Sweden. And Murmansk, Siberia, Nenets Okrug and Novaya Zemlya in the Russian Federation.

[8] Institutions are required to apply for membership on order to feature within those numbers. Not all Arctic institutions of higher learning are part of the UArctic.

a noticeable uptick of universities within the Arctic being established in secondary-cities, often seen in larger cities that are not the capital, but are large enough to support considerable student bodies. In the period around the war, 1930-1945, only Russian technical universities were established within the Arctic region. Some years following this, in the 1960's and the 1980's, where the participants of the war had managed to regain their footing, there was a noticeable *first wave* of highly peripheral institutions of higher learning being established in the very far north of the region, the Yukon, Alaska, NW Territories, Northern Russia and Iceland. In the period following this, from the 90's to the present, there has been a *similar second* wave of even more peripheral and localised institutions that take on a form that can best be described as hybrid-institutions; part university, part vocational college, part indigenous or cultural institution. More than half of the region's universities and institutions of higher learning were established within the period of these two *waves*.
This means that more than half, 61,2% (82 vs 62 of 134), of the academic institutions within the Arctic region are relative newcomers, the majority being established since the 1990's. Overwhelmingly, these are institutions on the edges of the region, very often established by local firebrands or well-known cultural or political figures within the community in order to cater to niche or highly specific needs of a community that is often highly remote, isolated, ethnically dissimilar or historically underserved.
These institutions are typically established as what could be termed as hybrid-institutions, in that they often offer not only some university or college level courses, but also vocational training, indigenous or culturally-focused classes or training in the same physical space.

One such institution is the University of the Faroe Islands (UFI)[9]. The UFI mirrors the description of small Arctic universities remarkably well. Historically (an overview is available in Olsen, MM. 2020) the UFI was part of *both* of the waves described above, it was established as an academy in the 1960's and was restructured into a university in the 1980's. Initially it was housed in a single small building in the centre of the capital, and was coordinated by a handful of very eager Faroese academics returning from their studies in Denmark. Existing only as an academic society in the 1880's, the whole operation was bootstrapped and held aloft by exceptionally dedicated and tireless firebrands who would go on to form a budding cultural elite and in the process also initiate the foundations of what would later become a Faroese self-autonomy movement that, to a large extent, has shaped the national identity as well as the authoritative history of the nation and written language of the people in the Faroe Islands to this day, Without mincing words, and this holds true for the majority of institutions within the brackets of the mentioned waves of established institutions within the Arctic region, the UFI was always intended as part of a grander nation building project. While the definition of *statehood* or *nation* is not directly applicable to a majority of communities and peoples within the Arctic that are engulfed by established nation states, the urge to establish autonomous and locally operated institutions catering to local issues, based on local values and traditions, is exceptionally strong within the Arctic due to the myriad of ethnicities, languages, cultures and historical attempts at suppressing these. The UFI, then, quickly became a hub for the study of language, history, culture and the active development of a faroese scientific language, in Faroese, about the Faroe Islands, intended for Faroese audiences. It then branched out to encompass and influence politics and law. The University of the Faroe Islands is currently one of the smallest universities in the world, as are several other institutions mentioned, counting a student body of around 400-500 students (see ibid).

Small Arctic universities and symbolic capital

Following Bourdieu (1998), organisations, institutions, individuals, places, objects and even concepts can be imbued with, or accumulate, symbolic capital. This capital refers to prestige, status, reputation or influence generated through recognition and validation. *Symbolic* capital differs from the other

[9] Where I was part of the faculty and would eventually complete my PhD project, as mentioned above.

types of capital put forward by Bourdieu–*economic*, *cultural* and *social*. While these types of capital are generally, according to Bourdieu, interconnected and work together to shape an individual's social mobility and opportunities within a society, symbolic capital is more abstract and focused on how prestige, recognition, and reputation are assigned within a community. It involves the accumulation of acknowledgment of cultural achievements and contributions (Bourdieu, P. 1984; 1986).
The larger, older and more established institutions of higher learning within the Arctic region have, over a very long period of time, some as far back as the 1500's, been able to accumulate symbolic capital and in turn dispense of it in order to attract students, scholars, funding and influence within its fields of operation. This kind of accumulative prestige is unlikely available to newer and even smaller institutions on the periphery. They, rather, receive an entirely different form of symbolic capital–as they themselves often take the form of potent symbols in and of themselves. Symbols for identities, as structural manifestations of self-governance and autonomy, and as producers and caretakers of culture, history and language. This is predominantly symbolic capital based in pride, resistance and resilience that is not easily transferable across borders. For the majority of these, often resource poor, local institutions within the Arctic, locally sourced social capital is the only form of capital available. They are very likely underfunded (economic capital), they are likely isolated and poorly networked (social capital) and they are also likely unable to attract top academics (cultural capital). They function since there is a shared communal recognition of their value in terms of a higher, identity-based, goal.

Because these institutions are often woven into the fabric of local identities and aspirations, they can become highly difficult and dangerous to critique and change. In some instances they enjoy a form of culturally monolithic status where external influences are rejected out of hand if they are expected to interfere with that narrative. Elsewhere (Olsen, MM. 2020) I trace the institutional and organisational development of the University of the Faroe Islands historically, and point to this fact–a lingering part or remnant of this aggressive nation building focus, that is tightly held onto by both the university itself and the community that it serves, clashing with the needs of a country that is ready to move on both politically and culturally. Changing such a powerful symbol is akin to changing a national identity as well, and in a community of 50.000 people even small changes can have drastic consequences.

Our attempted efforts to introduce and advocate for the adoption of sustainability as a core operating feature of the university, should be seen in this context. Further, it needs to be noted here that tensions also exist within a university between the different missions dealt with below, i.e. between *education* and *research* and *entrepreneurship* (Cf f.ex. Etzkowitz, E. (2013). Our troubles were not novel in the context of universities, institutionally or organisationally–but these barriers to change are not well recognised or at least verbalised in the literature on the fourth mission that will be introduced below. However, as with most small and isolated communities within the Arctic, there is only a single such institution of higher learning, only one such academic nation building symbol to carry this type of specific cultural and political symbolic capital. Attempting to tinker with an institutional reality that is already in the process of, however slowly, adapting to new demands from a community that is seeing new opportunities and influences outside of its borders, is a precarious undertaking. While these small universities enjoy an exceptional amount of interest and good will from the communities in which they reside, there is a limit to the rubberbanding. Not only were we advocating for implementation of sustainability, we were advocating for the implementation of the UN's Sustainable Development Goals (SDGs) as an operational framework. As I will deal with below, this was likely a crucial aspect of why it was so hard to navigate the process. We were working within an organisational hierarchy and an institutional setting that was fractured in terms of where the university was moving, while also acutely aware of the symbolic role that it had within the community. The introduction of sustainability (and the SDG framework) was in a very real sense a concept with a

tremendous amount of inherent symbolic capital of its own, something that could very possibly be at odds with the longstanding narrative of not only the university, but the community at large.

The contested subject of Arctic *post-sustainability*?

Covering the concept of sustainability broadly would be a far too ambitious undertaking for this paper. In the following I will be focusing on the term in relation to implementation within universities or institutions of higher learning, and in terms of how the term can be understood in an Arctic context. It will provide an overview of past sustainability implementation efforts, and will take a critical look at how sustainability might be defined within an Arctic context and also introduce the reader to critical approaches to the subject. It will conclude by introducing the paradigm of *post-sustainability* and provide examples to why this is an approach that can be beneficial to an Arctic setting.

The focus on sustainability and sustainable development is not new to academia and universities. Since the the 90's and especially the early 00's, there has been vocal academic engagement with the concept and work on both definitions and operational frameworks for sustainability within institutions of higher education in the form of sustainable operation, research, literacy, ethics, curricula development and cooperation internally and externally were initiated and developed years ago. An extensive amount of literature on positive feedback loops and Education for Sustainable Development (ESD) tactics, accountability, assessments and measurements of sustainability development and use of systems transitions and participatory design processes in relation to stakeholder engagement were worked on prior to the adoption of the SDGs (see for example: Wright, 2002; Lukman & Glavič, 2007; Ferrer-Balas, D. et al, 2008 and Godemann et al., 2014).
An early driver for attempting to incorporate sustainability in academia on a systemic level, came through the UN's DESD (*Decade of Education for Sustainable Development*) operated by UNESCO from 2005 to 2014 (see: UNESCO, nd; Tilbury, 2009) which was in operation simultaneously with the run of the *Millennium Development Goals*[10] (precursor to the SDGs; United Nations, 2000) which both carried forward to be key formulations of the Agenda 2030 resolution and the SDGs. This continuation of the efforts, especially the United Nations DESD, was requested by UN member states and figures as a key element of UN resolution 66/288* (UN, 2012), commonly referred to as "*The Future We Want*" (see Beynaghi et al. 2015). Further drivers have been efforts such as UN's PRME (*Principles for Responsible Management Education*), UN's UNleash programme and the AIM2Flourish initiative[11] (Buralli et al, 2018). There is no question that sustainability and the SDGs have catched the attention of academia in very profound ways. But it is questionable if they have much genuine impact on the issues that we face on a global scale.

According to Gad, Jacobsen & Strandsbjerg (2020), definitions of sustainability within the Arctic differ markedly from how it is understood on the global scale. Introducing their (Gad, UP. & Strandsbjerg, J. 2020:1-18) volume on the politics on sustainability in the Arctic, they point out the prevalent point of view that indigenous ways of life is worth sustaining as an overarching definition of the concept, yet in the same sentence point to contradictions between cultural and historical preservation and economic self-reliance and autonomy, at the cost of environmental degradation (ibid:1). Focusing on Greenland, they point to debates on uranium mining that have split the country for a number of years (Sermitsiaq 2016). On one side is an ecological stance against possible detrimental environmental side effects, while on the other side you find political arguments for mining couched in economic sustainability and

[10] Whereas the MDGs were focused on poverty eradication in the developing world, the SDGs are broader in topic and scope as they target the whole world - public and private sectors alike.
[11] UN's Unleash program fosters global youth collaboration for sustainable development through innovation and solutions (cf. www.unleash.org) as does AIM2Flourish, which is headed by Fowler Center for Business at Weatherhead School of Management — Case Western Reserve University (cf. www.aim2flourish.com).

autonomy. It is a particularly revealing debate that has been going on for a very long time and is quite expertly covered by Jacobsen, M. (2020), a debate that reveals that sustainability "*as a concept entails radically different futures depending on what it is that should be sustained*", and that it had become a concept that is able to serve any purpose (Gad, Jacobsen & Strandsbjerg. 2020:1, emphasis, and Cf. Gallie's definition of an essentially contested concept).
Within the Arctic, the concept of sustainability is overwhelmingly political in nature. Historically, the region as a whole has been underserved, subject to colonisation and poor in resources due to climate and geography. The Arctic region has played second fiddle to the rapid urbanisation and development seen in mainland sub-arctic capitals, in many cases brought on by the extraction of resources around indigenous communities (whaling, fisheries, trapping, mining, oil and gas extraction, forestry etc). For most of these communities, there is a sense that their time for modernisation and development, on par with their southern neighbours, has come. Sustainability, then, turns into a question of how these struggles over rights and resources in the Arctic are reconfigured by the concept (ibid:2), and point tothe fact that Arctic universities find themselves within this struggle, willingly or not..
As Gad, Jacobsen & Strandsbjerg (2020:5-6) point out, academic literature regarding sustainability in the Arctic is generally based in one of two narratives; either as an image of the past where vulnerable and fragile indigenous communities managed to eek out a living despite the hostile environment–or a foreboding image of the present where industrialisation, resource extraction and overconsumption are upending the global climate and destroying Arctic ecosystems and indigenous cultures. In both these narratives, the peoples of the Arctic are marginalised and stripped of agency. They are either defined as "other" (Bjørst, LR. 2008:119; in: Gad, UP. & Strandsbjerg, J. 2020:6) or simply as *traditional*[12] and any change becomes exogenous and damaging (Cameron, ES. 2012; in ibid). Definitions such as these, where peoples of the Arctic are defined as part of an ecosystem, serve only to silence any indigenous advocacy for socio-economic change (Gad, Jacobsen & Strandsbjerg. 2020:8). According to Gad, Jacobsen & Strandsbjerg (ibid:9, emphasis), *sustainability "intervenes in the discursive struggles over the future allocation of rights and resources"*. Further, they ask, "*What is to be sustained? In relation to what? How?*". Here it refers to the interplay between *identity*, *space* and *time* (ibid; emphasis).

This political nature of the concept of sustainability, as put forward above, reveals how it exists as an *essentially contested concept* within the Arctic. Essentially contested concepts tend to have multiple meanings and characterised by the fact that people can have widely differing or conflicting viewpoints about definitions, significance, and implications. Such concepts are contentious since they embody different values, ideologies, or perspectives–leading to debates that are not definitively resolved (ref Gallie, WB. 1955). Examples of competing definitions of sustainability within the Arctic are noticeable in the long standing reluctance by the Greenland government to sign the UN's *Agenda for Sustainable Development*, wherein the SDGs are found, citing local needs for development as running counter to the spirit of the agreement (f.e.x Sermitsiaq. 2019), Saami resistance to the construction of windmill parks on lands used for husbandry and cultural activities (f.ex. Nilssen. 2019) and how youngsters in Arviat in Hudson Bay are reclaiming their cultural identities in an environment that is changing due to degradation (Katz, C. 2022).

On a global scale, the overarching concept of sustainability has become a shibboleth that is unable to take into account local contexts. To some scholars, sustainable development has been argued to be a neo-colonial way for developed countries to enforce standards that limit development in much of the world (f.ex. Banerjee, SB. 2003; and Sachs, W. 1990; cited in Gad, Jacobsen & Strandsbjerg. 2020:4). In other academic circles, of a critical theory bent, there are a large number of emerging critiques of sustainability as a concept. Rose and Cachelin (2018) convincingly argue for greater focus on *critical sustainability* based in social/environmental justice, Misiaszek (2020a;2020b) calls for *ecopedagogy*

[12] Cf. Latour (1993).

to be adopted in institutions of higher learning to advance critical socio-historical understanding. In this sphere, there are also an increasing number of scholars that are unimpressed with the progress being made in the name of sustainability–Benson & Craig (2014) for example, argue for a wholesale abandonment of the concept of sustainability. According to Owen (2011:246 [cited in Ramsey, JL. 2015:1082]) sustainability is "*one of the least meaningful and overused words in the English language*", in that it is so poorly defined. This sentiment, of dealing with an undefinable and contested concept is also found in Newton & Freyfogle (2005); Johnston et al (2007); Thiele (2013). Farley & Smith (2020) provocatively title their volume "*Sustainability: if it's everything, is it nothing?*". In a tail-end of this type of argumentation, there is a call for this *if-it-means-evertyhing-it-means-nothing* abstracted definition of sustainability as deserving to be categorised as *post-sustainability* (see Blühdorn, I. 2016 and 2017; Foster, J. 2018; Sconfienza, UM. 2019).

While it is beyond the scope of this article to examine implications of a burgeoning *post-sustainability paradigm*, it should be understood in the context of the social shift that emerged in the late 20th century as a response to the ideas and characteristics of modernity. If the paradigm of *post-modernity* suggests a period that follows modernity but is characterised by a critical and sceptical attitude toward the grand narratives and absolute truths of the modern era–as put forward by thinkers such as Lyotard, Foucault, Derrida, Barthes and Baudrillard–a *post-sustainability* paradigm would retain similar thematic aspects in line with definitions of postmodernism. A key aspect of postmodernism, and the central recurring argument within the works of these mentioned thinkers, is modernity's fragmentation and pluralism that emphasises diversity and multiplicity of perspectives and rejection of grand narratives that aim to explain everything through a single dominant narrative–coupled with a distrust of metanarratives. This is also a perspective that intentionally blurs boundaries between disciplines, genres and categories, resulting in hybrid forms of art and thought that challenge conventional categories, often with the use of subversive irony and playfulness that questions established norms and conventions, often through the use of critical deconstruction (see f.ex. Best & Kellner. 1991; and Jameson, F. 1992). A post-sustainability approach would, then, include a more inclusive–and perhaps more acceptable– modern take on different cultural, ethnic, historic and social viewpoints. It could help to deconstruct a concept of sustainability by its rejection of metanarratives in favour of actionable and contextually contingent understandings.
The classic postmodernist scholars mentioned (Lyotard, Foucault, Derrida, Barthes and Baudrillard) rarely advocated for actionable implementation of their theories. I partially shy away from these in favour of more recent thinkers such as Bourdieu, Flyvbjerg, Scholte, Hulme–and by extension also Beck (1992) and Giddens (Giddens & Pierson. 1998), who prominently argue for active engagement and participation in order to better understand critical issues in such a way that they can be altered for the better.

There are examples of what could be denoted as post-sustainability focused literature. While they do not specifically use the term, scholars such as Hulme, M. (2009) and Ramsey, JL. (2015) approach their analysis of sustainability and sustainable development from such inclusive angles. Hulme takes on the multifaceted nature of climate change as a social and cultural phenomenon, rather than with a focus on its scientific aspects. He argues that climate change is not only a scientific matter but a product of societal or cultural contexts, political ideologies, and individual values. He concludes his seminal volume by arguing that climate change–and by my own extension herein, *sustainability*–is not a problem that needs solving, but rather a revelatory idea that informs us about different (individual and collective) beliefs, attitudes and values concerning how we might live in this world. Ramsey, in a rather similar vein, while still lamenting the diffuseness of the concept of sustainability, concludes that we can actively work with, and learn from, lacking definitions of sustainability in order to facilitate sensemaking based on context-based needs.

An example of how a *post-sustainability* paradigmatic approach can be useful, is in the deconstruction of the so-called three-legged approach to sustainability. This is a common depiction of sustainability as having to balance equally in *economic*, *social* and *environmental* terms in order to result in proper sustainable development. If one leg is too short, the three-legged stool will topple. Purvis, Mao & Robinson (2019) present an historical analysis of this three-pillared model. They conclude that there seems to be no singular source within the literature from where this model seems to derive, and that where it is used, definitions and goals often vary markedly.
As I have noted elsewhere (Olsen, MM. 2023), this three-legged approach is difficult to square with in an Arctic setting. In most (smaller) Arctic communities, the concepts of economic, environmental and culture are simply the same *thing* (Cf. also Latour. 1993). This might be easily dismissed by anyone who has not experienced life in a small and isolated place, but the climate, environment and remoteness has the capacity to inform culture to an exceptional degree. It is a source of food, spirituality, storytelling, clothing, tools, and transport. It dictates subsistence ways of life and informal sharing of resources and necessity for collective work. The economy is, also, dictated by the environment to a much larger degree than it is in mainland urbanised settings where infrastructure is not inhibited by large bodies of water, permafrost, inaccessible mountain ranges and distances. It is an economy that is historically defined by reciprocality and barter. Notions of where the environment might end and culture begins, and where culture ends and the economy begins are not always simple to explain in conventional terms. This merging of terms can be illustrated through the example of the Saami–in a reindeer herding community, free-range and nomadic husbandry might be a part of the economy, but the lived life in the environment that perpetuates this subsistence-based economy is so pervasive that the Saami culture is in many ways a representation of the economy and the environment (EALÁT. nd). This is reality for many of the peoples that are found within the Arctic.

Mission statements, co-creation and transscalarity

In previously completed work, (see: Blaxekjær, L., Olsen, MM. et al. 2018; Lauritsen, S. E., Olsen, MM. et al. 2019) we focused on how factors such as these were emerging within the Arctic. This work was completed in conjunction with a trans-arctic effort to understand how student entrepreneurship and social innovation might benefit universities and the communities around them and. The project involved participants from Denmark, the Faroes, Greenland and the US. We identified four emerging common trends across the Arctic academic landscape. First was an increasing cross-sector demand for innovative and entrepreneurial skills to be included within academic courses and curriculums. Second, there was a pervasive interest from both universities and local stakeholders to contribute beyond core university missions (teaching, research, dissemination). Third, there was an increasing interest in the SDGs and in sustainability more broadly. And finally, we noticed a rapid increase in the number of conferences and university collaborations with a focus on the Arctic and sustainability.

A connecting theme in our findings was one of external engagement and community co-creation. In efforts to introduce entrepreneurial and innovation-based teaching, there was a natural need for local stakeholder engagement. This meant inviting local industries and governance actors such as local civic actors and municipalities. This focus on engagement with stakeholders external to universities was in most cases developed by going beyond the conventional three academic mission statements that are commonly adhered to within universities: *teaching*, *researching* and *disseminating*. In order to facilitate this, we followed work done by Trencher et al (2014) on going beyond the third mission. In their work, Trencher et al introduce a framework that becomes an amalgamation of recent research and academic social engagement paradigms; participatory and action research, technology transfer, cooperative extension, service learning, regional development, urban reform and living laboratories. These are all fairly recent paradigms of social involvement and community engagement that focus on sustainability from an operation scale that is beyond that of only climate change, but anchored in the

local. This approach goes beyond not only the conventional three academic mission statements, but works holistically with the three-pronged definition of sustainability (economy, environment, culture). In some instances this approach is referred to as the fourth mission statement, in others it takes the form of co-creation for sustainability (academic mission statements are covered at length elsewhere: Olsen, MM. 2021). According to Trencher et al (ibid:152), these eight paradigms are deliberately included due to their multi-scalar focus. On a planetary scale, challenges such as climate change and degradation, food scarcity and conflicts over resources are a growing concern. These are the grand or *super wicked* problems (Levin, Kelly, et al. 2012) where there exists a significant deadline for useful solutions, but no central authority exists to find a solution–while those seeking to solve the problems are also causing it (ibid), that can be inordinately hard for central and local governments–even more so, universities, to tackle. For individual communities there are further compounding problems to contend with, such as demographic ageing and population dynamics, issues with infrastructure, non-compliant buildings and transport systems, pollution and economic decline. Further (ibid: 153), universities are places that can act as gathering places and draw in local and regional stakeholders in order to build alliances and reach potential solutions to problems that are found at these local and regional scales. As Trott et al (2018:2) phrase it: "Not only are higher education institutions hubs for innovation, creativity, and collaboration towards addressing the world's most pressing challenges, they are embedded within communities whose diverse, geographies, and members offer infinite opportunities for partnership, research, and action towards improving the well-being of people and planet".
This idea of co-production and co-design is further picked up by a number of scholars such as Rinaldi et al (2017), Wakkee et al (2019), Purcell et al (2019) and Filho et al (2021) who stress the need to acknowledge that universities and institutions of higher learning play a crucial part in the production of solutions and agents of change who can steer the agenda of sustainability in the right direction.

It should be clarified that a novel academic mission statement such as co-creation for sustainability is not to be understood as a distinct and separate operational pillar in addition to teaching, researching and dissemination–in fact, in terms of further adoption of sustainability, considering these mission statements as being separate operations is wholly unhelpful. According to Trencher et al, we should rather adopt a venn-diagram perspective of these missions, intersecting and traversing scales. Where teaching and researching overlap, the result is a research university. When teaching, researching and dissemination overlap, we can speak of an entrepreneurial/innovative university. Where all four missions combine, a university can be classified as a transformative university (Trencher et al. 2014:169). Operationally, such a place would shift away from walled-off siloed operations towards fluid and reflexive modes that actively will invite and engage non-scholars and other community stakeholders. Through this engagement, it will necessarily be forced to consider their operations on different scales at the same time.

4th mission and Co-creation globally

Elsewhere (Olsen, MM., Rosati, F. (forthcoming)) we present a systematic literature review concerning implementation of sustainability within academia through the use of entrepreneurship and innovation education globally. There we query n=77 journal articles from 2015-2020 from universities around the world in order to make sense of the motivations and barriers that are experienced by researchers, staff, students and external stakeholders. Our query includes 2015, the year of global adoption of the SDGs and the following five years. This results in a comparatively high number of exploratory publications that are generally concerned with making sense of this new reality. The majority of the publications used in the review take the form of case studies, focusing on a single university or on collaborative efforts by a handful of universities. Overwhelmingly, these publications are descriptive in nature, with only a few being prescriptive–likely due the novelty of the SDGs.

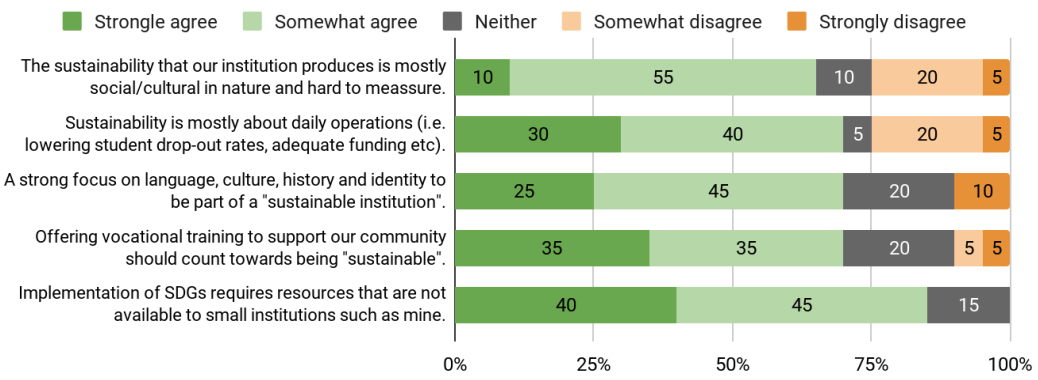
In terms of drivers we find that the majority of the pressure to adopt sustainability and the framework of the SDGs comes from sources internal to the universities themselves, from faculty and students specifically. While there is some international pressure from international bodies such as the UN, the EU and non-governmental organisations, it is far less noticeable. We find that pressure from industry is predominantly based in enterprises pivoting relative to sustainability and new forms of industry that display increasing demands for highly complex problem-solving and post-graduates that can juggle increasingly complex production methods with requirements for sustainability, what is commonly referred to as *Industry 4.0*. To ensure competitiveness, industry is currently actively on the hunt for post-graduates that possess not only technical skills, but increasingly also are nimble, adaptable, and trained in *soft skills*. Barriers to adoption of sustainability, based in entrepreneurship and innovation education, can be found in a number of social ills–lacking resources or conflicts are common, and there are also a number of barriers resulting from industry failures to adapt to collaborative efforts, but by-and-far the largest barriers to adoption of sustainability is internal to universities themselves. A central recurring barrier that features throughout the review, is a lamenting of ill-fitting, outdated and conservative pedagogy that relies on terse didactic teaching methods and lecture-based activities that cannot produce students capable of effectively solving social issues relating to sustainability. Publications also point to educational teaching environment paradigms that are rigid and inflexible and broadly in conflict with the necessary teaching outcomes required to produce future agents of change able to tackle immediate and highly complex problems related to sustainability.

As we mapped these efforts to introduce and adapt sustainability, in a setting of entrepreneurship and innovation education, it was realised that these efforts reflected a number of commonalities. In fact, we realised that the authors had resulted to work within the same research and social engagement paradigms suggested by Trencher et al (2014); *participatory and action research*, *technology transfer*, *cooperative extension*, *service learning*, *regional development*, *urban reform* and l*iving laboratories*. These paradigms were chosen, the review suggests, as a way to circumvent the mentioned rigid and inflexible teaching modes and outdated modes of educating. Globally there seems to be a movement developing that is internal to institutions, rejecting the current order of the academic environment in order to adopt to changing realities and needs. These findings, sourced from academics around the world, equally mirror my own experiences and challenges with implementing sustainability.

Co-creation in the Arctic

Curious to see if the results from our globally sourced systematic literature review could be replicated within an Arctic context, it was decided to conduct a survey of the small universities mentioned above, followed by interviews with a select number of respondents (Olsen, MM. 2023). The survey, an online multiple-choice based questionnaire, queried 63 of the aforementioned smaller institutions within the Arctic. The response-rate was 35.72%, as 20 institutions responded. The results from this quantitative portion of the investigation were difficult to synthesise. While only a quarter of the institutions would label themselves as being broadly *sustainable*, they nevertheless did rate themselves fairly highly in terms of *economic*, *cultural* and *environmental* sustainability.

Figure 3: To what extent do you agree with the following statements?



A series of questions pertaining to how institutions themselves viewed sustainability were perhaps the more revealing part of the qualitative survey. Along with responses to questions on the history and reasoning behind their institutions being established, which were in line with the presentation on first and second wave developments above, these responses indicated that my definition of sustainability was perhaps poorly thought out. Following this up with an additional, qualitative, portion in the form of six, one hour long, interviews with UArctic membership representatives at small institutions in Iceland, Northern Canada, Alaska, Greenland, Northern Norway and Saapmi (North-eastern Norway), provided a wholly different and nuanced understanding of how these institutions approached sustainability.

None of the interviewed institutions had adopted any form of sustainability policy, albeit one has since published an organisational sustainability framework, and one was launching an SDGs workshop on the day of the interview. The interviews reiterated the general findings from the qualitative survey, but in a far more contextual sense. The interview guide was especially designed to focus on and expand upon the theme around the responses given to the institutional definitions of sustainability (see: Table 3 above). It was quickly apparent that the perspectives on sustainability exhibited by the respondents were exceptionally close to an attempted definition of *post-sustainability* found above.

		Paradigms for successful co-creation as listed by Trencher et al. (2014)	**Survey findings: Operational activities of smaller Arctic institutions of higher learning**
Teaching	LIVING LABORATORIES	Engagement of university research and expertise to establish, monitor and evaluate real-life experiments and social inventions. Use of urban environment as open collaboration area	Institutions tend to have small physical spaces or lack conventional campus areas. Operations spill over into the community and the surrounding geographic environment.
	TRANSDISCIPLINARITY	Joint problem solving of real-world problems with multiple actors from society and academia. Practise oriented approach.	Local experts and elders become part of teaching or overall coursework in order to address local issues, often related to cultural aspects.
	SERVICE LEARNING	Application of educational programmes to extra-curricular activities for tackling localised, real-world problems	Due to the size of communities, courses tend to focus on local issues dealing with environmental issues, food production, social issues and the like.
	COOPERATIVE EXTENSION SYSTEM	Dating back to 1914 and the land-grant system, an outreach and technology transfer portal to drive local community and rural development	Institutions become facilitators and act as conduits for interaction between civil society and industry.
Research	PARTICIPATORY AND ACTION RESEARCH	Collaborative problem defining, fusion of researcher and subjects, empowerment of reflective social change	Researchers and educators make use of the community to practise their work, bringing students along into the field and engaging local experts and industry.
Dissemination	REGIONAL DEVELOPMENT	Alignment of university functions with regional economic development goals. University plays active role in regional governance	Institutions are a main actor that engages with local development in a practical sense. Research projects and courses are geared towards local development.
	URBAN REFORM	Targeted economic revitalisation through direction of university financial resources to local community and real-estate development	Low on monetary resources, institutions tend to opt for facilitation and playing an active role in the development of the local community.
	TECHNOLOGY TRANSFER	Commercialisation of research results, societal contribution through economic development	Transferral of research and educational results are mainly cultural or vocational in nature.
4th mission	CO-CREATION FOR SUSTAINABILITY	Internal and external collaborative co-creation on local issues concerned with cultural, economic and environmental sustainability.	Due to their size, lack of resources or geographic placement, institutions are forced to engage with aspects of sustainability through co-creation.

Table 1: Based on Figure 1 "Research & Social Engagement Paradigms in Trencher et al (2014:4). They list the following eight constituent paradigms as, when combined, making up the 4th mission statement. Taken from Olsen, MM. 2023.

There was no indication of deliberate attempts to trifurcate the concept of sustainability into sub-categories such as *economic*, cultural or *environmental*. In fact, the concept of *sustainability* was hardly ever mentioned, and when pressed, responses considered the concept in fluid and contextual terms. In a number of cases definitions were subversive and drew heavily on historical or current realities of non-inclusion or goals of autonomy. Sustainability, through these interviews, was never defined in terms of frameworks or internationally sanctioned attempts of implementation such as the SDGs. Overall there seemed to be an underlying distrust of such metanarratives, and an opting for definitions that leaned into locally relied upon views of pride, culture and social needs. Again, definitions were defined in terms of space, time and identity–especially identity that rejects stereotypical notions of Arctic peoples as *other* or *traditional* that serves to silence advocacy, as mentioned (i.e Gad, Jacobsen & Strandsbjerg. 2020:8).

A curious finding that resulted from the qualitative portion of the survey, was how such a defining of sustainability in local terms, based on what I would best describe as relying on *post-sustainability*, has resulted in an adapted operational form, mirroring the findings from our global systematic literature review, that is wholly in line with what Trencher et al (2014) define as co-creation for sustainability. These small Arctic institutions of higher learning, through a combination of locally and self-defined notions of (post-)sustainability and necessity, have long since adopted operational modes emerging as solutions to academic inactivity elsewhere (see: Table 1 for comparison).
These modes work actively with local identity and cultural production in order to facilitate and engage with stakeholders such as industry and producers of civic governance. They proactively work with the communities on co-creation and co-production of solutions on several scales through innovation and local entrepreneurship.This active participation within the community fuels their symbolic capital and both legitimises and challenges discourses on how sustainability is to be understood.

Scalarity and transscalarity

Per Flyvbjerg (2004:293), knowledge produces power. Solutions that take their departure in localised concerns have a higher likelihood of producing actionable knowledge. These local insights may then be translated into highly productive forms of power. This power, often translated into symbolic capital, can be re-appropriated to help facilitate branching networks, and positive relations and goodwill within the community. Institutions that adopt co-creation and co-production modes of operation instinctively also operate on different scales simultaneously. A forced reliance on stakeholder engagement will no doubt facilitate engagement on a campus-scale, on a city-scale and in the case of very small places, on a national-scale. Through initiatives such as the University of the Arctic's Thematic Networks (see UArctic. nd.b), which fosters research collaboration between member institutions and participation in conferences such as Arctic Circle Assembly and Arctic Frontiers, and the multitude of Arctic research initiatives such as the Arctic Science Committee, the International Arctic Social Sciences Association, indigenous councils such as the Inuit Circumpolar Council, Saami Council, Gwich'in Council, Russian Association of Indigenous Peoples of the North or Arctic Athabaskan Council–region and even global scales. When academic institutions can influence events and decisions across these scales, they are in effect *transscalar*.

Transscalarity as a concept, when used in social sciences, refers to the idea that social phenomena, such as values, practices, and institutions, can be understood at multiple scales of analysis at the same time. These scales may include individuals, groups, organisations, communities, nation states, and the world itself. Transscalarity suggests that social phenomena are not limited to one particular scale, but rather they interact and affect other scales of analysis. Scholte (across a number of publications: 2014; 2019; 2021) deals with defining the term. In his work he distinguishes between

multilevel and transscalar analysis. Multilevel analysis explains politics by examining geographical spheres (local, national, regional, global) as ontologically distinct and separate from each other where factors and actions within them do not overlap. This stands in contrast to transscalarity, where these spatial scales overlap and are interrelated (Scholte, JA. 2019:494-5). We see this in effect with the adoption of the SDGs, where, rather than being seen to filter down in any hierarchical sense, Scholte's understanding sees them as existing on global, regional, national and the local scales–and operating on all of these scales simultaneously. Similarly, a small institution that has adopted co-creation as a foundational operational mode, will more easily be able to break down organisational or structural barriers and silos. It would adopt a "*post-leve*l" perspective in the influence it can wield, and the manner in which it approaches its mission statements.

Final considerations

This paper, and the PhD thesis that forms the basis for it, sought to answer the following question: *How can we explain and understand the potential benefits and barriers for small Arctic institutions of higher learning to implementing sustainability as a Fourth Mission?* It aimed to address both a personal knowledge gap on why implementation of sustainability at the University of the Faroe Islands proved exceptionally difficult, and a more general knowledge gap of what can be found between the adoption of a fourth academic mission statement framework–*co-creation for sustainability*, and the practical performance of its proposed paradigms. Tied to this query was an early and surprising observation that the concept of sustainability generally, although the talk of the town at Arctic Circle and UArctic conferences, seemingly had failed to make much headway within Arctic academia as smaller Arctic HEIs had not incorporated or began to implement sustainability in any strategic manner.

To make sense of this, I present a subset of academic institutions seldom featured in the literature; these Arctic institutions were established in what I refer to as a *second wave* during the 1980's and into the present time, and consist of some of the smallest institutions of higher learning in the world. These are institutions on the periphery that, due to their size, are woven into the fabric of the local culture and history in places where they are situated. Because of this, they enjoy an inordinate level of symbolic capital. I focus on how the concept of sustainability is defined in local contextual terms that often differs greatly from how it is conventionally understood, and how the competing narratives within global and local definitions are often contested. I then introduce the burgeoning paradigm of *post-sustainability* as a way to understand contextually defined Arctic definitions of sustainability. I go on to argue that for Arctic universities to accommodate these differences in definition, it would be beneficial to adopt a new academic mission statement in the form of co-creation for sustainability. What I find is that there are a number of these Arctic institutions who themselves, through modes of operation that can best be described as post-sustainable, already have implemented the core tenets of what is presented as the paradigm of co-creation for sustainability.

Adopting a constructivist and interpretivist theoretical stance, I relied on personal experience from my time as faculty at the University of the Faroe Islands and my lived experience in the Faroe Islands and Greenland, and subsequently also extensive travels within the Arctic, to critically examine the concept of *sustainability*. The decision to focus on smaller Arctic institutions of higher learning in the Arctic region was based in these same circumstances.

I argue that very small universities and institutions of higher learning within the Arctic play an outsized role of identity creation within the small communities where they are located. They are often symbols of local progress and manifestation of self-governance and autonomy. They are seen as custodians and producers of culture, history and language. As such, they are often seen as a natural part of the progress of a community. As these institutions are woven into the fabric of identities and aspirations,

they can be slow to change and enjoy monolithic status where external influences are rejected out of hand if they are expected to interfere with a narrative of self-governance.
I further point to how sustainability within the Arctic is often defined in terms that differ markedly from how it is defined elsewhere and on different scales of focus. Here I also note that Arctic sustainability is often highly political in nature and is contingent on time, place and identity. This contested nature of sustainability is not a *rejection* of sustainability itself–but rather a rejection in terms. I introduce the paradigm of *post-sustainability* as a means to come to terms with the Arctic use of the concept.

Using post-sustainability as a lens, we can begin to understand Arctic rejection of metanarratives and attempts to include diversity and multiplicity of perspectives in how sustainability is considered. There is a sense of hybridity and subversiveness in how conventional understandings of sustainability might be blurred or transgressed depending on local contexts.
In a sense, within the Arctic that I have been dealing with, one could argue that *modern-sustainability* is being pitted against *post-sustainability*, in a struggle between the metanarrative of the political and economic centre's symbolic capital that is used to sway and convince the periphery on the one hand, and the Arctic communities where smaller Arctic institutions of higher learning play a crucial role as post-sustainability facilitators. Because of the contextual nature of symbolic capital, in the periphery, modern-sustainability loses much of its symbolic capital, and local communities and institutions are able to (or at least, *can* be able to) step in and define the concept on their own terms. Based on this argument, a transcalar perspective however, would beg the question of where those boundaries are to be found between any such purported *modern-sustainability* and *post-sustainability*.

As the institutions, and communities they are situated in, often reject conventional understandings of sustainability, it can be difficult to implement international frameworks that do not take into account local contexts. But that does not mean that these institutions are not *sustainable*. In dealing with how academic mission statements (teaching, researching and disseminating) often silo the operation of universities needlessly, and complicate the implementation of sustainability, it is noted that there is an emerging global trend that rejects current operational modes in order to escape the confines of what academia is expected to be. This move beyond the historically established missions takes the form of co-creation with local stakeholders. As of yet, it is still a novel concept within academia, but I point to a number of small Arctic institutions that have long since adopted this manner of operating.

The knowledge gaps find answers in these considerations. A personal quest to understand why it was extremely hard to introduce sustainability within the University of the Faroe Islands, likely lies within a combination of symbolic character and capital infused within the institution that makes it resistant to change. Along with this there is also something to be said about the manner in which the concept of sustainability was translated into a local context. A novel *post-sustainability* inspired paradigm would likely have included a better toolset for the task. The question concerning what can be found between the promise of a 4th mission in the form of co-creation for sustainability and its implemented form, can likely be found in small Arctic institutions of higher learning within the Arctic region.

Recommendations and further research implications

This paper relies on a number of novel concepts, theories and paradigms; *co-creation*, *transscalarity* and *post-sustainability* among them. The paradigm of *post-sustainability*, I would argue, likely holds promising solutions to how the concept of sustainability is understood in certain regions of the world. In this paper, I focus on the Arctic region. There is likely a benefit in superimposing post-sustainability on other locations around the world in order to see if there are generalisations to be made. Similarly, the concept of transscalarity is in need of further analysis, especially in how it relates to sustainability and development.

I would suggest further research into possibilities that can come from adopting a post-sustainability perspective on current sustainable development. This would particularly pertain to the development of novel and more inclusive toolsets and frameworks, that rely on local contexts.

Closer collaboration with organisations that are already pursuing such activities would likely be of benefit. In this case, research could be channelled more directly through the University of the Arctic, and take on a more transscalar approach.

A third avenue would be to focus on the consequences and practical power dimension of introducing a fourth mission statement of co-creation into universities. This is not well formulated within the co-creation literature, and the assumptions that upending centuries of academic traditions through a novel mission are achievable are not necessarily critical enough.

References

ArcticCouncil (nd.a) *Arctic Council Observers:List of Arctic Council Observers*. Available online: www.arctic-council.org/about/observers/.

ArcticCouncil (nd.b) *Arctic Peoples*. Posted online: arctic-council.org/explore/topics/arctic-peoples.

ArcticCouncil (2021) *How Arctic Indigenous Peoples are revitalizing their languages*. Posted online: arctic-council.org/news/revitalizing-arctic-indigenous-languages.

Armstrong, Rogers et al (2023) *The Circumpolar North: A Political and Economic Geography of the Arctic and Sub-Arctic*. Routledge Revivals.

Banerjee, SB. (2003) *Who Sustain Who's Development? Sustainable Development and the Reinvention of Nature*. Organization Studies, 24(1):143-180.

BarentsWatch (2015) *What Is the Arctic?* Published online: barentswatch.no/en/articles/hva-er-arktis.

Beck, U. (1992) *Risk Society: Towards a New Modernity*. Translated by Ritter, Mark. London: Sage Publications.

Benson & Craig (2014) *Policy Review: The End of Sustainability*. Society and Natural Resources, 27:777–782.

Best & Kellner (1991) *Postmodern Theory*. The Guilford Press; 1st edition (November 15, 1991).

Beynaghi et al (2015) *Future sustainability scenarios for universities: Moving beyond the United Nations Decade of Education for Sustainable Development*. Journal of Cleaner Production. 112.

Blaxekjær, Lanteigne & Shi (2018) *The Polar Silk Road & the West Nordic Region*. Arctic Yearbook 2018, Akureyri: Northern Research Forum and UArctic Thematic Network on Geopolitics and Security.

Blaxekjær, L., Olsen, MM. et al. (2018) *The Sustainable Development Goals and Student Entrepreneurship in the Arctic*. Arctic Yearbook 2018, Akureyri: Northern Research Forum and UArctic Thematic Network on Geopolitics and Security.

Blühdorn, I. (2016) *Sustainability— Post-sustainability— Unsustainability*, in: Teena Gabrielson and others (eds), The Oxford Handbook of Environmental Political Theory (2016; online edn, Oxford Academic, 7 Mar. 2016).

Blühdorn, I. (2017) *Post-capitalism, post-growth, post-consumerism? Eco-political hopes beyond sustainability*. Global Discourse, Volume 7, 2017 - Issue 1: After Sustainability - What?

Bjørst, LR. (2008) *En Anden Verden. Fordomme og Stereotyper om Grønland og Arktis*. Copenhagen: Forlaget BIOS.

Bourdieu, P. (1984) *Distinction. A Social Critique of the Judgement of Taste*. London: Routledge.

Bourdieu, P. (1986) *The forms of capital*. In Richardson, J. (ed) Handbook of Theory and Research for the Sociology of Education. New York: Greenwood.

Bourdieu, P. (1998) *Practical Reason: On the Theory of Action*. Cambridge: Polity.

Buralli et al (2018) *Moving towards the Sustainable Development Goals: The UNLEASH Innovation Lab experience*. Ambiente & sociedade. 21. 10.

Cameron, ES. (2012) *Securing Indigenous Politics: A Critique of the Vulnerability and Adaptation Approach to the Human Dimension of Climate Change in the Canadian Arctic*. Global Environmental Change, 22:103-114.

EALÁT (nd) *Reindeer Herding, Traditional Knowledge And Adaptation To Climate Change And Loss Of Grazing Land*. Published by the International Centre for Reindeer Husbandry (ICR). Online: www.reindeerherding.org/documents/category/17-ealat?download=44:reindeer-herding-traditional-knowledge-adaption-to-climate-change-loss-of-grazing-land

Etzkowitz, E. (2013) The Entrepreneurial University Wave. Hélice, Vol2(2).

Farley & Smith (2020). *Sustainability: if it's everything, is it nothing?*. Routledge.

Ferrer-Balas, D. et al (2008) *Explorations on the University's Role in Society for Sustainable Development through a Systems Transition Approach: Case Study of the Technical University of Catalonia (UPC)*. Journal of Cleaner Production, Vol. 17:1075-1085.

Filho, WL. et al. (2021) *A framework for the implementation of the Sustainable Development Goals in university programmes*. Journal of Cleaner Production,Volume 299.

Flyvbjerg, B. (2001) *Making Social Science Matter: Why Social Inquiry Fails and How It Can Succeed Again*. Cambridge University Press: London.

Foster, J. (ed) (2018) *Post-Sustainability: Tragedy and Transformation*. Routledge:London.

Gad, UP. & Strandsbjerg, J. (eds) (2020) *The Politics of Sustainability in the Arctic*. Routledge (Studies in Sustainability); London.

Gad, Jacobsen & Strandsbjerg (2020) *Introduction: Sustainability as a Political Concept in the Arctic*. In: Gad, UP. & Strandsbjerg, J. (eds) (2020) *The Politics of Sustainability in the Arctic*. Routledge (Studies in Sustainability); London.

Gallie, W. B. (1955). *Essentially Contested Concepts*. Proceedings of the Aristotelian Society, 56, 167–198.

Giddens & Pierson (1998) *Conversations with Anthony Giddens: Making Sense of Modernity*. Stanford: Stanford University Press.

Godemann et al (2014). *Higher Education and Sustainable Development: Exploring Possibilities for Organisational Change*. *Accounting, Auditing and Accountability Journal*, *27*(2), 218 - 233.

Guba, E. G., & Lincoln, Y. S. (1994) *Competing paradigms in qualitative research*. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp.105-117). Thousand Oaks, CA: Sage.

Guba, E. G., & Lincoln, Y. S. (2017) *Paradigmatic Controversies, Contradictions, and Emerging Confluences, Revisited*. In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE Handbook of Qualitative Research* (pp.213-263). Thousand Oaks, CA: Sage.

Heron, J. (1996) *Cooperative inquiry: Research into the human condition*. Thousand Oaks, CA: Sage

Heron, J., & Reason, P. (1997) *A participatory inquiry paradigm*. Qualitative Inquiry, 3, 274-294.

Hulme, M. (2009) *Why We Disagree About Climate Change: Understanding Controversy, Inaction and Opportunity*. Cambridge University Press: Cambridge.

Jacobsen, M. (2020) *Digging Sustainability: Scaling and Sectoring of Sovereignty in Greenland and Nunavut Mining Discourses*. In: Gad, UP. & Strandsbjerg, J. (eds) (2020) *The Politics of Sustainability in the Arctic*. Routledge (Studies in Sustainability); London.

Jameson, F. (1992) *Postmodernism: or, the Cultural Logic of Late Capitalism*. Verso Books; Reprint edition (14 Jan. 1992).

Johnston et al (2007) *Reclaiming the definition of sustainability*. *Environmental science and pollution research international* 14.1 (2007): 60-66.

Katz, C. (2022) *With Old Traditions and New Tech, Young Inuit Chart Their Changing Landscape*. Published online in Hakai Magazine, August 30, 2022: hakaimagazine.com/features /with-old-traditions-and-new-tech-young-inuit-chart-their-changing-landscape/

Lauritsen, S. E., Olsen, MM. et al. (2019) *Educating Arctic Entrepreneurs: The next generation of sustainable pioneers*. Nordregio report on student entrepreneurship in the Arctic. Nordic Council of Ministers.

Levin, Kelly, et al (2012) *Overcoming the Tragedy of Super Wicked Problems: Constraining Our Future Selves to Ameliorate Global Climate Change*. Policy Sciences, vol. 45, no. 2, 2012, pp. 123–52.

Lukman, R. and Glavič, P. (2007) *Review of Sustainability Terms and Their Definitions*. Journal of Cleaner Production, 15:1875-85.

Misiaszek (2020a) *Countering post-truths through ecopedagogical literacies: Teaching to critically read 'development' and 'sustainable development'*. Educational Philosophy and Theory, Vol. 52:7, 747–758.

Misiaszek (2020b) *Ecopedagogy: teaching critical literacies of 'development', 'sustainability', and 'sustainable development'*. Teaching in Higher Education, Vol. 25:5, 615–632.

Newton & Freyfogle (2005) *Sustainability: a Dissent*. *Conservation Biology,* 19.1 (2005): 23-32.

Nilssen, TR. (2019) *South Saami Cultural Landscape Under Pressure*. Ch. 9 in Hermanstrand, H. et al (2019) *The Indigenous Identity of the South Saami: Historical and Political Perspectives on a Minority within a Minority*. Springer Open; Springer International Publishing.

NordRegio (2019) *Indigenous population in the Arctic*. Published online by NordRegio: nordregio.org/maps/indigenous-population-in-the-arctic.

NSCN (2016) *Nordic Sustainable Universities Conference 2016*. Nordic Sustainable Campus Network, posted online, July 7th, 2016: https://nordicsustainablecampusnetwork.wordpress.com/2016/07/07/nordic-sustainable-universities-conference-2016/

Olsen, MM. (2020) F*ærøernes Universitet: Fra Nationsbygning til Nationsbranding*. Økonomi & Samfund 93(4); Særnummer om Færøerne, Blaxekjær, LØ (ed). Djøf Forlag: Copenhagen (translation is not published)

Olsen, MM. (2021) *An Academic Lead in Developing Sustainable Arctic Communities: Co-Creation, Quintuple Helix, and Open Social Innovation*. Chapter 7 in: Natcher, D. and Jokela, T. (eds) (2021) Renewable Economies in the Arctic. Routledge.

Olsen, MM. (2023[under review]) *"Sustainability is having enough midwives and teachers": A Survey of the Sustainability Practices of the Smallest Institutions of Higher Learning in the Arctic*. Arctic Yearbook 2023, Akureyri: Northern Research Forum and UArctic Thematic Network on Geopolitics and Security.

Olsen, MM. & Rosati, F. (forthcoming) *Universities as Agents for Entrepreneurship and Innovation for the Sustainable Development Goals: A Systematic Literature Review*.

Purcell, W., Henriksen, H. & Spengler, J. (2019) *Universities as the engine of transformational sustainability toward delivering the sustainable development goals: "Living labs" for sustainability*. International Journal of Sustainability in Higher Education. 20. 1343-1357.

Ramsey, JL. (2015) *On Not Defining Sustainability*. J Agric Environ Ethics (2015) 28:1075–1087.

Rinaldi et al (2017) *Universities and Smart Specialisation Strategy: From Third Mission to Sustainable Development Co-creation*. International Journal of Sustainability in Higher Education. 19(1), 67-84.

Rose and Cachlin (2018) *Critical Sustainability: Incorporating Critical Theories into Contested Sustainabilities*. Journal of Environmental Studies and Sciences. Vol.8, pages 518–525.

Sachs, W. (1990) *On the Archaeology of the Development Idea*. In: Redclift, M. (ed.), *Sustainability, critical concepts in the Social Sciences*. Volume II: Sustainable Development. London: Routledge, pp. 328-353. Original source: The Ecologist, 20(2), 1990:42-43.

Sconfienza, UM. (2019) *The post-sustainability trilemma*. Journal of Environmental Policy & Planning, 21:6, 769-784.

Scholte, JA. (2014) *Reinventing Global Democracy*. European Journal of International Relations, Vol. 20(1):3-28.

Scholte, JA. (2019) *Civil Society and Global Governance: Exploring Transscalar Connection*. Interest Groups & Advocacy, Vol. 8:490-498.

Scholte, JA. (2021) *Beyond Institutionalism: Toward a Transformed Global Governance Theory*. International Theory, Vol. 13:179-191.

Sermitsiaq (2016) *Ny Uran-Demonstration i Nuuk*. Published in Danish online 18th of May, 2016, www.sermitsiaq.ag/ny-uran-demonstration-i-nuuk.

Sermitsiaq (2019) *Vittus gentager: Nej til klimaaftale*. Published online in Danish on Sermitsiaq.ag: www.sermitsiaq.ag/node/212167.

Thiele, L. (2013). *Sustainability*. Malden, MA: Polity Press.

Tilbury, D. (2009) *Tracking Our Progress: A Global Monitoring and Evaluation Framework for the UN DESD*. Journal of Education for Sustainable Development. 2009;3(2):189-193.

Trencher, G. et al. (2014) *Beyond the Third Mission: Exploring the Emerging University Function of Co-Creation for Sustainability*. Science and Public Policy, Vol. 41:151-197.

Trott et al (2018) *Prefiguring Sustainability through Participatory Action Research Experiences for Undergraduates: Reflections and Recommendations for Student Development*. Sustainability. 2018; 10(9):3332.

UArctic (nd.a) *Full Members Lists*. Published online by the University of the Arctic: www.uarctic.org/members/members.

UArctic (nd.b) *Thematic Networks and Institutes*. Published online by the University of the Arctic: www.uarctic.org/activities/thematic-networks/

UN (2000) *United Nations Millennium Declaration*. A /RES/55/2.

UN (2012) *The Future We Want*. A/RES/66/288*.

UN (2015) *Transforming Our World: The 2030 Agenda for Sustainable Development*. A/RES/70/1.

UNESCO (nd) UN Decade of ESD. Available online at: en.unesco.org/themes/education-sustainable-development/what-is-esd/un-decade-of-esd

Wakkee et al (2019) *The university's role in sustainable development: Activating entrepreneurial scholars as agents of change*. Technological Forecasting and Social Change, 141, 195-205.

Wright (2002) *Definitions and Frameworks for Environmental Sustainability in Higher Education*. Higher Education Policy, 15:105-20.

4.0 Appendix: Publications

The four articles forming the core of this thesis are re-produced in the following sections. They have all been reformatted in order to convey a uniform presentation. A few grammatical errors, found in the original publications, have been corrected and in some instances minor cosmetic alterations have been made to some of the figures and tables. For all intents and purposes, the text is identical to that of the original publications.
Article 4.1 was originally published in Danish, in a Danish-language journal. Below I have included my own English translation. The original Danish text is available as Open Access via the citation below.

There is no intended chronological progression of the texts, and they can be read in any order. They are presented below in an order that makes sense from a scalar perspective. Article **4.1**, a case study of the University of the Faroe Islands has a very small and local focus. Article **4.2**, consists of two surveys focusing on small Arctic universities–and takes on a regional perspective. Article **4.3**, is an all-encompassing systematic literature review on the subject and takes into account a grander global perspective. Article **4.4**, bookends the thesis with an organisational and institutional focus that, while centred around the Arctic, takes a transscalar approach to the subject.
This reading order will be out of order chronologically in terms of publication, yet is likely the best way to convey the intentionality behind the overall presentation.

4.1 University of the Faroe Islands: From Nation-building to Nation-branding

This article has been peer-reviewed and published. It was originally published in Danish. See: Olsen, MM. (2020) *Færøernes Universitet: Fra Nationsbygning til Nationsbranding*. Økonomi & Samfund 93(4); Særnummer om Færøerne, Blaxekjær, LØ (ed). Djøf Forlag: Copenhagen (translation is not published).

University of the Faroe Islands: From Nation-building to Nation-branding

In 2020 the University of the Faroe Islands is at a crossroads. This article guides the reader through the history of the University of the Faroe Islands, the development from an academy in the 1960´s to the establishment of the University of the Faroe Islands in 1987, the university reform of 2008 and change of rectorship in 2019. This article maps how the university has transformed from having a strong and successful organisational identity with a keen focus on national preparation, nation-building and cultural autonomy to an organizationally weakened and divided institution with no overarching unifying goal. The article points to the Faroese financial downturn of the 1990's and the shift from an academy to a university as being the deciding factor for the loss of both a common organisational and institutional identity. The article concludes that the university, if it is to assert itself in a society experiencing rapid growth and development, must develop a new unifying organisational identity.

The University of the Faroe Islands historically; from idea to academy and university

In his examination of the history of the University of the Faroe Islands from 1951-1983, Faroese historian Jóan Pauli Joensen employs local Faroese folk wisdom concerning the dangers of the Faroese natural environment as the title of his article: "*Um ikki at flyta anna fótin fyrr enn hin stendur tryggur*" [On not taking one more step, unless the previous was on sure footing] (1983:9). Joensen is referencing a speech by Hanus Debes Joensen, then chair of the Faroese Scientific Society, relayed during the 20-year anniversary of the society. As chair, he likens the arduous work of establishing a Faroese academic environment and the founding of a Faroese university with the concerted and perilous scaling of the steep Faroese mountains where one must trust in ones companions wholly and only continue the treacherous ascent if on sure footing. In the political upheaval of the time, brimming with renewed sentiments of independence from Denmark and an increasing interest in local national-building, the chair urges the audience to take deliberate steps towards progress; step-by-step, measured progress towards a sustainable academic environment that produces research and schooling in Faroese, about the Faroe Islands, for the Faroese people.

It is hard to come to an understanding of where the University of the Faroe Islands stands in 2020 without considering the Faroese independence movement. The set-off point for the Faroese independence movement and its endeavours proper can be argued to have been in 1888 when an invitation to a public meeting outside the parliament building in Tórshavn was circulated in the newspapers of the time. The result from this gathering, known since as *Jólafundurin* [the Christmas Meeting], was a formal declaration consisting of six politically loaded points of contention to be addressed stipulating that the Faroe Islands ought make use of Faroese as the primary language in schools (rather than Danish), that classes in history should focus mainly on Faroese history, that priest were to hold sermons in Faroese, and that Faroese was to be used in relation to all matters official and public. The sixth resolution of the declaration was an intent to establish a Faroese high school (Skarði, 1988).

The high school (modelled on the Scandinavian *folkehøjskole* tradition) became a reality in 1899. Furthermore, a national library was established alongside the national archives and national museum while the adoption of Faroese as the national language continues. With the consolidation of these institutions, a small building in the centre of Tórshavn quickly developed into a natural gathering-point for a budding academic milieu. That building was to become a place of gathering for a cultural elite of personalities with an interest in history, literature and culture–that would go on to influence Faroese language, publishing and politics (Joensen, 1990:12). In 1937 a Faroese secondary education was established in the form of the Gymnasium of the Faroe Islands, in 1940 the new Faroese flag is recognized, in 1946 the landmark vote on Faroese independence from Denmark was held (and failed despite a narrow majority vote), and in 1948 the Home Rule arrangement was introduced. As a natural extension of the growing nation-building through the years, the wish to establish a Faroese Academy was increasing (Marnersdóttir, 2003:46).

Faroese Scientific Society, 1952-1964

The end of World War II resulted in an increased migration of Faroese academics from an academic environment in Copenhagen, which had used the wartime period to debate their visions of a Faroese academic environment able to produce publications and expertise about the Faroe Islands in Faroese. The meeting between local and returning academics resulted, in 1952, in the establishment of Føroya Fróðskaparfelag [*the Faroese Scientific Society*] (Joensen, 1990:12-4). The society was established

with three main goals in mind: The establishment of a Faroese forum for academic dialogue; publication of scientific journals in Faroese concerning the Faroe Islands; and the establishment of an institution of higher learning (Sølvará, 2015:4). The society quickly published its first scientific journal in 1952; Fróðskaparrit (lit. trans. as Scientific Journal), which is still published annually. The intent behind Fróðskaparrit was to publish academic research in Faroese in order to kickstart development of a Faroese scientific language (Joensen, 1990:4,15-6). In the period between 1952-1965 some progress was made in developing courses in the natural sciences, Faroese and literature (taught in Faroese, rather than Danish). And in 1965, following years of deliberate hiking, with small steps and feet on solid ground, the establishment of a Faroese institution of higher learning was a reality: Academia Færoensis, or rather Fróðskaparsetur Føroya (the University of the Faroe Islands), which in 2015 was able to celebrate its 50th anniversary.

Academy of the Faroe Islands, 1965-1986

During 1965-1986 the moniker of Fróðskaparsetur Føroya was used (literally translated to *Faroe Islands' Seat of Knowledge*, and <u>not</u> university), and this is still the case when referring to the University of the Faroe Islands. During that period, the institution is not a university proper, but rather what could be defined as an academy. Following the establishment of Fróðskaparsetur Føroya, all possessions and obligations of the Faroese Scientific Society were folded into the newly established academy. Equally, full economic responsibility of operations was transferred to the Faroese government. It was only in 1972 that the academy offered a first two-year basis course. Up to that point (i.e 1965-1972) higher education consisted only of single two-semester certificate courses in the natural sciences and a number of language courses (but not Faroese, curiously). During the 1970's basic courses in the natural sciences and Faroese were offered. During the 1980's courses in history, social sciences and theology were added (Sølvará, 2015:5-6).

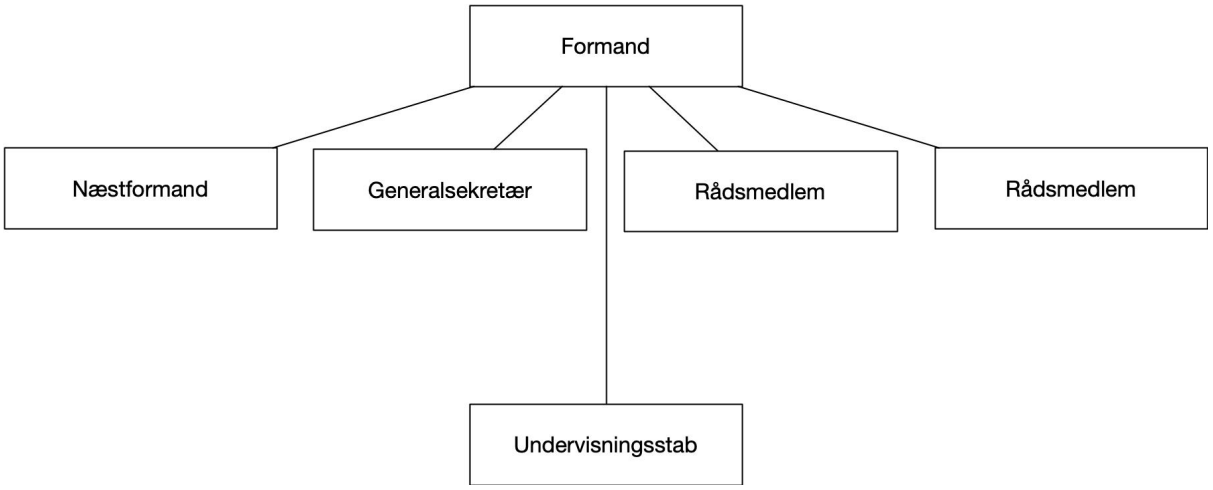


Figure 1: Organisational diagram for the Academy of the Faroe Islands during 1965-1987. Based on Joensen (1990:29-31).

It is hard to find any definite definition of what constitutes an academy in a Nordic context, but the comparison to the Scandinavian folk-highschool (folkehøjskole) tradition is fairly apt. At the time, there already existed a Faroese folkehøjskole, and the definition then becomes an institution of higher education between a folkehøjskole and a university. Due to the size of the academy at the time, the organisational structure was small and relatively flat. Management was (according to Joensen, 1990:4, 29-31) made up of five self-organising members. Permanent members consisted of the national librarian and rector of the Faroese High School (i.e. danish *studenterskole*). Additional members were elected during annual meetings of the Faroese Scientific Society. In the mid-1970's

participation of educators and students in council meetings was institutionalised, and from the already existing teacher's council positions of faculty leadership were established. During this time, there is no rector or academic council, management and administration should be considered to be one and the same (see Figure 1). It is hard to illustrate the organisational development during the period of 1965-1986, but it is clear that during this early phase of the institution we are dealing with a very small academic council with many assignments and a clear needs-based and ac-hoc development of the organisational structure.

The University of the Faroe Islands, 1987-2019

The process of transforming the Academy of the Faroe Islands into a university proper was initiated in conjunction with coalition negotiations following the national election of 1984. Shortly thereafter an academic working group presented a report that covered a number of desired improvements: organisational structure (see Figure 2), academic quality assurance and new courses to the new coalition. The advice in the report is taken to heart and a new law concerning a genuine Faroese university–the University of the Faroe Islands, becomes a reality in 1987 (Joensen, 1990: 54-7; Marnersdóttir, 2003: 51).

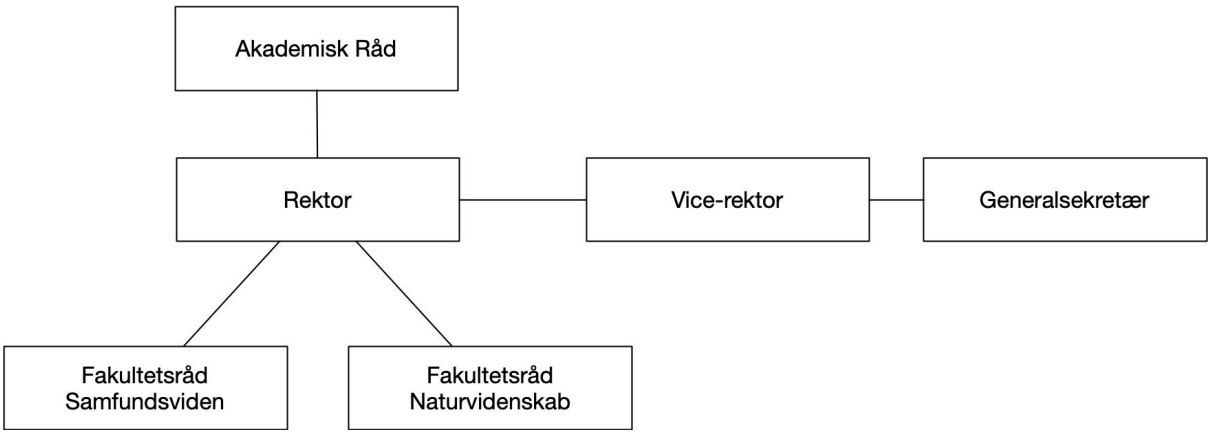


Figure 2: Organisational diagram for the University of the Faroe Islands in 1987. Based on Joensen (1990:56-61).

With the establishment of a proper university, the words of Hanus Debes Jensen, chair of the Faroese Scientific Society, from 1972 cast an ominous shadow on the proceedings. The recommendations in the working group report have not even begun to be implemented, as one of the worst financial crises in Faroese history hit in the 1990's. The fallout of the crisis results in a slashing of the operational budget by one third. For almost ten years, until 2000, public funding can only be used on salaries and basic operation costs (Marnersdóttir, 2003:51-2), all other activities and developments were halted.

In 2008, the existing legal framework relating to the University of the Faroe Islands was revised (Løgtingið, 2008). The already existing Teacher's School of the Faroe Islands and the Faroese Nurses College are folded into the administrative oversight of the university, resulting in the current organisational structure consisting of five departments: Faroese Language and Literature, Natural Sciences, History and Social Sciences, Pedagogy and the Public Health and Nurses School. The thirteen students that were awarded their diplomas in 1965, are now an annual student body of roughly 700-800 students (Sølvará, 2015:6-7).

It is during this period, with the changes to the legal framework relating to the university from 2008 to today, that an actual organisational structure starts to take shape. During these last 10-12 years, the institution has gone from a very simplified management structure towards a formalised organisational structure (see Figure 3). It is also during this period that the university transitions from an internal academic council, to an actual board consisting of four external members chosen by the current member of parliament for culture, two internally elected representatives and an elected student representative. It has also become somewhat of a tradition for the MP to choose at least one member of the board that is external to the Faroe Islands. Additionally, the board of directors are also tasked with the hiring of rector, administrative director and deans.

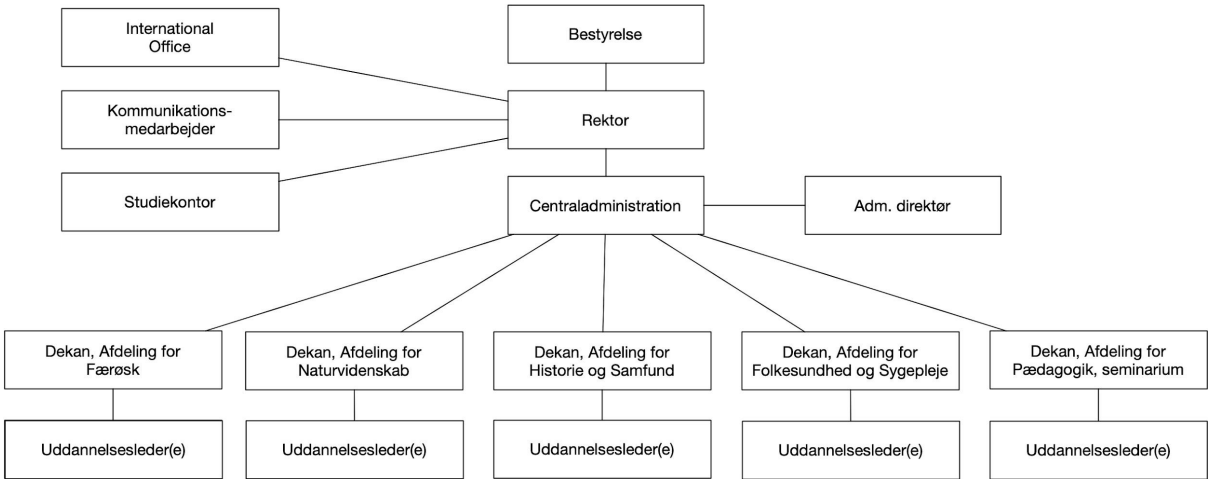


Figure 3: Organisational diagram for the University of the Faroe Islands around 2019. Based on FSF (2020c).

The University of the Faroe Islands, a national project

To summarise, the Faroe Islands have had an academic milieu since the end of the 1800's (developing in Denmark and the Faroe Islands in tandem), an academy since 1965 and a university since 1987. The economic crisis of the 1990's in many ways delayed the restructuring from academy to university to as late as 2000. Combining the university with two already operating institutions of higher learning (the Teacher's School of the Faroe Islands and the Faroese Nurses College) with each their own organisational structure, history and focus har further challenged an actual institutional and organisational unity. With this in mind, the argument for a Faroese University celebrating an anniversary of 55 years can be challenged-albeit not without the risk of controversy. This disparity is couched in the usage of Fróðskaparsetur Føroya as a moniker that covers both the Academy of the Faroe Island and the University of the Faroe Islands–which, only when combined into a single entity, can be argued to have a 55-year long history. The argument made here is that it would not be organisationally proper to imply that the history of the University of the Faroe Islands stretches back to 1965. The University of the Faroe Islands is, on one hand, an institutional symbol of independence (with more than 50 years of history), but organisationally the university is yet very young and struggles with incomplete and gradual implementation of organisational and academic practices, as one would otherwise encounter fully entrenched in older and more established universities in the region.

Nation-preparing and Nation-building

The 1965 law on the establishment of a Faroese academy underlines that the core activities, based on the academic work initiated by the Faroese Scientific Society, were to conduct research and facilitate academic courses. Looking through the old comments and notes made on that bill (Joensen, 1990: 57), it quickly becomes apparent that there is more than academic research and education on the line. From a political perspective, the spectre of a conservative nationalist ideology looms large behind the newly established academy. It is especially clear that plans to establish faculties for Faroese language and Faroese history are seen as fundamental to the furthering of local Faroese autonomy and nation-building (Sølvará, 2015: 5). It is also then chairman of of the independence-minded and republican party Tjóðveldisflokkurin (*The Independence Party*), Erlendur Patursson, that is credited with putting academic modernisation on the agenda (Joensen, 1990: 57), and the main point of the new academy was to offer disciplines and courses not available at Danish universities, but had a focus on education and social benefits concerning Faroese language, literature, history and cultural understanding – while research as one generally understands it in relation to continental and modern universities was secondary (Marnersdóttir, 2003: 49-50). Former rector Malan Marnersdóttir, rather candidly, notes in her analysis of the institution that: »The value and mission of the University of the Faroe Islands [at the time an academy] towards the Faroese community was made explicit from the very start: It was nation-building and nation-preparing« (ibid: 46).

In many ways these early goals have been met and even surpassed. The journal Fróðskaparrit is no longer exclusively in Faroese, but includes an increasing number of articles in English in an attempt to reach a broader global audience. This shift towards English can be seen as an expression of having won the linguistic battle (with Danish) and an accumulated capacity to express scientific theories, methods and analyses in Faroese and that there is also enough confidence to contribute to international debates. As the primary local academic journal has seen a shift towards English, the public is now catered to through the popular science publication Frøði (*Knowledge*) which is entirely published in Faroese as a bi-monthly glossy newsstand-style magazine (Marnersdóttir, 2003: 48).

Research

According to Marnersdóttir (ibid: 53) a key consequence of the previously mentioned economic crisis was a shift in the public debate and focus on the benefits of research, and notably how research was able to play a part in preventing similar economic and social crises in the future. Part of that debate was naturally a realisation that academia was fertile ground for innovation and enterprise-based research which in turn could have a stabilising effect on the economy and contribute towards insights related to exports. In 1996 Granskingargrunnurin (the Faroese Research Fund) was established for those purposes and is currently operated through Granskingarráðið (the Faroese Research Council). An analysis of publications and legal frameworks related to this debate, reveals partly how much weight is given to the necessity of research resulting in innovation and novel economic activities benefiting the local community and industry (Granskingarráðið, 2007: 14), and partly the importance of an interplay between the University of the Faroe Islands and sector research conducted at the numerous other Faroese research facilities (Granskingarráðið, 2015: 8-10).

Own calculations reveal that the University of the Faroe Islands, since the establishment of the Faroese Research Fund in 1996 up to the time of publishing, has constituted around 29% of all accepted applications, with around half of those consisting of applications for funding towards PhD-projects. This analysis also shows that the university throughout the period of 1996-2020 only joins forces with the other Faroese research institutions in 20% of instances (based on approved applications). The numbers show that funding for PhD projects is almost always initiated by potential future (non-staff) candidates themselves, rather than being part of a coordinated institutional effort to

increase the numbers of candidates or strategically allocate internal resources towards any specific domains. Of those 14.5% of approved applications that are not related to doctorate projects, efforts towards interdisciplinary or cross-institutional collaborations are extremely rare, seeing the majority of the funding going towards lone researchers operating in relative solitude. The fact that roughly three-fourths of all Faroese research grants are handed to research institutions (most often public sector research) and not the University of the Faroe Islands reveals not only that competition is fierce – but also that the majority of research on the Faroe Islands is being conducted outside the walls and influence of the country's only university.

Growing pains

A core argument of this article is that the *institutional* shift, from being an academy to becoming a university, has at the same time demanded an equal *organisational* shift and that this organisational transition was delayed for more than two decades – only to now come about in a time of economic, political, demographic and technological changes that have and continued to alter the Faroese society.

The University of the Faroe Islands, on the one hand, is saddled with deeply ingrained and institutionalised norms, values, traditions, history of nation-building within the community, creating a narrative understanding of common goals. On the other hand, I would argue, the actual organisational structure struggles to live up to any such expectations. The organisation has yet to institutionalise as a unit working towards common ideals and goals. The consequences of a shift, as a result of the 2008 university reform – from a system of internal division of responsibility (see Figures 1 and 2), to a system consisting of predominantly external influence over rectorships and administrative chairs (see Figure 3) were highly similar to the effects of the Danish 2003 university bill (FT, 2002). A shift away from an Humboldtian ideal towards a new form of top-down managed and utility maximising institution.

If the organisational purpose, understood as a group of people working together towards a common goal (Scott og Davis, 2007: 38) for the Academy of the Faroe Islands was to be nation-building and nation-preparing – and the institutional composition, understood to be rules, norms and culturally aware elements combined with activities and resources which result in stability and purpose (Scott, 2014: 56) complemented this goal – we could conclude that the organisation was institutionalised. The goal to be reached was internalised, and there was a common understanding of the activities and resources set aside in order to accomplish the task. As mentioned, a point was reached where nation-preparing no longer was the overarching organisational purpose. The economic crisis inhibited the realisation of a new identity as a formalised university and it similarly delayed a response to requirements for new goals for more than two decades. Without a clearly defined and overarching organisational common goal for the university as a unit, we see the university (especially since the amalgamation of the Teacher's Seminary and the School of Nursing in 2008) fragment into smaller self-contained units consisting of five very different departments and a central administration. Because almost twenty years pass with no implementation of a common strategy, departments (and even courses within them) seize the task of defining their organisational purposes and develop separate institutions, each with their own agendas, protocols and academic cultures[13].

All the while, the Faroese society around the university sees rapid changes and there exists, despite an obvious conflict between the lack of organisation and the different fragmented internal institutions, an

[13] There are no written sources on these activities, and these statements are based on observations and informal interactions with university staff over a number of years.

insistence from the board and from management of growth and progress in the form of additional courses, students and research. As is illustrated elsewhere within this special issue, the Faroe Islands have over the years developed into a rather exceptionally well-functioning micro-state, especially driven by the rapid development, progress and the prosperity of the post-crisis years. Following the crisis of the 1990's, there was an extraordinary push to develop local infrastructure, daily flights to and from a number of European countries beyond Denmark and telecommunications besting most other nations. Salmon farming and a rapidly growing tourism industry have provided an economic boom that further fuels the service industry. The gloomy predictions of the 2010's concerning a mass exodus of youths and demographic collapse described in Exit Føroyar (á Rógvi og Reistrup, 2012) have reversed with record-numbers of newly educated youth returning to the islands (Hagstovan, 2020), the highest birth-rate (NMR, 2020: 29) and the highest employment numbers of the Nordic countries (ibid: 69). This same period has also seen a political development with the Faroese government helming their own agenda in international settings and opening embassies around the world. It is in the middle of this modern, outwardly seeking and globalised society, where the need to be nation-preparing is become less and less needed, that the university is situated – a society that economically, politically and culturally has hiked up the mountain ensuring that each step is on solid ground, is now able to start running – that the university must make its mark.

The number of courses, foreign colleagues and eager Faroese academics with global experience and the number of active students is increasing – and ambitions to attract international students and funding also. The university stands, as it has for a while, at a crossroads on its trek up the mountain. Should the focus still be on national romanticism and institutional values of nation-building with an inwards minded focus, or should it be on organisational consolidation, modernisation and professionalisation that also allows for an outwardly gaze that engages regionally and internationally? This is currently the greatest challenge of the University of the Faroe Islands. A consolidation of the institutional and organisational halves and the re-creation of a whole that encompasses engagement both locally and externally at the same time. A unit with a clear organisational purpose and institutional composition that was able to realise those national romantic goals and values – but in a new and modern encapsulation.

A Strategic Future

Questioned on the hiring of scotsman Chik Collins in 2019, the first non-Faroese rector of the University of the Faroe Islands (FSF, 2019), chairman of the board, Ólavur Ellefsen (Olsen, 2020) answers that the process of finding a suitable replacement for the retiring rector was arduous. He points to the flat organisational structure of the university and its lacking possibilities for management training as a main reason for there not being an apparent or obvious internal heir candidate for the position. The position was initially posted locally, then internationally due to a lack of applicants. The final choice of a non-Faroese candidate was not, according to Ellefsen, a concerted effort by the board to break with the past, stating that Collins was the best suited candidate to deal with the changes envisioned by the board. Further, Ellefsen states, the board was indeed cognisant of the challenges that might stem from an individual in a leadership role with no connection to the Faroe Islands – language, knowledge of history and culture – and also the benefits of a rector free from local anchoring or commitment. Shortly after his tenure had started, the new rector prioritised the completion of stalled work on adopting the guidelines of the Bologna-declaration and the long-awaited signing of the Magna Carta Universitatum, which now also exists in Faroese (OMCU, 2020). At the same time development of the new university strategy for 2020-2024 was launched (FSF, 2002b).

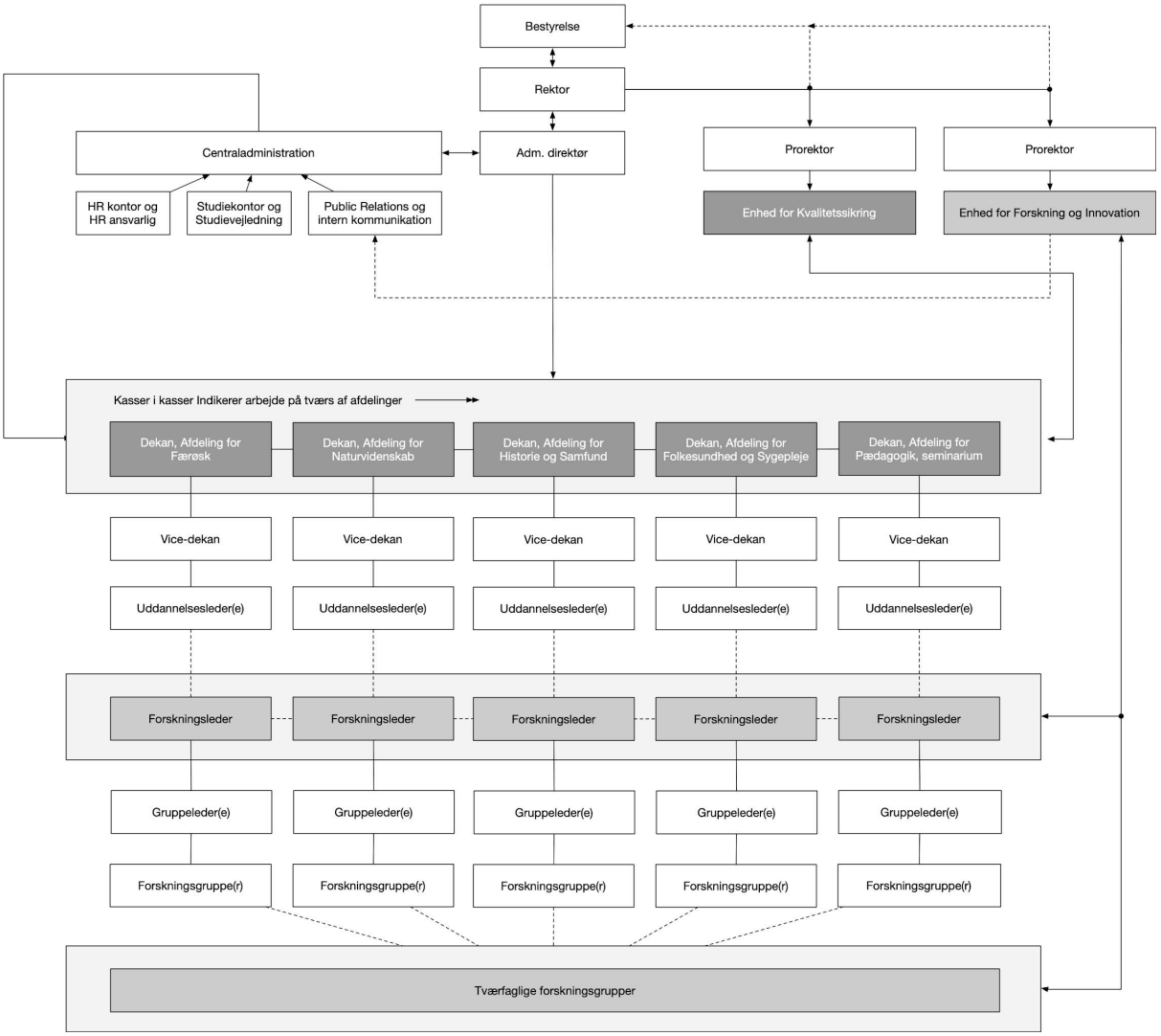


Figure 4: Expected organisational diagramme for the University of the Faroe Islands roughly 2021. Based on FSF (2020c) and own observations and interpretations. Arrows indicate expected lines of communication.

A year into his tenure as rector, there were already signs of a reckoning with the existing fragmented, flat and autonomous leadership-style that had developed ad-hoc in each of the different departments, towards a more classically managed organisational-structure, brandishing newly appointed organisational intermediaries and positions of responsibility in the form of pro-rectors, vice-deans, research leaders and units that intentionally were to operate cross-departmentally (see Figure 4). One of those changes to the structure is the establishment of three new offices with a mandate to bridge management and departments. These offices are a response to the first three requirements of the new university strategy; quality in education, research and innovation, og development of staff and organisation. The Quality Unit and the Research and Enterprise Unit are led by reputable pro-rectors with broad mandates concerning leadership and project initiation in support of the strategy. The new HR-department is tasked with developing the organisational structure, modernisation and professionalisation. An additional Key Performance Indicator (KPI) working group headed by the university director is tasked with producing data and following up on all of the priorities mentioned in the strategy.

In a year, the new rector has, in collaboration with management and board, managed to launch a surprising level of initiatives. Many of these improvements have been long overdue and the university has been called out on its shortcomings politically, from staff and from students on a number of occasions. The current strategic plan differs markedly from previous strategies by focusing on realistic ambitions and a series of initiatives that signal practical implementation already prior to the publication of the strategy proper. The fact that the university hit the ground running with the establishment of a Quality Unit, Research and Enterprise Unit and an HR-unit before the strategy is officially unveiled has resulted in cautious approval internally.

More than keeping up

It is one thing to launch a series of initiatives in order to achieve a more current and professional level of academia. The implementation of the Bologna-declaration's guidelines and the signing of the Magna Carta Universitatum, organisational professionalisation, evaluations, quality control and an increased focus on research, innovation and additional research are of course not the end goal in and of itself. Actions such as these are what paves the way for actual academic development: tools that allow the university to keep up with the surrounding community – also internationally. It is what follows that allows the university to be at the cutting edge.

The University of the Faroe Islands is at a crossroads. The choice is between a focus turned inwards towards the Faroe Islands – and a focus turned outwards towards the region and the world. Realistically, however, these two options were never and can never be mutually exclusive. The University of the Faroe Islands is the only university in the country and must latch onto its work with local realities, culture and identity. The new strategic plan for 2020-2024 speaks to the creation of a transscalar organisation and institution that operates across two very different geographic scales at the same time; the very small and local and the grander regional (see for example Scholte, 2005:185-223). The new language-policy (summarised in the strategy) speaks to something down-to-earth and especially Faroese – while the very next point of the strategy speaks to an external engagement and partnerships with other similar geographic areas of the world and their challenges with indigenous linguistic challenges. A new university working group, intended to kickstart the declining Faroese interest in the UN's Sustainable Development Goals is a similar initiative concerning sustainability, that can only turn its focus inwards and outwards at the same time. Regardless if the plan is to achieve local or regional goals, a united university will be needed. A fragmented university with departments and faculties that go it alone will have a hard time engaging with its surroundings. Primarily towards the new law on research, development and innovation (Løgtingslóg um ráðgeving og stuðul til gransking, menning og nýskapan), adopted earlier in the year (Løgtingið, 2020). Secondly, towards the upcoming Arctic Strategy for Denmark, Greenland and the Faroe Islands (UM, 2020a og 2020b).

The mentioned new law on research, development and innovation is a framework law that has been in the works for a number of years and is no doubt inspired by the earlier debate that followed in the wake of the financial crisis concerning research and how research relates to innovation, economic growth and exports. Even if these are ideas that have rummaged around the Faroe Islands for over thirty years and have been part of all coalition agreements and policy rapports since the economic crisis (Granskingarráðið, 2007: 14; 2015: 8-10), this is never something that has taken a hold in the University of the Faroe Islands, where research has primarily been tied to the previously mentioned nation-building and researchers' own professional interests. The difference this time around, is that the debate is not taking place in the aftermath of an economic crisis – but rather in an economic upswing never seen before on the islands. This framework law posits stricter requirements on economic funding allocated to research through the Faroese Research Council and stipulates a

reconfiguration of the Faroese Science Board (Vísindaráðið)[14] into a new Council for Research, Development and Innovation (Ráðið fyri Gransking, Menning og Nýskapan). This will result in a revision of the economic foundation of the funds that drive Faroese research (of which the University of the Faroe Islands through applications receives somewhere in the region of thirty percent) and allocated based on new sets of criteria that give primacy to economic growth, social development and entrepreneurship. For an unprepared university, where formal collaboration with industry and sector research is not the norm, change like this can have serious consequences.

An early draft of the joint Danish, Greenlandic and Faroese Arctic strategy (Arktis 2030) har circulated among Faroese researchers for some time, and research is very much a primary focus within all of the six visions for the future: international politics, public health and economic development, sustainability and renewables, innovation and entrepreneurship, technology and research collaboration. Following a regional strategy for the Kingdom of Denmark, a Faroese strategy for the Arctic is also expected to include most of these same visions. Tied to these two strategies and the research cost affixed to them, follows a debate on how the University of the Faroe Islands might take on such a transscalar challenge. For the university's sake, participation can only take place in tandem on a very small and a very large scale, in collaboration with local and regional stakeholders. The Arctic strategy for the Kingdom of Denmark seems to be so comprehensive that the University of the Faroe Islands will only be able to join as a coherent unit with centralised coordination. There are further examples of upcoming challenges for the University of the Faroe Islands; the debate on renewed pledges towards Horizon2020 participation is one such challenge. A commonality for all these challenges is that they require commitment on more than one scale, a united academic unit and strategic cooperation. More importantly, however, it requires that the university rises up to the challenge with a new identity – a new organisation and institution in agreement.

The University shows its colours

During the summer of 2020, Faroese newspaper Sosialurin brought a series of editorials produced by the university administration; rector and five deans, one from each faculty. The editorials were meant as a platform for the visions of the board surrounding the new 2020-2024 university strategy to reach the public (and staff). Through coding and textual analysis we can create an overview of the five most used conceptual narratives employed across these six editorials; *Faroe Islands/Faroese*, *research*, *society*, *University of the Faroe Islands* and *international*.

The teacher's seminary (kronik-2; Olsen, 2020) mainly focuses on interaction with the Faroese society and does not mention research or internationalisation. The editorial is primarily an overview of the importance of knowledge to society and the role that the department has in facilitating it. The Department for Faroese (kronik-3; Hansen, 2020) focuses heavily on the new language-policy of the university, yet manages to orient itself both inwards and outwards in its analysis of the importance of an academic Faroese language and the importance research into the Faroese language in a globalised world. The Department of Health and Nursing (kronik-4; Mohr, 2020) centres around research as its theme, the role of research in society and for the Faroe Islands as a nation. International relations are not mentioned, as the focus is purely on elevating local research and insights. The Department of Natural Sciences (kronik-5; Joensen, 2020) deals with the role of the natural sciences at the university. The first half focuses on local matters and how they are connected to international issues. The second half has a strong social aspect, providing the reader with

[14] The Research Council (*Granskingarráðið*) is an umbrella-term for the Faroese Research Fund (Granskingargrunnurin), the Research Electorate (Granskingarnevndin) og its offices. The Research Electorate consists of seven members elected by the Ministry of Culture (Mentamálaráðið) (see Granskingarráðið 2020a). The Faroese Science Board (Vísindaráðið), develops the official research-policy of the Faroe Islands and consists of the Prime Minister, relevant ministers and representatives from unions, the university and sector research (Granskingarráðið, 2020b).

examples of the importance of the natural sciences locally. The Department for History and Social Sciences (kronik-6; Sølvará, 2020) has submitted an editorial that se-saws back and forth between local and international perspectives. It speaks to the importance of globalisation, and what can be learned from it, at the same time it reminds a Faroese audience of the importance of locally anchored knowledge that can make a difference to a local community.

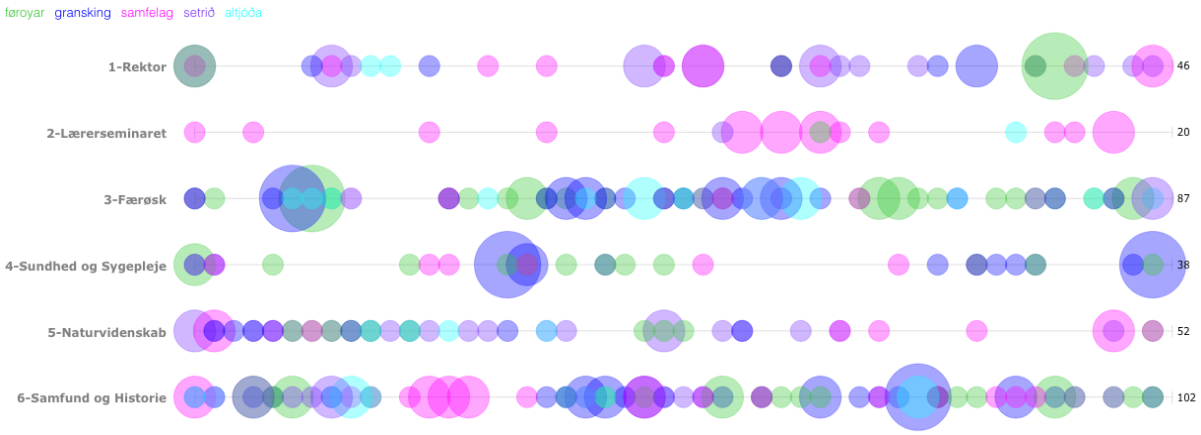


Figure 5: Heat mapping of coded textual analysis.

It is interesting to see that it is only the rector's editorial (kronik-1; Collins, 2020) that mentions the strategy that was the whole point of these strings of editorials. None of the deans mention the strategy and none of them acknowledge any of the other departments or collaboration between them. Another interesting point is that of those voices one would conventionally associate with an inwards-looking perspective (departments for Faroese, history and social sciences) are those who display a far greater interest and focus outwardly. Broadly speaking, these editorials are all positive. While they show scant regard for the priorities in the new university strategy or the future, they do paint a picture of an organisation and institution that is evolving. There is still little reason to believe that there is a willingness to move before one is on stable ground – and there is likely not much running in the near future. Tasks are still numerous and the climb is yet steep. Off in the distance there is still a peak to conquer and trust in one's fellow companions is now more needed than ever.

From having been a nation-preparing symbol of autonomy, culture, language, history and politics – the University of the Faroe Islands as an organisation and an institution embroiled in a transformation that in many ways is mirrored in the development of the Faroe Islands itself. To be relevant and cutting edge, the university is forced to create a new identity for itself that can function as a symbol for a modern Faroe Islands. Within the region, the University of Greenland has attempted to position itself as the university in the Arctic. Icelandic universities are renowned for the focus on small state politics and their polar law programmes. Norway has an intense focus on international relations and defence, and Denmark focuses on issues such as economic development, climate and other international areas of study. What is a unique role that the University of the Faroe Islands can brand itself on? How does the university (and the Faroe Islands) transition from nation-building to nation-branding? For the Academy of the Faroe Islands the overarching organisational focus was on statehood and the development of a sustainable Faroese culture and equally sustainably governance. A focus on autonomous cultural sustainability. If we in 2020 can say that it in a number of ways has played a successful role in delivering on cultural sustainability on the Faroe Islands, the university might be well off considering if the time has come to focus on sustainable economics, climate and environment. Perhaps the new identity of the University of the Faroe Islands from 2025 should be »*the sustainable university in the Arctic*«".

References

á Rógvi, H. og H. Reistrup, red. (2012), *EXIT Føroyar*. Vestmanna; Sprotin.

Collins, C. (2020), "*Fróðskaparsetur Føroya – fyri Føroyar og føroyingar*", kronik udgivet i Sosialurin 26. juni [https://www.setur.fo/fo/setrid/tidindi/frodskapar setur-foroya-fyri-foroyar-og-foroyingar/]

Føroya Løgting (2020), "*90/2019 Uppskot til løgtingslóg um ráðgeving og stuðul til gransking, menning og nýskapan*", Færøernes Lagting, Beslutningsforslag, udgivet pa˚ hjemmeside 26. maj, [https://logting.fo/casenormal/ view.gebs?menuChanged=16&type=0&caseNormal. id=4647].

FSF (2019), "*The University of the Faroe Islands Appoints New Rector*", nyheder, Færøernes Universitet, udgivet pa˚ universitetets hjemmeside, 28. juni, [https://www. setur.fo/en/the-university/news/the-university-of-the- faroe-islands-appoints-a-new-rector/].

FSF (2020a), "*Rammulógin: Nú eru træðrirnir savnaðir*", nyheder, Færøernes Universitet, udgivet pa˚ universitetets hjemmeside 8. juni, [https://www.setur.fo/ fo/setrid/tidindi/rammulogin-nu-eru-traedrirnir- savnadir/].

FSF (2020b), "*Strategic Plan 2020-2024*", Tórshavn: Fróðskaparsetur Føroya [https://www.setur.fo/media/6819/ setur_strategiatlan_en_2020.pdf].

FSF (2020c), "*Leiðsla og Bygnaður*", organisationsbeskrivelse pa˚ Universitetets hjemmeside. [https://www.setur. fo/fo/setrid/um-setrid/leidsla-og-bygnadur/].

FT (2002), "*Forslag til Lov om universiteter (universitetsloven)*", Folketinget, 2002-03 – L125 [http://webarkiv. ft.dk/?/samling/20021/lovforslag_som_fremsat/l125. htm].

Granskingarráðið (2007), "*Gransking, menning og nýskapan í Føroyum 2007: Høvuðsúrslit [Forskning, ud- vikling og innovation pa˚ Færøerne 2007: Resultater]*", Tórshavn; Granskingarráðið [https://www.gransking.fo/media/2318/høvuðsfrágreiðing.pdf].

Granskingarráðið (2015), "*Vitan og Vøkstur: Yvirskipaður granskingarpolitikkur Føroya 2011-2015 [Viden og Vækst: Overordnet forskningspolitik for Færøerne 2011-2015]*", folder produceret af Føroya Vísindaráð i forbindelse med ny forskningspolitik, udgivet af Forskningsstyrelsen, Tórshavn: Granskingarráðið [https://www.gransking.fo/media/2439/gransk-faldari-web.pdf].

Granskingarráðið (2020a), "*Um Okkum: Granskingargrunnurin og Granskingarráðið*", udgivet pa˚ Granskingaráðið's hjemmeside, udateret, [https://www.gransking.fo/fo/um-okkum/].

Granskingarráðið (2020b), "*Vísindaráðið*", udgivet pa˚ Granskingaráðið's hjemmeside, udateret, [https://www.gransking.fo/fo/um-okkum/visindaradid/]

Hagstovan (2020), "*Nettoflytning*", Færøernes Statistik over nettoflytning per 24. april, [https://hagstova.fo/fo/folk/flyting/nettoflyting].

Hansen, BD. (2020), "*Fróðskaparsetrið samtykkir málpolitikk*", kronik udgivet i Sosialurin 10. juli [https://www. setur.fo/fo/setrid/tidindi/frodskaparsetrid-samtykkir-malpolitikk/].

Joensen, JP. (1983), "*Um ikki at flyta anna fótin fyrr enn hin stendur tryggur: Ein stutt søgulig lýsing av Føroya Fróðskaparfelag*", Fróðskaparrit, 31(1983): 9-35. Tórshavn; Fróðskaparsetur Føroya [https://timarit.is/page/929284#page/n5/mode/2up]

Joensen, J. P. (1990), "*Fróðskaparsetur Føroya 1965-90: Stutt Søguligt Yvirlit á 25 ára degnum*", Tórshavn; Fróðskaparsetur Føroya.

Joensen, HP. (2020), "*Fróðskaparsetrið styrkir vitanarsamfelagið*", kronik udgivet i Sosialurin 30. juli [https://www.setur.fo/fo/setrid/tidindi/frodskaparsetrid-styrkir-vitanarsamfelagid/].

Løgtingið (2008), "*Løgtingslóg nr 58/2008 Um Fróðskaparsetur Føroya, sum broytt við Løgtingslóg 51/2012*", Færøernes Lagting [https://www.setur.fo/media/1933/ logtingslog_nr-_58_fra_9-_juni_2008_um_frodskap arsetur_foroya.pdf].

Løgtingið (2020), "*Løgtingsmál nr. 90/2019: Uppskot til løgtingslóg um ráðgeving og stuðultilgransking, menning og nýskapan*", Tórshavn, Færøernes Lagting [https://logting.fo/files/casestate/27883/090.19%20 U.t.ll. um radgeving og studul til gransking menning og nyskapan.pdf].

Marnersdóttir, M. red. (2003), "*Universitet í Útnorðri: Framløgur á Verkstovu á Fróðskaparsetur Føroya í September 2001"*, Tórshavn; Fróðskaparsetur Føroya.

Mohr, M. (2020), "*Vísindasamfelagið Føroyar*", kronik udgivet i Sosialurin 17. juli [https://www.setur.fo/fo/ setrid/tidindi/tidargrein-visindasamfelagid-foroyar/]

NMR (2020), "*State of the Nordic Region 2020*", Nordisk Ministerråd: København.

Olsen, E. (2020), "*Kunning um læring og menning er fyritreyt fyri vitan of vøkstri*", kronik udgivet i Sosialurin 3. juli [https://www.setur.fo/fo/setrid/tidindi/kunn leiki-um-laering-og-menning-er-fortreyt-fyri-vitan-og- vokstri/]

Olsen, M. M. (2020), "*Telefoninterview med bestyrelses-formand Ólavur Ellefsen om ansættelsen af Chik Collins som rektor for Fróðskaparsetur Føroya*", udført den 10. september.

OMCU (2020), "*Magna Carta Universitatum, færøsk udgave*", udgivet på Observatory Magna Carta Universi- tatums hjemmeside i juni [http://www.magna-charta. org/magna-charta-universitatum/read-the-magna- charta/the-magna-charta].

Scholte, J. A. (2005), *Globalization: a Critical Introduction*. Hampshire: Palgrave Macmillan.

Scott, R. W. (2014), *Institutions and Organizations: Ideas, Interests, and Identities*, Los Angeles: Sage.

Scott, R. W. og G. F. Davis (2007), *Organizations and Organizing: Rational, Natural and Open System Perspectives*, London: Routledge.

Skarði, J. A. (1988), *Jólafundurin 1988: og eitt sindur um høvuðsmenninir í Føroyingafelag í Føroyum*, Tórshavn: Føroya Skúlabókagrunnur.

Sølvará, H. A. (2015), *Fróðskaparsetur Føroya 50 ár*. Frøði 1(2015): 4-7. Tórshavn; Føroya Fróðskaparfelag.

Sølvará, HA. (2020), "*Altjóða gransking við føroyskum kjølfesti*", kronik udgivet i Sosialurin 7. august [https:// www.setur.fo/fo/setrid/tidindi/altjoda-gransking-vid- foroyskum-kjolfesti/].

UM (2020a), "*Udenrigsminister Jeppe Kofod Rejser til Færøerne*", udgivet pa˚ hjemmeside 31. september [https://um.dk/da/udenrigspolitik/udenrigspolitiske-nyheder/newsdisplaypage/?newsid=a4e99221-6ca7-49 07-a418-b56809f45e20].

UM (2020b), "*Udenrigsministeren besøger Grønland*", ud- givet pa˚ hjemmeside 21. september [https://um.dk/da/udenrigspolitik/udenrigspolitiske-nyheder/newsdisplaypage/?newsID=56A5E05B-FBE C-426B-BC05-16C3F67B1E0E]

UMMR (2020), "*Nýggj lóg um gransking, menning og nýskapan*", nyheder, Ministeriet for Udenrigsanliggender og Kultur. Udgivet pa˚ hjemmeside 5. juni [https://www.ummr.fo/fo/kunning/tidindi/nyggj-log-um-gransking-menning-og-nyskapan/]

4.2 *“Sustainability is having enough midwives and teachers”*: A Survey of the Sustainability Practices of the Smallest Institutions of Higher Learning in the Arctic

This article has been peer-reviewed and published. See: Olsen, MM. (2023) “Sustainability is having enough midwives and teachers”: A Survey of the Sustainability Practices of the Smallest Institutions of Higher Learning in the Arctic. Arctic Yearbook 2023, Akureyri: Northern Research Forum and UArctic Thematic Network on Geopolitics and Security.

“Sustainability is having enough midwives and teachers”: A Survey of the Sustainability Practices of the Smallest Institutions of Higher Learning in the Arctic

Martin Mohr Olsen[15]

Abstract

This article explores sustainability practices in small member institutions of the University of the Arctic (UArctic). It employs a mixed-method survey, including quantitative data from 20 Arctic institutions and qualitative interviews with respondents. The study focuses on the adoption of a fourth mission statement for sustainability. Contrary to expectations, the interviews revealed that sustainability is context-dependent and already deeply ingrained in the operations of small Arctic universities. These institutions were also found to be aligned with emerging social engagement paradigms. The research highlights that sustainable practices observed in these universities have been at the forefront of advancements, despite being relatively overlooked in the literature.

---

[15] PhD-Candidate at the Technical University of Denmark and the University of the Faroe Islands. The author would like to thank all respondents and interviewees for their time and kind help. Thanks also go to the external reviewers of the survey questionnaire.

Introduction

This article investigates how smaller Arctic institutions of higher learning are employing the concept of sustainability in their operations. It makes use of two different, yet connected, surveys–one quantitative and one qualitative, in an attempt to make sense of how sustainability is employed. As a part of ongoing research on the subject (see following section), this article concerns itself with an Arctic perspective and aims to produce a generalisation at a regional scale. Findings from the quantitative survey were initially somewhat perplexing and inconclusive, in that they did not produce a clear enough picture of what was meant by sustainability, and how this might be implemented. The qualitative follow-up interviews, on the other hand, produce a much better insight into how these smaller Arctic institutions operate. They also reveal that the concept of sustainability is highly contextual and poorly defined. While none of the interviewees on their own accord offered that their institution was highly sustainable, discussions were in fact mostly concerned with topics that I would contend to be entirely centred around sustainability; cultural and linguistic survival, economic development, vocational training and local expertise, and a relentless focus on environmental issues including the sustainable use of plants and animals.

I conclude, firstly, that there is an unfortunate duality within the discourse surrounding the concept of sustainability and that smaller Arctic institutions of higher learning function as local stabilisers for the economy, for culture and for the environment–all vital aspects of sustainability. Second, I conclude that these same institutions are found to be in line with emerging social engagement paradigms to a surprising degree. In fact, broadly speaking, they already follow the requirements stipulated as constituting a 4th academic mission statement (beyond teaching, researching and dissemination) as outlined by Trencher et al. (2014) in their call for new transformative universities based on "*co-creation for sustainability*".

The article is in four parts; the present introduction, the methods and findings of the quantitative survey followed by the qualitative survey, respectively. It concludes with a discussion of the findings.

Prior research[16]

This work builds upon previous research focusing on sustainability implementation in higher education institutions. A 2018 study (Blaxekjær, L., Olsen, MM. et al. 2018) identified emerging trends in Arctic academia, including the demand for innovative skills, the establishment of a "co-creation of sustainability" mission statement, the adoption of the Sustainable Development Goals (SDGs), and increased interest in Arctic conferences and collaborations. A 2019 report (Lauritsen, SE., Olsen, MM. et al. 2019) emphasised the role of students in driving sustainable development in the Arctic. A case study of the University of the Faroe Islands (Olsen, MM. 2020) examines its historical and organisational structure and the potential for improved sustainability engagement. I further (Olsen, MM. 2021) explore institutional implications of a fourth mission statement and helix-based engagement in a volume on Natcher & Jokela's (2021) volume on Renewable Economies in the Arctic. A systematic literature review explores global best practices in SDG implementation, highlighting the need for stakeholder engagement and civic involvement (Olsen, MM. and Rosati, F. forthcoming). The present article aims to bridge those local and global perspectives by examining how smaller Arctic universities integrate sustainability into their operations and education at the regional level.

[16] This paper was produced as a part of an ongoing PhD thesis conducted at the Technical University of Denmark, with additional supervisory support of staff from the University of the Faroe Islands. It was produced during the COVID period and ended up being somewhat delayed.

Methodology

As noted, preceding work has compelled me to question how smaller institutions of higher education (HEI) within the Arctic region deal with the implementation of sustainability. To this end, it was decided that a mixed-method data triangulation approach was to be employed in the form of (1) a questionnaire sent to a subset of UArctic members, (2) with additional interviews with staff at selected universities, the results of which are then (3) compared to relevant findings in previous work (mentioned above). The nature of the surveys is such that the number of respondents is below the threshold for conventional statistical analysis. The resulting data has been deemed acceptable for the intended purpose–but additional research is still highly recommended.

While the present paper is neither wholly qualitative, nor quantitative–nor is it in the form of a case study, it takes on characteristics that fall somewhere in between. In order to deal with this, it takes on a triangulation approach (Deacon, Bryman & Fenton. 1998). Cohen & Manion (2000) define triangulation as an "attempt to map out, or explain more fully, the richness and complexity of human behaviour by studying it from more than one standpoint". Further, according to Denzin, N. (2006) there are four types of triangulation; data-, investigator-, theory-, and methodological triangulation. It is with the fourth type of triangulation, methodological, we will concern ourselves with, as it involves more than a single method of data collection–questionnaires, interviews, observations and documents. In triangulation, according to Heale and Forbes (2013) one of three outcomes is to be expected; (1) results converge and lead to the same conclusion, (2) results complement and supplement each other, and (3) results may diverge and contradict each other. I will argue that the second outcome is sufficiently present, in that the quantitative survey helps to supplement and more generally make sense of the following quantitative portion of the survey. Additionally, I lean on Flyvbjerg's (2011) encouragement that even singular case studies can assist in valuable knowledge production.

I should note that the paper is informed by neo-institutionalist theory (see: Meyer, J. and Jepperson, RL. 2021) and relies heavily on Bourdieu's (1972) practice-theory as these are well-suited for the study, as I am interested in the intersection of how institutions create meaning and how Arctic stakeholders reinforce or alter that meaning in order to further their local communities.

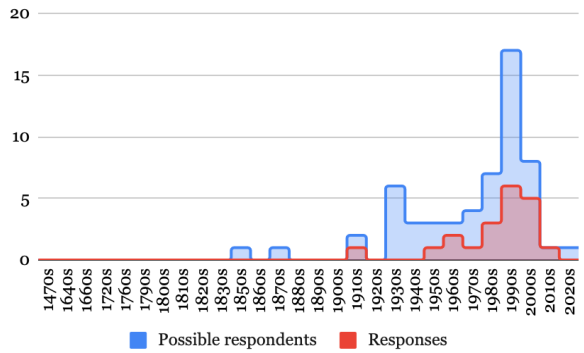
Quantitative survey

The quantitative portion of the survey was completed using institutional memberships of UArctic per January 1st 2021 (UArctic, nd.a) as prospective respondents. Institutions list a contact who functions as UArctic assembly representative and point of contact. These contacts tend to be rectors, academic administrators, deans or Arctic researchers. It was decided that these persons would have sufficient insights into local sustainability developments and similarly sufficient insights into developments at a local level to function as respondents.

Respondent demographics

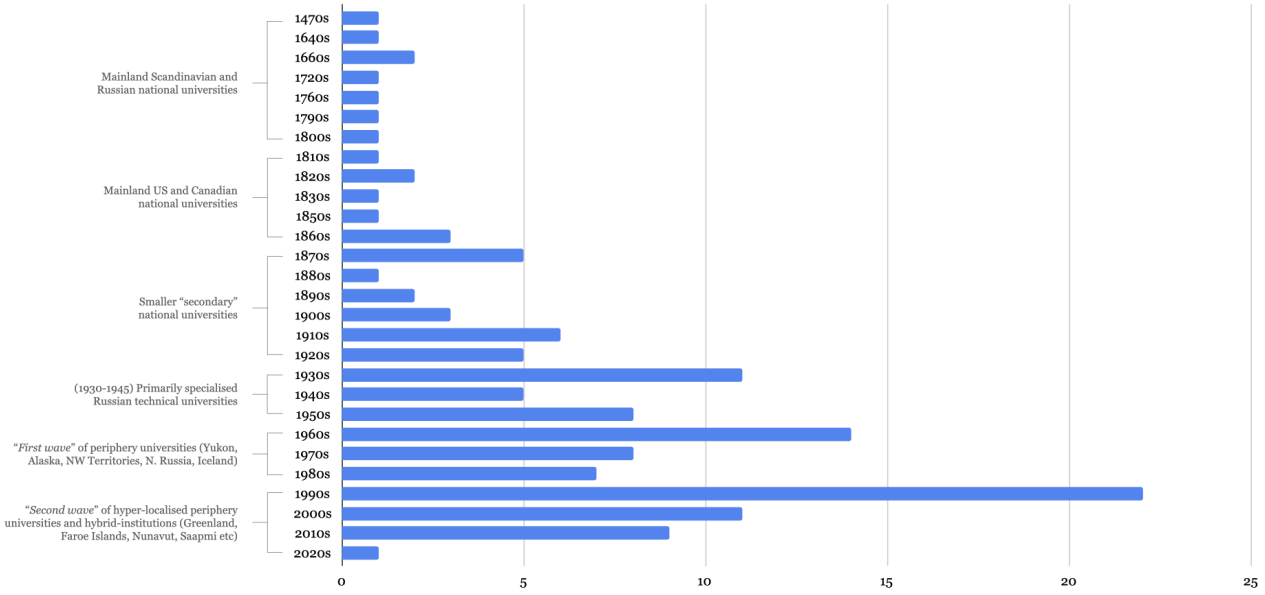
As the quantitative survey was initiated, UArctic had 134 academic members. Of those, 57 were institutions with fewer than 5000 students, of which 20 responded. Figure 1 illustrates how those 57 smaller institutions cluster when sorted by decade of establishment. The majority of these smaller institutions are relatively young, more than half established between the late-80's

Figure 1: UArctic quantitative survey respondents vs responses (based on institutions with <5000 students), sorted by decade of institutional establishement



and mid-2000's. Surveying the entire membership base of the UArctic (Figure 2), we see this same clustering. In the period prior to the 1810's we see old Scandinavian and Russian national universities. In the first half of the 1800's, there was a proliferation of American and Canadian national (or large) universities. In the latter half of the 1800's and up until WW2 a number of smaller national universities (typically in second-largest cities) were established. During the war and some years following that, we mostly see an increase in highly specialised Russian technical universities. While some of the smaller institutions we will be concerning ourselves with in this article are established throughout the years presented in Figure 2, the majority come into being from around the mid-60's and onward. Notably, they come in two distinct waves–one between 1960-1980 where a number of very local institutions on the periphery are established, especially in

Figure 2: UArctic members estalishment sorted by decade and grouped by period



the north of Russia, Canada and Alaska. The later wave, 1990-2000, consists of even smaller and more localised institutions that take on a form that can best be described as hybrid-institutions; part university, part vocational college, part indigenous or cultural institution. It bears noting that these institutions make up roughly half of the membership-base of the University of the Arctic and half of those again were established in the 1980's or later.

Methods

A systematic overview of all UArctic institutions was extracted from membership profiles on the UArctic website; year of establishment, country, numbers of staff and students, contact details and similar. These institutions were indexed and sorted. As this survey focused on the smallest institutions of higher learning, institutions with an excess of 5000 students were excluded, leaving 63 institutions. The institutions were then grouped into categories; university, part of a university, college with university level courses, vocational-based college or institute (non-academic) and cultural-based college. Within the Arctic, a number of larger (non-Arctic) universities maintain research centres, institutes and think-tanks. While these can hold UArctic memberships, they are not institutions of higher learning per se – and were excluded. Faculties part of a university (not located geographically within the Arctic) were also excluded, while faculties that are part of universities geographically within the Arctic were included, leaving a final set of 56 institutions.

	University	Faculty	College w.univ. level courses	Vocational college	Cultural-based college	Survey queries	Survey queries in %	Response rate	Response rate in %
Canada	7		3		1	11	19.64%	6	10.71%
Faroe Islands	1					1	1.79%	1	1.79%
Finland	2				1	3	7.14%	0	0
Greenland	1	1	1			3	5.36%	2	3.57%
Iceland	7					7	12.5%	5	8.93%
Norway	2				1	3	7.14%	3	5.36%
Russia	17		1	6		24	41.07%	2	3.57%
Sweden					1	1	1.79%	0	0
United States	2			1		3	3.57%	1	1.79%
Survey queries	39	1	5	7	4	56	100%	20	**35.72%**
Survey queries %	64.29%	3.57%	8.93%	16.07%	7.14%	100%			
Responses	15	1	1	2	1	20			
Responses %	38.46%	100%	20%	28.57%	25%				

Table 1: Quantitative survey: nationalities, types of respondent, queries and response rates.

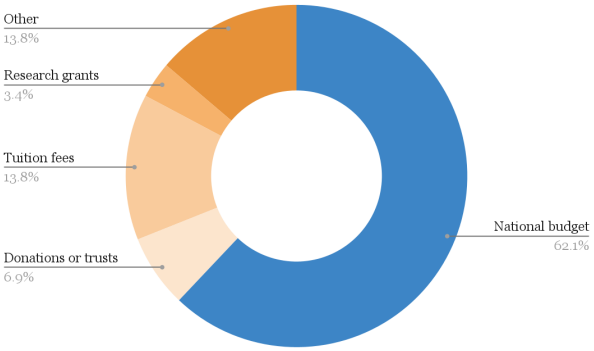
Data collection

The quantitative survey was designed in Survey-Xact and consisted of 34 questions relating to institutional operations in terms of sustainability implementation, institutional self-branding and sources of operational funding. The majority of questions were based on a 5-point Likert scale, ranging from strongly agree to strongly disagree or in some cases simply sliders from 1-5 denoting institutional adherence to a range of subjects. In some cases multiple choice answers were used to collect data on institutional self-identification and outward branding. Quality control was first conducted with the help of four colleagues, two from the Technical University of Denmark and two from the University of the Faroe Islands–following this, an additional round of control was conducted with the help of colleagues from the Faroe Islands and Canada. A list of respondents was culled from the contact data on the UArctic website. Requests for participation in the survey were emailed to respondents in June of 2021 and then, due to a lack of respondents, three more times every three months. A break-down of survey queries and response-rates can be seen in Table 1. Of the 56 institutions surveyed, 20 responded, resulting in a response-rate of 35.72%.

Quantitative findings

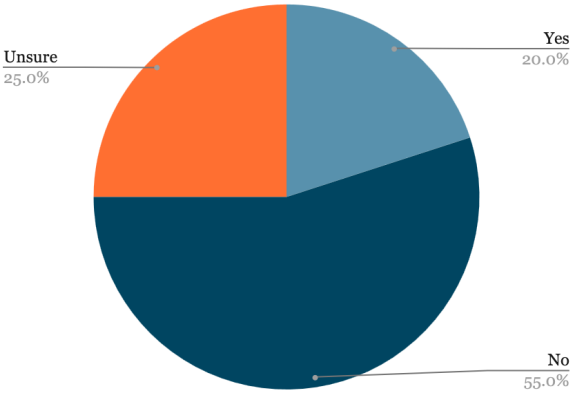
Of the 20 respondents, the majority (62.1%) rely on governmental grants (as part of national/regional budgets) for operations. Most of these institutions (see Table 1) are situated within Nordic countries or in Russia where education is free or heavily subsidised. A number of the institutions are also not-for-profit national universities. The question allowed multiple answers, and the overall reliance

Figure 3: What are the main sources of operational funding for your institution?



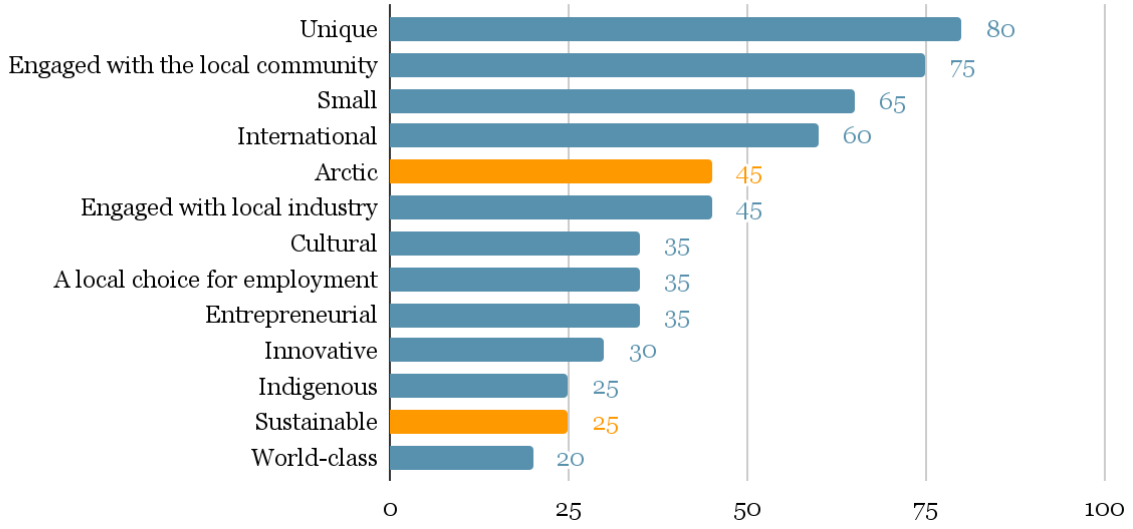
on governmental sources is likely higher than the numbers presented in Figure 3, as research grants tend to be seen as additional funding. Manually going over the financial status of respondent institutions, following the survey, reveals that the number is higher than 75%.

Figure 4: Does your national government (Ministry of Education, Office of Statistics or similar) require annual institutional reporting on sustainability?



Smaller Arctic universities overwhelmingly relying on subsidies bring up questions related to governmental oversight into adherence to sustainability in the form of progress reporting. Respondents were queried on institutional responsibility to report on adherence and progress towards implementation, 20% responding in the affirmative. Following up on this, it seems to be that the 25% of respondents in Figure 4 answering that they are unsure of reporting requirements are not, in fact, required to do any reporting. As far as I can tell, the 20% of respondents answering in the affirmative are Icelandic universities that fall under the Græn Skref [Green Steps] initiative (Græn Skref. nd), an ISO Standard mandatory reporting that all Icelandic governmental institutions must adhere to. While a number of larger Arctic universities publish their own sustainability reports, there seems to be little oversight with regards to systematic adherence and progress reporting as it relates to sustainability in those queried. That publicly funded institutions are, largely, not required by their governments to report on adherence to sustainability is somewhat curious as these are issues very much at the heart of the work done by these states through the Arctic Council. That Arctic institutions of higher learning are not being audited based on sustainability, does not mean that they abstain from working with sustainability–rather, as will be dealt with below, they often do so on their own terms.

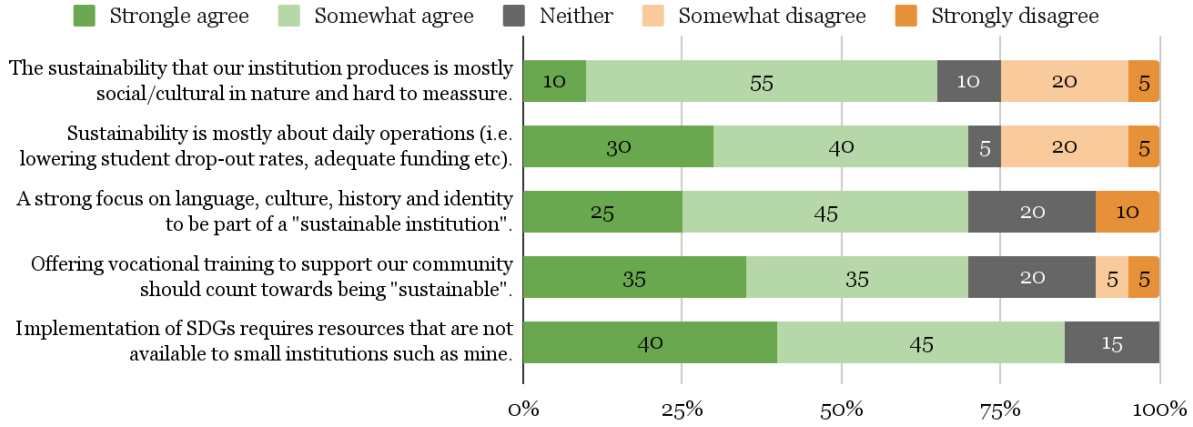
Figure 5: My institution actively promotes itself as being...



As the initial lists of respondents was populated, a separate list of actionable keywords was simultaneously culled from respondents' websites. This resulted in a list of 13 keywords that were presented to respondents, who were then able to pick several concepts that they felt represented their institution. This self-identification revealed that less than half of queired institutions promote

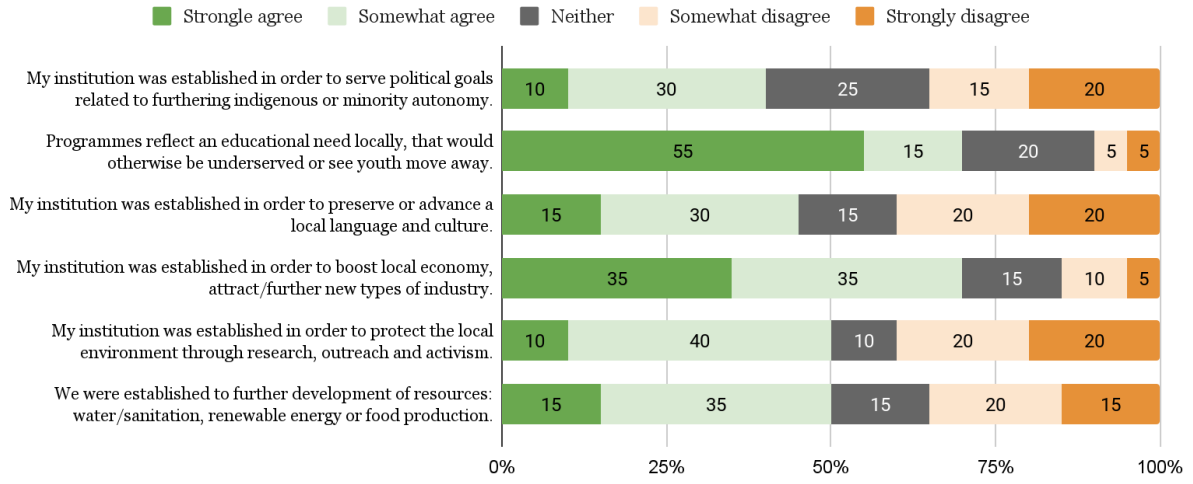
themselves as being Arctic. This is likely due to the majority of students being local–but it also speaks to a possible spatial fragmentation in terms of regional identification and cooperation. Key, for our purposes; sustainability is curiously low on the list of how these institutions present themselves (Figure 5), with only 25% classifying their institution as being sustainable.

Figure 6: To what extent do you agree with the following statements?



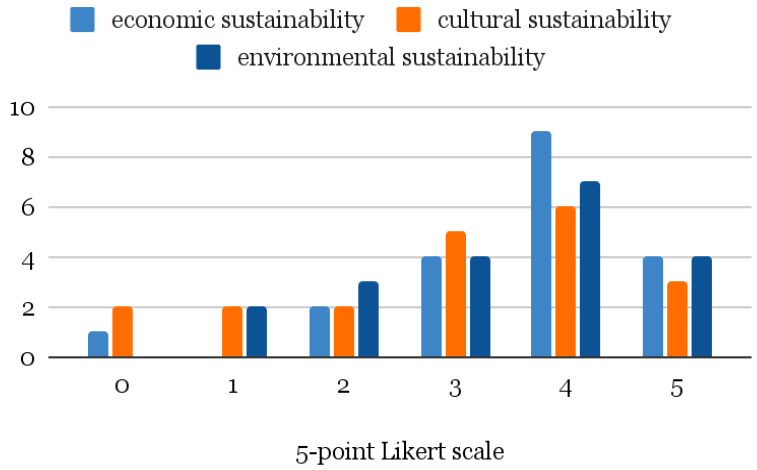
Asked a series of questions (Figure 6) intended to narrow down reasons for a lack of implementation of sustainability initiatives and also meant to clarify what institutions understand as sustainability, it is clear that responses related to how institutions might define themselves become contextual. Overwhelmingly, institutions are in agreement that sustainability is multifaceted and represent more than immediate concerns of environmental sustainability. To an extent, the surveyed institutions agree that they are producers of economic or cultural sustainability in their community, and that the kind of sustainability they produce can be difficult to measure. Sustainability extends to maintaining daily operations, lowering drop-out rates, acquiring acceptable levels of funding etc. Sustainability is also about producing local cultural values, ensuring that local languages and identities are held in high regard, and the same can be said of servicing the local economy with often much needed vocational training and support. Most agree that SDG implementation is too costly for small institutions.

Figure 7: To what extent do you agree with the following statements?



As is outlined above, respondents represent some of the smallest institutions within the Arctic. Figures 1 and 2 illustrate decades of institutional establishment[17]. Figure 1 shows all queried institutions (in blue), overlaid with respondents (in red), and indicates that the majority of the respondent institutions were established between the late 1980's and early 2020's. This same clustering is visible for the full set of UArctic members (Figure 2). These relative institutional latecomers come in two waves: around 1960-1980 and later 1990-2010. The surveyed respondents follow a similar pattern, 8 institutions being established prior to 1990–and 12 after. This split goes a long way in explaining the duality in the responses given (in Figure 7) when asked about why respondent's institutions were initially established. Overall, there seem to be three commonalities between them, in that they have either come about as a result of local independence movements or as a wish for localised indigenous or minority autonomy, are located peripherally in very remote areas-away from urban centres/larger mainland institutions, or cater to a certain culture, language or specific need for development. All respondent institutions are the result of a combination of these factors. Findings reflect this, as 40% of institutions identify with being established in order to further indigenous or minority autonomy–hereof especially the Saami, Greenlandic, Canadian, Alaskan and Russian indigenous populations along with the Faroese independence/autonomous movements. This is similarly mirrored in the built-in institutional mandate for preservation of local languages and cultures. Responses to questions on supporting industry and academic focus overwhelmingly confirm an initial thesis that these institutions especially tend to lock onto providing programmes and courses that serve an immediate need in their local community (generally nursing and care, pedagogy and vocational training) that is otherwise not met and likely would lead to brain-drain as students move away to nearby countries or states (70% answering in the affirmative) – and initiatives meant to boost the local economy and industry (also 70% in the affirmative). To some extent these are also institutions established to engage with the environment, resource extraction, and energy- and food production – all components that figure into visions of autonomy and self-reliance.

Figure 9: Self-reported perceived institutional focus on economic-, cultural-, and environmental sustainability,



Asked to rate (Figure 9) their perceived institutional focus on economic-, cultural-, and environmental sustainability from 0-5, respondents overall skew towards a perceived high focus on the three aspects of sustainability. Figure 6, above, reveals insights into what might seem to be a discrepancy between on the one hand having a sense of being very sustainable–and on the other hand having little systematic evidence of being so.

[17] It should be noted here that some of the represented institutions are currently made up of yet smaller, previously active, institutions, each of which were often established earlier than is registered in the data.

Qualitative survey

Due to the relatively low numbers of respondents to the quantitative survey, it was decided to complement the data with additional follow-up interviews. Constraints allowed for six interviews with representatives from the quantitative survey. A focus of these interviews was to further explore the concept of sustainability, and how respondents, acting as representatives for their institutions, would contextually situate their institutions' existence and operations in that regard. Based on the quantitative survey alone, it seemed that definitions of what would constitute sustainability were unclear, either due to the design of the questionnaire, or as a part of the vocabulary used.

Methods

It was decided that a follow-up portion consisting of ten interviewees from the original cohort of respondents would suffice. Due to the prolonged time frame in which the article was produced, this turned out to be a challenge. A number of original respondents were either retired, had moved on to other positions, on leave or otherwise unable to complete an interview. In the end, I was able to secure six possible interviewees from different countries within the Arctic, some of whom had taken the original quantitative survey. Due to this lack of original respondents, it was decided to produce an interview guide that was not a direct continuation of the quantitative survey.

Data collection

Respondents have been made anonymous. They are located in the following regions of the Arctic: *Northern Norway*, *Greenland*, *Finmark*, *Iceland*, *Northern Alaska* and *Western Canada*[18]. Interviews were conducted online, each of a duration of 40-60 minutes. An open-ended interview guide was produced and followed throughout. While queried institutions were very similar, there were aspects that were different enough that not all questions were equally relevant. The interview guide consisted of five different lines of questioning:

- Question on motivations and objectives behind establishing the institution in question.
- Question on challenges and barriers facing the community around the institution.
- Question on community engagement (cultural, economic, environmental).
- Question on the institutional definitions of sustainability broadly.
- Question on how sustainability might be utilised to combat challenges within the community.

Interviews were recorded and transcribed for analysis by myself.

Qualitative findings

This qualitative interview portion of this survey was able to produce a far more nuanced understanding of how small Arctic universities view sustainability. While only six interviews were conducted, I would argue, based on previous work and interactions with a fair number of institutions on the initial list of prospective respondents, that the findings from these interviews are broadly representative of the state of smaller Arctic institutions of higher learning. Further, the institutions interviewed exhibit striking parity with my historical overview and institutional analysis of the University of the Faroe Islands (Olsen, MM. 2020).

[18] Several attempts were made to reach out to Russian respondents. It seems that current geopolitical realities complicated matters.

Q1: Motivations and objectives behind establishing the institution

Historically, the interviewed institutions exhibit striking similarities in terms of the reasons behind their establishment. A few came about through mergers with similar institutions, either in terms of institutional focus, or in terms of geographic proximity. Those that are the result of an institutional merger, were made up of smaller, struggling, local institutions. A recurring theme for all of the institutions is that they were originally launched through grass-roots efforts by their respective local communities. Where the majority of institutions of higher learning in the Arctic established up to around the 1950's were primarily initiated through top-down governmental efforts to ensure education, the smaller institutions that came about during the two spikes noticeable in Figure 2 came about through bottom-up efforts by communities in need of local options:

> *"It started in the mid-to-late 1980's, there was a committee that formed and [...] they were promoting this idea. There is a pretty good story behind this…they had tables at shopping malls to promote this idea of a university, and people were encourage to give [small amount] to the university fund, right…to this day I still hear from people, this is 30 years later, of how they gave their [small amount], right? It was almost as if they were buying shares in the community–so it was a grass-roots movement, and they managed to convince the government to commit resources"* (Olsen, MM. 2023a).

> *"Historically you look at the boarding-school era where our people had to leave the community to go to education, even [boarding school] had 8 or 9 years old students…even younger, so, having education here at home is something very important for our people and for our communities so they don't have to leave"* (Olsen, MM. 2023b).

Due to the often immense distances within the Arctic, governmental efforts to initiate institutions of higher learning tend to be centred around highly populated areas, and regions that are geographically cut off from accessible infrastructure are often overlooked. Local solutions, then, emerge through the efforts of local elders, municipal councils, cultural enthusiasts and other firebrands.

Q2: Challenges and barriers facing the community around the institution

Aware of the multitude of stigmatic social issues facing many of the remote communities within the Arctic region, I was wary of probing too far into the territory of socio-economic maladies. All interviewees steered clear of any such discussions on their own accord.

The institutions interviewed are all located geographically in areas or regions that tend to rely heavily on resource extraction of some type or another; fisheries, mining, mills, farming or husbandry. For that reason local communities that they serve can often be subject to economic booms and busts. For many communities these fluctuations can have severe impacts on social stability and this can be an often overlooked variable that can prove itself quite the challenge for small institutions. The most general and obvious commonality for the institutions is remoteness and infrastructural challenges due to geography. All but one are located far away from urban centres and the areas they serve tend to be isolated further, requiring air-travel or lengthy trips by ship or busses. This type of isolatedness tends to be a challenge in terms of attracting students and staff interested in remaining in the community long-term. Geographic isolation also often tends to translate into scarcity of resources and bootstrapping an institution from the bottom-up can often come with very practical challenges in terms of purely daily operations. A number of the

institutions interviewed are not housed in conventional purpose-built campuses, but have to make do with whatever local resources allow:

> *"[O]ne main area is our physical infrastructure, we are operating out of a 1940's naval infrastructure, so we have 13 different buildings [...] and we are not connected to the main water and sewer utility from our town. It doesn't feel like a college, because it wasn't built to be a college...so our location and our facilities, we have out-grown it...it's, some of the areas are dilapidated, we can't work on it, because of the asbestos, so we are very much in need of new facilities"* (Olsen, MM. 2023b).

Q3: Community engagement (cultural, economic, environmental)

While the initial cut-off point for inclusion in the initial survey was 5000 students or fewer, most of the institutions dealt with have a substantially lower number of students. Some as low as 150. This naturally entails limited access to facilities, restrictions on offices and teaching spaces. An interesting commonality of these institutions is their ability to increase the scope of their activities by bleeding into the surrounding community in rather clever ways. For some the community is used as a means to secure vocational internships and off-site practical training. Most seek to establish long-term partnerships with local industries–examples such as mutually beneficial collaborations with farmers, herders and hunters in order to extend teaching capabilities (veterinary sciences, biology and cultural studies) are common.
There was little focus on environmental sustainability during the interviews, but some interviewees offered the occasional local perspective on how it figured into academic pursuits.

> *"[B]ecause of our geographic location, the local environment around the school…it becomes a natural extension, or an obvious tool to use in our classes–drilling for ice-cores, temperature measurements and observations of local plants and animals. It's natural for our researchers, and I think…I think it is also simply expected by our students…that when we can open the door and step outside to have classes there…that, that is something that we do…I guess, somewhat naturally…"* (Olsen, MM. 2023c).

> *"Oh yeah, we do that. We purchased snow-machines and we have had people make sleds, so that our science classes are in the field, they do snow-samples, specific science studies that are related to the specific environment here, so they can utilise the land, we grow a lot of plants–medicinal plants, they are on the field and learning our local history and knowledge"* (Olsen, MM. 2023b).

In many instances, environmental and cultural aspects very much rub up against each other. To a large extent, this is also something that is very much engrained in being Faroese, the environment is culture and it can be hard to separate the two in casual conversation. The subsistence way of life that is the norm within these communities is inextricably linked with nature and the environment. Food is the obvious example:

> *"[W]e had something called [cultural night], so having a cultural night…you cook soup and have traditional foods and you allow for staff who are new here to come be a part of the experience as well as our students, and they were such a hit that we had that responses from our students that they would like to have them once a month, and we can then bring in our cultural experts and utilise our space and opportunity to bring in our elders, so that they create a familiar atmosphere and be rooted in our cultural body…and I think that is something very different than a larger institution of education can offer"* (Olsen, MM. 2023b).

Q4: Definitions of sustainability

In spending roughly an hour with each of the interviewees, a similar pattern of attempting to draw out definitions of sustainability emerged. In most cases, after several attempts to coax interviewees to see that generally their answers were indeed circling types of sustainability…be it environmental, cultural, or economic, direct modes of questioning were often needed. Attempting to get the point across, without asking leading questions required some finagling persuasion. With the interviews completed, this fact had me puzzled. It took a while to understand that this classification of sustainable might be an apt way of conceptualising behaviour post-factum as I will now attempt to do–but that, as it was relayed to me, these actions were likely understood by the interviewee as immediate and pragmatic solutions to very complex problems that would otherwise go underserved. Utilising the local environment and the stakeholders in the surrounding community wasn't meant as a deliberate act of sustainability, but rather as an act of matter-of-fact necessity. This, I feel, is the same reason that the topic of the environment only came up in conversations sparingly–in many ways the culture is the environment and the environment is the culture. The environment is always assumed–not part of a sustainability equation in need of solving. Soil erosion, changes in migratory patterns, warming oceans, disappearing hunting-grounds– these are all lived and assumed complexities of operating a small Arctic institution of higher learning on the periphery.

> *"[...] you can define sustainability however broadly you want to, right? I mean, often we focus on environmental sustainability. And I think that's been some, you know, somewhat of a focus [here] through our different programming. We have environmental studies, natural resources and environmental studies programs that focus a lot on that. But I think also, I mean, sustainability is about economic sustainability. It's about regional sustainability. It's about even the sustainability of the university itself. [We are] a standalone institution [...] and maintaining that independence is very important. In terms of sustainability, things like enrollment and [...] regional programming going back to those things, you know, we need to figure out those issues in order for us to be sustainable. These institutions are providing trained people who…who are often from the north. So they see their futures here and they want to give back to the communities where they live, whether that's indigenous communities or non-Indigenous communities. So, yeah, [...t]hat was one of the founding…, the reason why, [we] were created–to build that kind of capacity in the north"* (Olsen, MM. 2023a).

> *"[We] would see it in a couple of different ways, sustainability I think of as self-sustainability of being a tribal college and of being who we are, we wanna maintain and continue who we are and being able to be a college that provides, we wanna sustain and we wanna be here with our culture. That can mean funding and diversifying our funding [...] I would look at that as operational–then you think of the cultural part, of language preservation, cultural learning and keeping our cultural knowledge and our subsistence way of life, hunting, the land, the language and...I see it in those two different ways...as a college financially and making sure we are in compliance with our accreditation and continue to exist as a college, but then being embedded in our culture and in being tribal"* (Olsen, MM. 2023b).

Q5: How sustainability is used to combat challenges within the community

Taken in aggregate, these interviews revealed an insight that I think is often overlooked, perhaps even by these institutions themselves–as one interviewee noted: *"[W]hat the university does or has done is almost like act as an economic stabiliser, right? Because the university exists no matter*

what the resource economy is doing" (Olsen, MM. 2023a). In regions experiencing booms and busts in the economy, a comparatively large local institution of learning absolutely can have a noticeable balancing effect on the local economy in that it not only offers salaries to the staff, that re-enter the economy–but it can also readily function as an intermediary between the community and its industry. But this stabilising effect does not seem to be limited to economic sustainability, it extends to cultural sustainability for all the interviewed institutions in a number of different ways. Without explicitly stating as much, all of the institutions had cultural sustainability as an inherent operational aim, through focusing on language preservation, history, values and norms. For a number of the institutions, this was made explicit through open-door policies that invite the community into the institution for cultural events and workshops and. For some communities, these institutions provide access to facilities and larger venues able to host local gatherings and thus facilitate interactions between cultural experts, researchers and the community.

> *"Since this is a very small place, and we have modern facilities, a lot of the cultural activities and other community-based activities come through our buildings…and, and we spend a lot of effort on being welcoming and inviting to the surrounding community"* (Olsen, MM. 2023c).

For most of these institutions, operational continuation and financial survival is a key concern. This often intense focus that they have, as quoted above, on self-sustainability and perpetuation seems to be mirrored in the student body. As one source candidly revealed, as they were about to initiate a week-long workshop with students and staff on the Sustainable Development Goals–discussions concerning sustainability can at times complicate matters. While the world is large and its problems legion, focusing on home can often have a surprisingly large impact.

> *"I think that our students, these young people, they really do care and they have a burning desire to make a difference. And, I think that they are going to be the ones to carry the torch, not only because they are young and idealistic, but also–don't get me wrong–it's their future…it doesn't belong to old assholes like me and you. [...B]ut I do think that there might be a challenge in working with the Sustainable Development Goals and them being this very large diffuse, global and complex thing to take on–and then translating it into something local where they as students feel can make a real difference–that bridge, I feel, is all-important"* (Olsen, MM. 2023d).

Especially one of the conversations both crystalised a mismatch between what the idea of sustainability is perceived as, and how it actually fails to engage. A notion that sustainability as a concept that is defined externally, and forced onto a community, is a repeated sentiment in a number of the interviews:

> *"[We] are fed these ideas of sustainability from the media and social media…and I can get this sense of "bah!"...perhaps not fed-up with it, but at least that we as a school need to become part of making it familiar to us…to make sure that it is recognisable"* (Olsen, MM. 2023f).

As we continue this discussion, we veer into the subject of how the Saami people are and have been at the centre of a prolonged debate relating to the construction of windmills in North Norway. While this will not be dealt with here (see rather: Nilssen. 2019), our discussion is rather in relation to the often harsh discourse directed at the Saami and how that might impact Saami youth. We end up circling back to this idea of small Arctic schools and universities catering to indigenous or culturally distinct students functioning as stabilisers–and in this case as cultural stabilisers. Talking about what were to happen if this particular school were to cease operations, we come back around to the meaning of sustainability:

RESPONDENT: *"I mean, being young [Saami] today, there has been research done on this–the harshness of the discourse against Saami. I think this school is extremely important for them to get a sense of security in order to resist such treatment. [...] If you read comments online [i.e. discussing Saami rights and politics] it is extremely offensive, it is really quite serious stuff. So, I think…that it is important that the youth here have a safe and empathetic harbour here"*.

MMO: *"...but, would you not call that sustainability?"*

RESPONDENT: *"[laughs and pauses]...well, it probably is sustainability [laughs]. I never thought of it that way. But, yes, it is. It is…"* (Olsen, MM. 2023f).

Discussion and Conclusion

This article focuses its attention on institutions of higher learning in the Arctic, particularly smaller institutions with fewer than 5000 students. It aims to take on as pragmatic an approach as possible, without veering into the varied political histories contained within the multitude of Arctic communities–focusing on smallness. The main reason for this being the inclusion of the present research in the context of a larger research project, but certainly also that the severity and complexities of these histories would be far beyond the scope of the article.

I am, by far, not the first to point out the complexities of defining the concept of sustainability. Robert O. Vos, writing in 2007 (Vos, RO. 2007:p335) notes that definitions of sustainability number in the hundreds. Nor am I breaking new ground in terms of pointing out complexities in defining sustainability within the context of the Arctic, Gad and Strandsbjerg in their (2018) volume on the politics of sustainability in the Arctic, do so at length. Shorty, N. (2022) expertly deals with this from an indigenous angle and Huhmarniemi and Jokela (2020) do so in terms of culture and arts.

Within Arctic academia, these definitional complexities also seem to be very much present. Very few of the surveyed institutions have published definitions of sustainability (nor are the majority required to do so), making it difficult to zero in on any type of consensus in terms of how sustainability is defined regionally. Similarly, results from the quantitative survey present mixed signals–few institutions outwardly present themselves as sustainable, and tend to agree that sustainability is hard to define and measure, and that systematic implementation of sustainability (for example through the SDGs) would be too costly. However, asked to rate the perceived sustainability of their institutions, respondents nevertheless choose to score themselves fairly highly.

The qualitative portion of the survey to some degree mirrored this lack of definition. None of the respondents interviewed, in clear terms, offered on their own accord that their institution was sustainable. Institutional operations were in the context of economics, culture and environment, overwhelmingly referred to in terms of having a *stabilising effect*, but not as being *sustainable*. Only when pressed that these were often interchangeable, did respondents agree that their institution was, in fact, sustainable. Clear definitions of academic sustainability, however, did not form.

Combined, the two surveys paint a picture of smaller Arctic institutions of higher learning–often operating as hybrid-institutions, that are lacking in resources and removed from urban centres. They tend to service highly localised student bodies, often consisting of cultural minorities and they generally function as facilitators or conduits for economic, cultural and ecological activities within their communities. Crucially, they also often connect these aspects of sustainability with each other as a form of civic glue. The core reason why the concept of sustainability is so elusive and difficult to talk about, is primarily how diffuse and multi-faceted it is as a subject. The interview portion of the survey revealed that the perceived high adherence to sustainability (Figure 9) is not misplaced. In fact, the interviews reveal a far more nuanced perspective on what constitutes sustainability. Not only does it become clear that "*sustainability*" is so ingrained in the ethos of these smaller institutions that it is taken for granted and not necessarily considered sustainability–but, rather, is a by-product of survival

and continuation. The institutions surveyed are not sustainable because they have chosen to implement the Sustainable Development Goals or have produced strategic policies–they are sustainable…economically, culturally and environmentally, because there is simply no other way for them to operate. The discourse on sustainability in academia is sidetracked, or muddled by this duality of terms. In the rest of this article I intend to transpose the findings from these two surveys towards a systematic way of looking at how sustainability for smaller Arctic institutions of higher learning can be defined.

Elsewhere (Olsen, MM. and Rosati, F. forthcoming), based on a systematic literature review of publications from around the world, we point to evidence that there is an emerging movement within academia to restructure institutional operations in such a way as to better work with issues of sustainability. We argue that the current conventional organisational and institutional structures fall short in solving complex issues related to sustainability that require collaboration and varied stakeholder involvement. While drivers behind this change are based in the interests of students, educators and external spheres of interest such as NGOs and industry, we see that barriers to change can overwhelmingly be blamed on inflexible and rigid academic modes of operations. The educators and academic staff referenced in our review all go beyond what is generally considered conventional academic mission statements–teaching, researching and dissemination.

		Paradigms for successful co-creation as listed by Trencher et al. (2014)	**Survey findings: Operational activities of smaller Arctic institutions of higher learning**
Teaching	LIVING LABORATORIES	Engagement of university research and expertise to establish, monitor and evaluate real-life experiments and social inventions. Use of urban environment as open collaboration area	Institutions tend to have small physical spaces or lack conventional campus areas. Operations spill over into the community and the surrounding geographic environment.
	TRANSDISCIPLINARITY	Joint problem solving of real-world problems with multiple actors from society and academia. Practise oriented approach.	Local experts and elders become part of teaching or overall coursework in order to address local issues, often related to cultural aspects.
	SERVICE LEARNING	Application of educational programmes to extra-curricular activities for tackling localised, real-world problems	Due to the size of communities, courses tend to focus on local issues dealing with environmental issues, food production, social issues and the like.
	COOPERATIVE EXTENSION SYSTEM	Dating back to 1914 and the land-grant system, an outreach and technology transfer portal to drive local community and rural development	Institutions become facilitators and act as conduits for interaction between civil society and industry.
Research	PARTICIPATORY AND ACTION RESEARCH	Collaborative problem defining, fusion of researcher and subjects, empowerment of reflective social change	Researchers and educators make use of the community to practise their work, bringing students along into the field and engaging local experts and industry.
Dissemination	REGIONAL DEVELOPMENT	Alignment of university functions with regional economic development goals. University plays active role in regional governance	Institutions are a main actor that engages with local development in a practical sense. Research projects and courses are geared towards local development.
	URBAN REFORM	Targeted economic revitalisation through direction of university financial resources to local community and real-estate development	Low on monetary resources, institutions tend to opt for facilitation and playing an active role in the development of the local community.
	TECHNOLOGY TRANSFER	Commercialisation of research results, societal contribution through economic development	Transferral of research and educational results are mainly cultural or vocational in nature.
4th mission	CO-CREATION FOR SUSTAINABILITY	Internal and external collaborative co-creation on local issues concerned with cultural, economic and environmental sustainability.	Due to their size, lack of resources or geographic placement, institutions are forced to engage with aspects of sustainability through co-creation.

Table 2: Based on Figure 1 "Research & Social Engagement Paradigms in Trencher et al (2014:4). They list the following eight constituent parts as, when combined, making up the 4th mission statement.

To combat academic inertia within the field of sustainability, Trencher et al. (2014) insist that institutions of higher learning embark on an organisational and institutional restructuring towards becoming transformative universities. These would be universities that systematise their approach to the mentioned three academic pillars in such a way that it is possible to go beyond teaching, researching and disseminating–towards an all encompassing ethos of co-creation. They similarly track these emerging trends and find that universities that are especially focused on this idea, are exhibiting eight different paradigms of social engagement (Table 2), all centred around active community and stakeholder collaborative efforts.

These eight paradigms listed by Trencher et al (2014) all centre around activities that engage the local communities served by universities and institutions of higher learning. They focus on real-life solutions that can alleviate and solve societal problems. They are activist and transformative in nature and acknowledge that co-creation is the best way for actors to engage with complex issues. For the institutions that Trencher et al point to in their work, these paradigms are novel and none encompass all eight principles. The Arctic institutions that feature in the qualitative portion of this survey, reveal themselves to come exceptionally close to embracing the full gamut of the listed paradigms–not as an active pursuit of sustainability in terms of the SDGs, but rather as a pragmatic solution to survival.
Just as the economy, the environment and culture often fuse and can be hard to separate from each other for most of the respondent institutions–so we see a similar melding between education, research and dissemination. Whereas the economic, cultural and environmental aspects of sustainability are taken to mean stability…the overlaps between institutional operations in terms of education, research and dissemination produce a similar result through community-based *co-creation*. Interestingly, for these very small institutions, the sustainability components (economy, culture, environment) also very much fuse with institutional missions (teaching, researching, dissemination) due to a need for stability and how it is engaged through co-creation.

References

Blaxekjær, L., Olsen, MM. et al. (2018) *The Sustainable Development Goals and Student Entrepreneurship in the Arctic*. Arctic Yearbook 2018, Akureyri: Northern Research Forum and UArctic Thematic Network on Geopolitics and Security.

Bourdieu, Pierre ([1972] 1977) *Outline of a Theory of Practice*. Cambridge University Press.

Cohen & Manion (2000) *Research methods in education*. Routledge (5th edition).

Deacon, Bryman & Fenton (1998) *Collision or collusion? A discussion and case study of the unplanned triangulation of quantitative and qualitative research methods*. International Journal of Social Research Methodology, 1:1, 47-63.

Denzin, N. (2006) *Sociological Methods: A Sourcebook*. Aldine Transaction (5th edition).

Flyvbjerg (2011) *Case Study*. Chapter 17:301-316 in Norman K. Denzin and Yvonna S. Lincoln (eds), *The Sage Handbook of Qualitative Research*, 4th Edition. Thousand Oaks, CA: Sage, 2011.

Gad and Strandsbjerg (2018) *The Politics of Sustainability in the Arctic: Reconfiguring Identity, Space, and Time*. Routledge.

Græn Skref (nd) *The Green Steps Programme*. See: www.graenskref.is/english.

Heale and Forbes (2013) *Understanding Triangulation in Research*. EBN, Vol. 16:4, pp: 98.

Huhmarniemi and Jokela (2020) *Arctic Arts with Pride: Discourses on Arctic Arts, Culture and Sustainability*. *Sustainability* **2020**, *12*(2), 604.

Lauritsen, S. E., Olsen, MM. et al. (2019) *Educating Arctic Entrepreneurs: The next generation of sustainable pioneers*. Nordregio report on entrepreneurship in the Arctic. Published by the Nordic Council of Ministers.

Meyer, J. and Jepperson, RL. (2021) *Introduction: Cultural Institutionalism* (pp. 3–24), in *Institutional Theory: The Cultural Construction of Organizations, States, and Identities*, Meyer, J. and Jepperson, RL. (eds.), Cambridge: Cambridge University Press.

Nilssen, TR. (2019) *South Saami Cultural Landscape Under Pressure*. Ch. 9 in Hermanstrand, H. et al (2019) *The Indigenous Identity of the South Saami: Historical and Political Perspectives on a Minority within a Minority*. Springer Open; Springer International Publishing.

Olsen, MM. (2021) *An Academic Lead in Developing Sustainable Arctic Communities: Co-Creation, Quintuple Helix, and Open Social Innovation*. Chapter 7 in: Natcher, D. and Jokela, T.: *Renewable Economies in the Arctic*. Routledge.

Olsen, MM. (2020) *University of the Faroe Islands: From Nation-building to Nation-branding*. Økonomi & Samfund 93(4); Special issue on the Faroe Islands, Blaxekjær, LØ (ed). Djøf Forlag: Copenhagen [published in Danish].

Olsen, MM. (2023a) *Interview with a First Nations institution in Western Canada*. Interview conducted March 30th, 2023. Interview conducted in English.

Olsen, MM. (2023b) *Interview with an Iñupiat institution in Northern Alaska*. Interview conducted October 10th, 2022. Interview conducted in English.

Olsen, MM. (2023c) *Interview with an institution in Northern Norway*. Interview conducted November 8th, 2022. Interview conducted in Danish and Norwegian, quotes translated.

Olsen, MM. (2023d) *Interview with an Inuit institution in Greenland*. Interview conducted March 20th, 2023. Interview conducted in Danish, quotes translated.

Olsen, MM. (2023e) *Interview with a rural institution in Iceland*. Interview conducted March 21th, 2023. Interview conducted in English.

Olsen, MM. (2023f) *Interview with a Saami institution in Norway/Sápmi*. Interview conducted April 21th, 2023. Interview conducted in Danish and Norwegian, quotes translated.

Olsen, MM. & Rosati, F. (forthcoming) *Universities as Agents for Entrepreneurship and Innovation for the Sustainable Development Goals: A Systematic Literature Review* [Manuscript submitted for publication].

Shorty, N. (2021) *Sustaining Indigenous Knowledge as Renewable "Resources"*. Chapter 8 in: Natcher, D. and Jokela, T.: *Renewable Economies in the Arctic*. Routledge.

Trencher, G. et al. (2014), *Beyond the third mission: Exploring the emerging university function of co-creation for sustainability*. Science and Public Policy, 41(2): 151–179.

Vos, RO. (2007) *Perspective. Defining Sustainability: A Conceptual Orientation*. Journal of Chemical Technology and Biotechnology, 82:334-339.

UArctic (nd.a) *Members*. University of the Arctic website: www.uarctic.org/member-profiles.

4.3 Universities as Agents for Entrepreneurship and Innovation for the Sustainable Development Goals: A Systematic Literature Review

This article is under peer-review and is currently *unpublished*. See: Olsen, MM. & Rosati, F. (forthcoming) *Universities as Agents for Entrepreneurship and Innovation for the Sustainable Development Goals: A Systematic Literature Review*.

Universities as Agents for Entrepreneurship and Innovation for the Sustainable Development Goals: A systematic literature review

Abstract

This paper is a systematic literature review of academic publications between 2015 and 2020 focusing on entrepreneurship education for the United Nations Sustainable Development Goals (SDGs) in universities around the world. We assert that academia is a vital actor not only in knowledge production and dissemination but also in entrepreneurship and innovation and question what barriers might be hindering progress in academic engagement with matters relating to the SDGs. It is revealed that several systemic barriers resulting from an outdated academic institutional structure that is unable to rapidly respond to complex sustainability challenges are in place. We further analyse the role of entrepreneurship education in academic engagement towards the SDGs. We find, however, that fundamental systematic changes must take place within academia before novel modes of teaching, research and dissemination can take place efficiently to advance universities' contribution to the SDGs. Taken in aggregate, the articles used in this review point to the value of considering a fourth mission statement of sustainable co-creation if higher education institutions are to contribute efficiently as leaders to societal grand challenges such as the ones highlighted by the SDGs.

1.0 Introduction

Since the adoption of the Sustainable Development Goals during the United Nations Summit in September of 2015, there has been a steadily increasing number of academic publications with a focus on the impact of the *2030 Agenda* (United Nations [UN], 2015; Sianes et al., 2022) and its accompanying 17 goals. The declaration was truly a global call for action; urging states, governments, industry, institutions, schools, NGOs, and citizens across the world to take part. Since we are now several years removed from the adoption of the SDGs, we are starting to see an increasing number of articles focused on following up on the degree of implementation within academia. While there is indeed some praise to be found, several critical takes highlight complex systemic barriers to implementation. Leal Filho and colleagues (see: Filho et al., 2019a; 2019b; 2021) point to a broad lack of institutional engagement and integration of the SDGs within academia, as is the case for Serafini et al. (2022) and Akins et al. (2019) who also point to several implementational barriers .

This paper focuses on the increasingly pressing role of institutions of higher learning in mobilising efforts related to sustainability-oriented innovation and entrepreneurship education to advance the sustainable development agenda. The article employs a systematic literature review of 77 articles published through 2015-2020 dealing with sustainability-oriented innovation and entrepreneurship and the pursuit of the SDGs within academia globally. Overall, the articles used are examples of self-reported case studies conducted across the world within (and through) academic institutions and provide novel insights into the often highly complicated machinations that underpin systemic shifts needed to implement sustainability-driven agendas and missions. The study also investigates drivers and barriers for SDG implementation in universities, with a particular focus on the role of innovation and entrepreneurship, and stakeholder engagement strategies.

We contend that institutions of higher education, and universities, should be at the fulcrum of societal activity for promotion of the SDGs and sustainability broadly. As noted by Trott and colleagues: *"Not only are HEIs hubs for innovation, creativity, and collaboration towards addressing the world's most pressing challenges, they are embedded within communities whose diverse histories, geographies, and members offer infinite opportunities for partnership, research, and action towards improving the well-being of people and planet"* (Trott et al., 2018, p. 2; emphasis added). This to a degree offered by few, if any, other types of institutions. Universities (being the focus herein) maintain a simultaneously localised embeddedness and act as regional and global actors that can both draw in and push out new knowledge, best practices and resources. The success and impact of all the Sustainable Development Goals and their sub-goals are predicated on solutions that are inclusive and collectivist in nature, requirements that could be fulfilled by universities. As the success of the SDGs is broadly contingent on novel innovation and to a large degree novel forms of entrepreneurial resolve, universities can be the perfect incubators for addressing concerns and solutions as they relate to sustainability. On a global scale, contributing to the SDGs could generate USD12 trillion in new business value a year, and generate 380 million new jobs (Business and Sustainable Development Commission, 2017), jobs that require training and scientific expertise. We therefore argue that academia should be considered a main architect and catalyst for viable change.
Assuming revelations of best practices, organisational insights, and success stories from around the world that would benefit academia, business and policy makers going forward, we realised the restrictive implications of the conventional academic structure. Particularly, we found that most of the examples of sustainability implementation presented in the articles used broke the mould of what can be argued to be conventional academia and did not adhere to standardised university mission statements. In fact, the articles mirror Trencher et al. (2014) and *their* call for a university mission statement that goes beyond the three-pronged *teach, research, disseminate* structure. They call for an updated perspective of modern academic involvement, calling for the addition of a fourth mission

statement of *co-creation for sustainability* to combat pressing issues. We conclude that rather than organising a concerted effort to maximise education related to innovation and entrepreneurship within academia to speed up adoption of sustainability and the sustainable development goals, a grander restructuring of the role of universities will need to take place before actual implementation can take hold. It follows a number of similar and current calls for restructuring of academia, especially where it intersects with sustainability (see for example: Liu et al., 2019; Belmonte-Ureña et al., 2021).

The paper is structured as follows: Section 2 outlines the methodological approach taken; Section 3 provides an interpretation of the findings; Section 4 gives a short overview of university mission statements and summarises the findings; Section 5 concludes with the implications inherent in the findings and how they relate to an emerging fourth academic mission statement. A list of all the articles included in the systematic review can be found appended in Appendix 1.

2.0 Methods

This review is a qualitative systematic literature review adhering to the PRISMA Statement in order to maximise transparency, reproducibility, and validity. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement is a guideline developed to improve the reporting of systematic reviews and meta-analyses. The PRISMA statement consists of a checklist of 27 items that authors should include in their reporting of a systematic review or meta-analysis, as well as a flow diagram to illustrate the process of study selection. The checklist covers items such as the research question, search strategy, study selection criteria, data extraction methods, and statistical analyses. By adhering to the PRISMA statement, authors can ensure that their systematic reviews and meta-analyses are transparent, reproducible, and of high quality (PRISMA, 2020). Structurally and thematically, the method adopted in this systematic review study builds upon the work of Okoli & Schabram (2010) and Adams et al (2016). Okoli and Schabram in particular, in their eight-step guide to conduct a systematic literature review (2010:7), provide an invaluable resource for conducting a highly structured review and their advice is used throughout as an initial template for the review. Similarly, Adams et al (2016) provide notable levels of insight in working with sustainability-oriented innovation (SOI) that has also been adhered to throughout.

2.1 Research Question

Taking inspiration from García-Feijoo et al (2020:4), the research question was established using the National Institute for Health and Clinical Excellence's PICO framework (Schardt et al. 2007). The PICO framework is a mnemonic device commonly used in the field of medicine and care that provides practitioners with an effective access to a diagnostic framework using simple logic. In terms of diagnosis and medical solution to an ailment in human subjects, the PICO framework asks, who the patient is, what can be done to intervene, what other solutions might be possible and, finally, expected outcomes. PICO is P (patient/problem), I (intervention), C (control) and O (outcome). In this article we are interested in exploring novel examples of initiatives and actions taken on by academia to further sustainable development through innovation and entrepreneurship. The research question took the form of a tiered sequence of interlocking queries as such:

(P) Assuming that academia is a vital stakeholder in the production of cutting-edge knowledge, dissemination of insights and engagement with governance, what are the **barriers** to greater university involvement in issues relating to the SDGs and sustainability at large?

(I) Through a systematic literature review, can we identify **drivers** of university involvement in entrepreneurship and innovation for the SDGs?

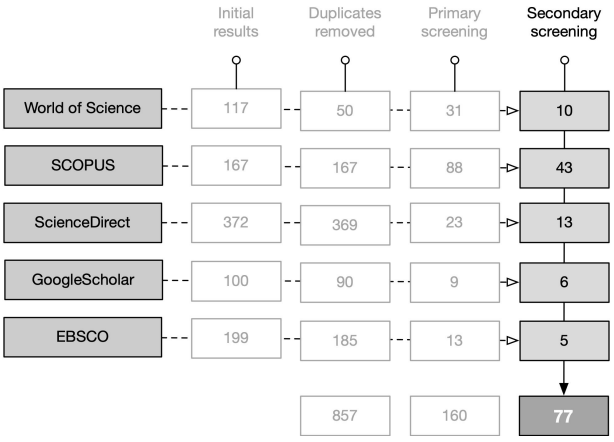
(C) Does a systematic literature review point to any additional solutions or even **negate** the assumption that entrepreneurship and innovation within academia are an overlooked solution to achieve the SDGs?

(O) It is assumed that a close inspection of the existing literature on entrepreneurship and innovation for the SDGs will reveal that these disciplines should be a core focus for academic institutions wishing to proactively contribute to the sustainable development agenda.

Tied to this is an assumptive expectation that successful and unsuccessful implementation models and strategies will reveal themselves in the process.

2.2 Search Strategy

Conducting the review, articles published in international scientific journals, since the establishment of the Sustainable Development Goals in 2015 up to 2020 were considered to be of interest. Book chapters and conference papers were also assumed to bring value to the analysis, however volume and quality were, during the review process, deemed not to be significant. In order to stay consistent across the different academic databases, a uniform string structure consisting of three sets of variables: (SDGs) + (innovation/entrepreneurship) + (Higher Education), was developed. From this initial string, search strings were tailored with the syntax used by the following academic databases: Web of Science, SCOPUS, ScienceDirect, Google Scholar and EBSCO (see Table 1). For each of these five searches, we searched titles, abstracts and keywords. Searches were limited to the period between 2015-2020 and only English language results were requested. While this limited timeframe is arguably restrictive, we take our cue from Mio, C. et al (2020:4) who also argue for the same time frame in order to enhance consistency. Due to the large amount of results from the combined EBSCO databases, it was decided to only include results from EBSCO's Business Source Premier database in the results. Results from Google Scholar were extracted using the application Publish or Perish[19] that allows for a set number of returned results. In this case, the top 100 results, sorted by relevance, were deemed acceptable. Where possible, results were exported as .csv or .xls. For results exported in .bib format, the application JabRef[20] was used in order to convert the results into .csv.



[19] Which can be found on Prof. Anne-Wil Harzing's website: harzing.com/resources/publish-or-perish.

[20] Available at jabref.org

Table 1. Database search strings.

Database	Search Terms					Fields
	Outcomes (O)		Intervention (I)		Population (P)	
Web of Science	(sustainable development goals) *OR* sdg *OR* (global goals)	*AND*	innovation *OR* entrepreneurship	*AND*	university *OR* (higher *AND* education)	Title, Abs, Keywords
SCOPUS						Title, Abs, Keywords
ScienceDirect						Title, Abs, Keywords
GoogleScholar						Title, Abs, Keywords
EBSCO						Title, Abs, Keywords
Web of Science search string	TS=((sdg* or ("sustainable development goal") or ("sustainable development goals") or "global goal" or "global goals") and (entrepreneur* or innovati*) and ("higher education" or college or universit*)) and PY=(2020 or 2019 or 2018 or 2017 or 2016 or 2015)				n=117	November 2nd, 2020
SCOPUS search string	(TITLE-ABS-KEY ("Sustainable development goal*") OR TITLE-ABS-KEY (sdg*) OR TITLE-ABS-KEY ("Global Goal*")) AND (TITLE-ABS-KEY (innovati*) OR TITLE-ABS-KEY (entrepreneurs*)) AND (TITLE-ABS-KEY (universit*) OR TITLE-ABS-KEY (higher AND education))				n=167	November 12th, 2020
ScienceDirect search string	("Sustainable development goal" OR "SDG" OR "Global Goal") AND (innovation or entrepreneurship) AND (university OR "higher education")				n=372	November 12th, 2020
GoogleScholar search string	("Sustainable development goal" OR "SDG" OR "Global Goal") AND (innovation OR entrepreneurship) AND (university OR "higher education")				n=100	November 10th, 2020
EBSCO[1] search string	("Sustainable development goal*" OR "SDG*" OR "Global Goal*") AND (innovati* OR entrepreneur*) AND (universit* OR "higher education")				n=199	December 8th, 2020

[1]Limited to the database *Business Source Premier* Searches including "*" denote wildcard operators.

Querying these five academic databases resulted in a combined number of n=955 initial articles. Following this a duplicate search was conducted, lowering the initial set to n=857 unique articles. The resulting data was consolidated for an initial primary screening.

2.3 Inclusion and Exclusion

The remaining n=857 entries were added to a selection matrix. Separately, the authors conducted a primary screening where all articles were rated either 1 (*include*), 0.5 (*discuss*) or 0 (*exclude*) based on title, abstract and keywords. The following three core guiding review questions produced *a priori* were used as a guide for this process:

1) Is the article centred around an institution of higher learning in some capacity? Either focusing on students, staff, curricula, organisational structure, campus, surrounding community or similar.

2) Is the focus of the article on mission statement activities (i.e. teaching, researching, disseminating) that can be categorised as innovative or entrepreneurial?
3) Do the Sustainable Development Goals (SDGs) figure as a central operating focal point? Either as a means to further innovation, entrepreneurship or academia – or vice versa; innovation and entrepreneurship as a means to further the SDGs.

Articles scoring a 1 (*include*), were transferred to a new set and meetings were held discussing the merits of articles scoring 0.5 (*discuss*) from both reviewers. Articles that were deemed to be thematically in line with our points of inquiry were included in the final set. This screening resulted in a final n=77 articles deemed to be within the parameters of the research question, the protocol, and the overall theme of the review.

2.4 Quality Appraisal

Prior to commencing with the data extraction, the final set of articles was subjected to a ranking based on the impact factor of the journals they were published in, and whether these journals appeared in ABS (*Chartered Association of Business Schools*) or ABDC (*Australian Business Deans Council's Journal Quality List*). While this ranking had no impact on the review itself, it did reveal that several of the journals featured in this review skew towards smaller and perhaps lesser, *niche publications*–and there is indeed an argument to be made for relevance and representation to be made. More than half of the included publications are drawn from reputable sources with comparatively high impact factors. Peppered in amongst these are several highly specialised or localised publications that serve research communities that might be out of the mainstream. An interesting aspect of this casting of a wide academic net, is the inclusion of publications from an extensive array of disciplines; *economy*, *engineering*, *education*, *psychology*, sociology, *management*, *administration*, *health*, *environment and ecology*, *political policy and governance*, *food,* and liberal arts such as *theatre*. This broad representation of disciplines underlines the current focus and interest in sustainability generally, but also how different disciplines are shifting towards similar solutions to issues of sustainability, i.e., novel forms of engagement and the employment of entrepreneurship and entrepreneurial tactics.

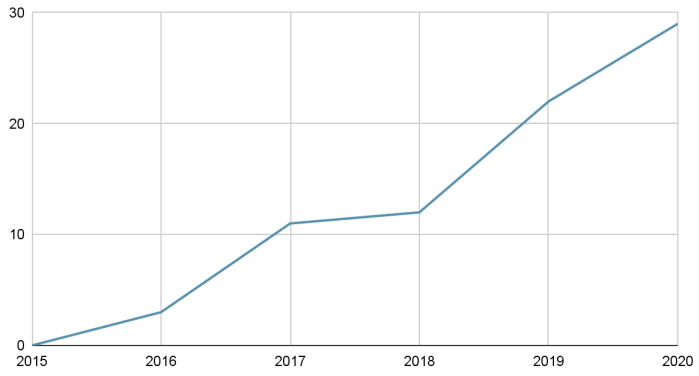
2.5 Data Extraction

Extraction was conducted by feeding the final n=77 articles into a review matrix. As reading progressed, the review matrix was populated by data garnered from the articles. Upon completion of the readings and production of a finalised matrix, variables deemed relevant for further analysis were singled out for further processing and analysis, allowing for simpler production of tables and charts for sensemaking.

3.0 Results

This review set out to investigate how universities around the world have dealt with implementation of the United Nations Sustainable Development Goals using entrepreneurship and innovation to gain traction and engagement. The review concerns itself with a five-year period, from the passing of the United Nations General Assembly announcing the Agenda 2030

Figure 2: Publications by year, from 2015-2020



Resolution in 2015 until 2020. Implementation of sustainability in its many forms within academia of course predates the SDGs, as do initiatives related to entrepreneurship and innovation for sustainability. The core focus here, however, is the added factor of a single coherent globally agreed upon standard for future sustainable development. While there are, understandably, no academic publications (based on our dataset) from 2015 that feature an analysis of the SDGs, there seems to be an almost immediate interest in the subject. The earliest publications are mostly shorter, exploratory works that give way to an increasing number of publications with greater depth and expressions of utility in the latter half of the period.

Figure 3: Empirical methodologies employed

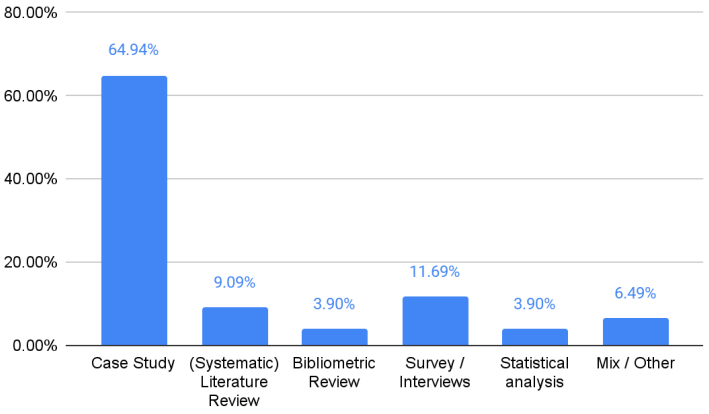
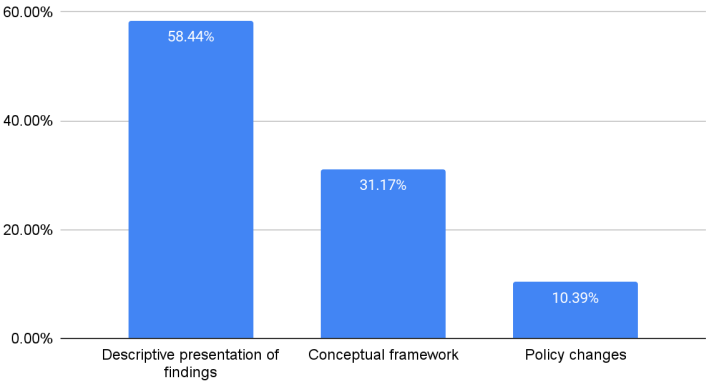


Figure 4: Main conceptual methodological focus

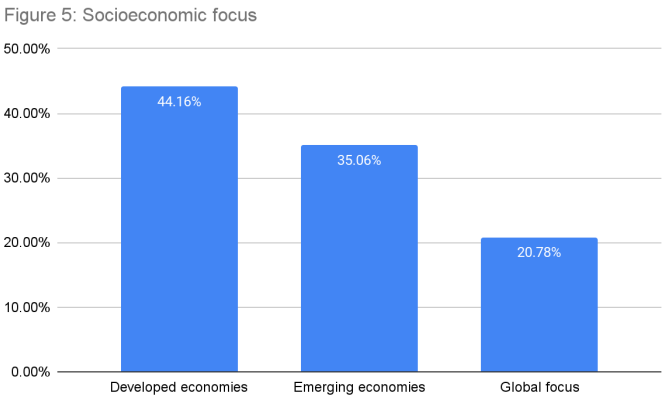


Sorting the reviewed literature according to empirical methodology, the literature skews heavily towards case studies (64.9%) as a means of conveyance. The remainder of the literature consists of literature reviews (9.1%), bibliometric reviews (3.9%), surveys and interviews (11.7%), statistical analyses (3.9%) and other types of mixed methods or reporting (6.5%). While 64.9% of the literature makes use of case studies, the majority of the remainder of the literature (reviews, surveys, interviews, and statistical analyses) also describe cases to a different extent and use different types of empirical data to convey findings to illustrate a specific case. The combined amount of the literature classifiable as a *case study* is then roughly 93%.

With such a high number of case studies, in the immediate period following the passing of the Agenda 2030 resolution in 2015, it follows that the literature takes on a descriptive nature when seen in aggregate. Of the 77 articles employed, 58.4% can be classified as being descriptive presentations of activities related to attempts to introduce the SDGs in academia through novel forms of entrepreneurship and innovation tactics. 31.2% of the articles set out to produce some form of guiding conceptual framework based on the experiences relayed, and 10.4% of the articles have concrete policy changes as a core aim. The fact that only around 10% of the published articles deal with prescriptive efforts to establish policy changes, and the remaining 90% of the articles lean heavily towards introspective sensemaking of how these different concepts (academia, innovation and entrepreneurship) interact in relation to each other, is likely due to the novelty of the SDGs. Given another 5 years, we will likely see a shift from predominantly descriptive publications to a majority of prescriptive works.

The overall geographic socioeconomic focus of the literature used is distributed equally. While there are slightly more articles dealing with how innovation and entrepreneurship can further the SDGs in

developed countries (44.2%), articles dealing with these same issues within developing countries are not far behind (35.1%). The remainder of the articles (20.8%) take on a global perspective.



This primary synthesis of some of the fundamental variables chosen for this review give an initial outline of the type of literature found within. We are focusing on the very first batch of published articles that attempt to make sense of how the SDGs can be used as a framework for implementing sustainability in academia using innovation and entrepreneurship. The overwhelming majority of these articles take the form of descriptive case studies–either through conventional case study methodologies, or other methodologies to illustrate challenges, drivers, or barriers. In this early stage of sensemaking, as the SDGs are still a novel variable, it is natural that the literature predominantly takes on a descriptive nature and yet within only a few years takes on a more prescriptive focus, utilising conceptual frameworks and adaptive governance through suggested policy changes.

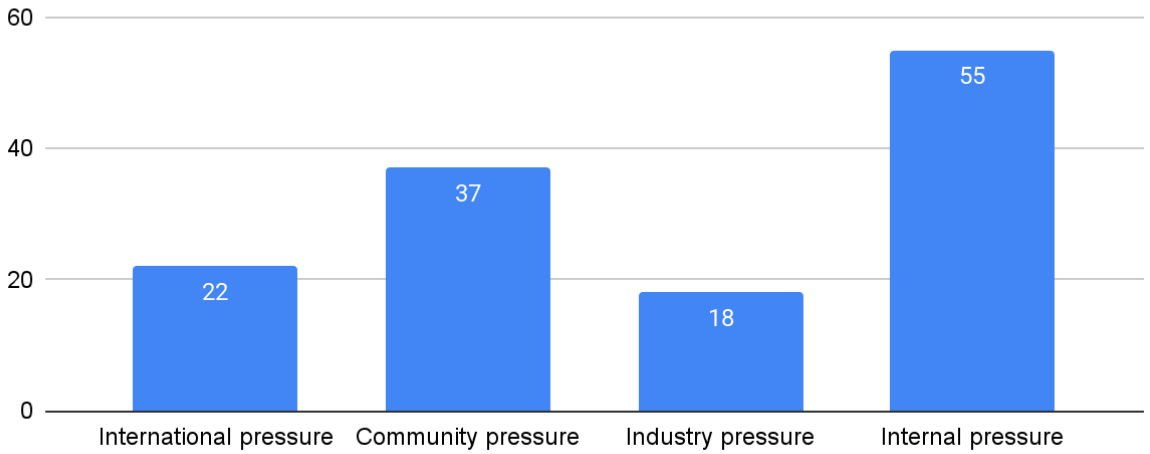
3.1 Drivers

Adoption of the SDGs as guiding principles for sustainability within academia is propelled from different sides. The articles reviewed concern themselves with the intersection of entrepreneurship, innovation and the SDGs, and take on somewhat different approaches to articles concerned with SDG implementation broadly. Similarly, they also deal with drivers and barriers particular to that endeavour. It should be noted that several of them mention more than one driver; pointing to pressure coming from all sides at once, or the state of a community necessitating action to such a degree that it acts as a propellant (e.g., conflicts, poverty). In the figure below (Figure 6), articles can therefore appear more than once. The articles are sorted by their explicit mentioning of certain drivers–however, some of them do not explicitly mention barriers and have been sorted based on context, theme, or implicit details.

As we concern ourselves with the SDGs, a certain level of **international pressure** is to be expected, and it was also detected as a major driver in our sample (e. g., Beynaghi et al., 2015; Buralli et al., 2018; Wade, 2020). One of the earlier drivers to attempt to systematically incorporate sustainability within academia was the United Nations' DESD (*Decade of Education for Sustainable Development*) overseen by UNESCO from 2005-2014 (see: UNESCO, nd; Tilbury, 2009). To an extent, the efforts and best practices from that initiative ran parallel to the *Millennium Development Goals* (the precursor to the Sustainable Development Goals, see: United Nations, 2000) both carried forward into what became key formulations of the Agenda 2030 resolution and the Sustainable Development Goals. This continuation of the efforts, especially the United Nations DESD, was requested by UN member states and figures as a key element of UN resolution 66/288* (UN, 2012), commonly referred to as "*The Future We Want*" (see Beynaghi et al. 2015). A further such driver has been the UN's PRME (*Principles for Responsible Management Education*) initiative begun in 2007. Similar initiatives such as the UN's UNleash programme are mentioned (here, see also examples such as Buralli et al., 2018) as is the similar AIM2Flourish initiative. G7 Ministerial meetings, global poverty levels, regional corruption and an influx of migration from conflict zones are all examples given of international pressures that play an important part in spreading insights and interest in the SDGs and sustainable development.

At the same time, there is also a fair amount of **community pressure** pushing adoption. At the one end of this spectrum, we see adoption to combat maladies resulting from war and violent conflicts, poverty and lack of resources, refugees, poor literacy levels, issues with sanitation and diseases, gender equality and marginalization (e. g ., Haraké el al., 2020; Kuo et al., 2020). On the other end of the spectrum, we see pressure to adapt, mostly from economically developed regions, to interests from religious NGO's, lack of access to education due to geographic distances, smart cities, sustainable food production and local NGO engagement (e. g ., Warner et al., 2016; Killian et al., 2019; Malheiro et al., 2019).

Figure 6: Drivers



While likely more in vogue in recent years, there is some **industry pressure** to adapt to changing realities of consumer demand and enterprise pivoting relative to sustainability. A main drive here is the shift away from industrial production towards knowledge economies that has brought on novels form of industry that often differ from conventional forms of heavy production-based enterprises–commonly referred to as *Industry 4.0*. This type of modern industrial direction puts forward in ever increasing demand for highly complex problem-solving and post-graduates that can juggle increasingly complex production methods with requirements for sustainability. To ensure competitiveness, industry is currently actively on the hunt for post-graduates that possess not only technical skills, but increasingly also are nimble, adaptable, and trained in soft skills (incorporating collaboration, political insights, a keen eye for emerging trends and so on) For more on this, see especially Lasi, H. et al., (2014) and Awan, Sroufe & Shahbaz (2021).

Of the articles reviewed here, a majority point to **internal pressure** to adopt not only the SDGs but also innovation and entrepreneurship to solve problems and adapt to the many challenges facing the world (e.g., Brugmann et al., 2019; Sanabria et al., 2020). There is, of course, an inherent bias in this distribution as these are all articles written from an academic perspective by researchers and educators. It is only natural that many publications focus on a situational reality that feeds back into the other types of pressure mentioned. These pressures take different forms and are applied from several directions. While some are purely practical and utilitarian, such as developing accessible academic databases listing all courses and offerings focusing on sustainability, increasing distance-learning and online offers and equalising gender-ratios–others are starting to shift away from the conventional three-mission setup that is mentioned above; establishing living-labs and maker-spaces focusing on transdisciplinary efforts relying on innovation and student entrepreneurship that are part didactic and part student-driven or setting up forever-projects in the form of Vertically-Integrated-Projects (VIPs) that are passed on from one group of students to the next as the years pass. Some breach the third mission intentionally, requiring students to employ innovation and entrepreneurship to engage with local communities, industry or charitable

organisations. A final theme of the literature is pressure based in institutional or organisational failure, pointed out by educators and researchers, to see valuable impact from current RME (Responsible Management Education) and ESD (Education for Sustainable Development). These generally lament the inaction from universities in going beyond traditional teaching methods (see especially Sierra, 2020) and veer into territory between drivers and barriers.

Table 3. Drivers.

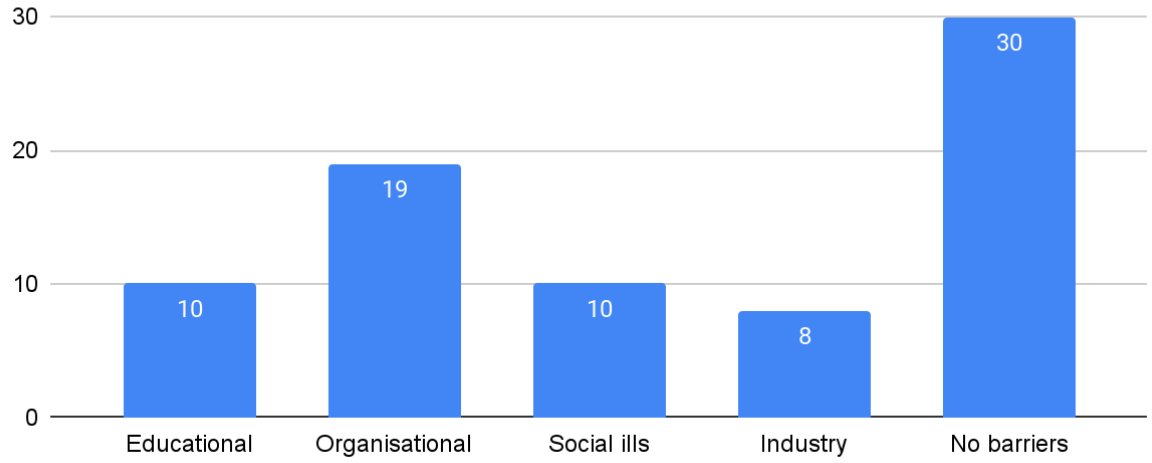
DRIVERS	ELEMENTS	REFERENCED IN
International	UN DESD, UN PRME, UNleash, AIM2Flourish, G7 and similar.	Beynaghi, Ali & Trencher, G. et al. 2015; Greenberg, D. N. et al. 2017; Kolb, M., Fröhlich, L., & Schmidpeter, R. 2017; Filho, N. 2017; Buralli, R., Canelas, T. et al. 2018; Baskin, R., & Sommer, C. 2017; Paletta, A., Fava, F. et al. 2019
	Global poverty levels, corruption, migration from conflict zones	Rosenbloom, A., Gudić, M., Parkes, C. & Kronbachd, B. 2017; Vorontsova, A., Vasylieva, T., Bilan, Y., Ostasz, G., & Mayboroda, T. 2020; Wade, R. 2020.
Community	War, conflict, poverty, refugees	Haraké, M-F., Saliba, L., Audeh Ibrahim, M. & Moussa, N. 2020; Mugisha, F. 2017; Rosenbloom, A., Gudić, M., Parkes, C. & Kronbachd, B. 2017; Wade, R. 2020.
	Poor literacy, sanitation, diseases, gender and marginalisation	Domenech, MA., Bello, J. & Pittendrigh, B. 2018; Kasulo, V., Holm, R., Tembo, M., Singini, W. & Mchenga, J. 2020; Commer, P., Sci, S., Ul, M., Naz, A. & Hassan, M. 2020; Kuo, W-Y., Kim, S-H. & Lachapelle, P. 2020.
	NGO engagement	Warner, K., Lieberman, A. & Roussos, P. 2016; Killian, S., Lannon, J. et al 2019.
	Issues from geographic distances and city planning	Castro, MP. & Zermeño, MG. 2020; Malheiro, B., Silva, M. F., Ferreira, P. D., & Guedes, P. B. 2019.
	Sustainable food production and cultural shifts	Serhan-Murray, H. & Yannou-Le Bris, G. 2020; Kuo, W-Y., Kim, S-H. & Lachapelle, P. (2020); Fomunyam, K. (2020).
Industry	Knowledge economies and Industry 4.0	Burbridge, M. 2017; Muñoz La Rivera, F., Hermosilla, P., Delgadillo, J. & Echeverría, D. 2020; Abad-Segura, E., González-Zamar, M-D., Infante-Moro, JC. & Ruipérez García, G. 2020
	Demand for highly complex problem-solving skills to ensure competitiveness	Annan-Diab, F. & Molinari, C. 2017; Knudsen, M. & Frederiksen, M. & Goduscheit, R. 2019; Diez, M., Corral, J., Zubizarreta, A. & Pinto, C. 2020.
Internal	Practical and utilitarian, distance learning, gender ratios	Brugmann, R., Côté, N., Postma, N., Shaw, EA., Pal, D. & Robinson, JB. 2019; Castro, MP. & Zermeño, MG. 2020; Rodríguez-Abitia, G., Pérez, S., Ramírez-Montoya, M-S. & Lopez-Caudana, E. 2020; Commer, P. & Sci, S., Ul, M., Naz, A & Hassan, M. 2020; Aluko, Y. & Okuwa, O. 2018.
	Living-labs, maker-spaces and Vertically Integrated Projects (VIPs)	Sroufe, R. 2020; Sanabria-Z, J. & Davidson, A., Romero, M. & Quintana, T. 2020; Purcell, W., Henriksen, H. & Spengler, J. 2019; Burbridge, M. 2017; Strachan, S., Marshall, S., Murray, P., Coyle, E. & Sonnenberg-Klein, J. 2019.
	Engagement with local communities, industry and charitable organisations to solve pressing issues	Perales Franco, C. & McCowan, T. 2021; Orozco-Messana, J., De la Poza, E. & Calabuig Moreno, R. 2020; Kuo, W-Y., Kim, S-H., Lachapelle, P. 2020; Trott, C., Weinberg, A. & McMeeking, LS. 2018; Ortiz, D. & Huber-Heim, K. 2017; Killian, S., Lannon, J. et al 2019; Venkiteswaran, V. & Cohen, M. 2018; Meza, M., Herremans, I., Wallace, J. et al 2018.
	Organisational failure	Kopnina, H. 2018; Cicmil, S., Gough, G. & Hills, S. 2017; Sierra, J. 2020

3.2 Barriers

For our purposes, vis-à-vis a fourth mission-statement as mentioned above, barriers experienced by academic researchers and educators paint a picture of concerning and pressing issues of sustainability in need of solutions–contrasted with academic institutions and operationalization that is not qualified to take on the wicked-problem nature of consequences brought on by climate change, pollution, depletion, and conflict. Of the articles featured in this review, roughly 30 do not point to any concrete barriers for implementation of the SDGs, innovation, or entrepreneurship. While they point to

drivers or other variables used in the review they do not deal with barriers in any actionable sense and have been excluded from this section. Ávila et al., (2017) give a thorough examination of barriers to innovation and sustainability from a global perspective and are highly recommended. The remainder of the literature adheres to four different, yet at times interconnected, types of barriers; *Educational* (especially with outdated pedagogy), *Organisational* (dealing with silos and structural rigidity), *Social ills* (and wicked problems that restrain institutions) and barriers related to *Industry* (and its relation to academia).

Figure 7: Barriers



Of the more scathing subsection of articles used herein, those dealing with educational barriers (e. g., Sierra, 2020; Trott et al., 2018), provide highly relevant insights into the problems associated with introducing sustainability-oriented innovation and social entrepreneurship education into the existing conventional pedagogic format used in academia around the world. These articles span geographies, economic development, and institutional size. Not only do the researchers and educators lament outdated and conservative modes of pedagogy that rely on terse didactic teaching methods and lecture-based activities that alone cannot produce students capable of effectively solving social issues of sustainability, they also point to an educational teaching environment paradigm that is rigid and inflexible and is broadly in conflict with the necessary teaching outcomes required to produce future agents of change able to tackle immediate and highly complex problems related to sustainability.

While the educational barriers on their own hamper adoption of sustainability education, they are tightly woven into the organisational and institutional fabric of academia. While academic institutions are built to accommodate experimentation, curiosity, and the questioning of paradigms, they nevertheless pose inherent organisational barriers that stifle adoption of interdisciplinary modes of operation that rely heavily on external stakeholder engagement and both nudge and blur our understanding of the roles of students, educators, and researchers–and the definitions of these concepts at a fundamental level (e. g., Clifford & Zaman. 2016; Sroufe, 2020; Orozco-Messana et al., 2020). The one immediate flaw that is pointed to is how academic institutions are generally found to be compartmentalised into silos which do not communicate well, there is a lack of integration between disciplines and departments that often rely on their own traditions, paradigms, and institutional biases. An institution that is divided into silos can also become rigid and inflexible to the extent that communications between faculties and leadership can lead to disagreements and disconnect–making it hard to implement institution-wide policies. This failure of introducing a very broad concept such as sustainability as a matter of policy across the many aspects contained within academic institutions; teaching, research, dissemination, operations and so on sees sustainability set aside and treated as a curiosity which struggles to become adapted into policies and curricula. Due to

this difficulty of internalising and operationalizing sustainability from the top and down through the system, efforts to introduce sustainability, in our case through innovation and entrepreneurship, are fraught with lack of planning, focus, applicability and continuity.

Beyond the internal machinations of academic institutions, there is also a fair amount of focus on social ills that act as barriers to adoption of the SDGs and novel forms of introducing them into an academic setting. Predominantly these are seen in developing economies and in areas of conflict and tend only to exacerbate the institutional barriers mentioned earlier. These social ills take the form of post-conflict settings or integration of displaced persons fleeing conflict, lack of resources, training, infrastructure or corruption and lack of opportunities and access due to overtly culturally patriarchal divisions or indigenous affiliation. These articles in many cases deal with problems that fundamentally challenge academic pursuits at a fundamental level, but they simultaneously illustrate cases in certain regions and circumstances where sustainability and social development are sorely needed to better communities in many parts of the world.

Table 4. Barriers.

BARRIERS	ELEMENTS	REFERENCED IN
Educational	Outdated modes of pedagogy and reliance on didactic methodology	Sierra, J. (2020); Mann, L., Chang, R. et al (2021); Muñoz La Rivera, F., Hermosilla, P., Delgadillo, J. & Echeverría, D. (2020); Malheiro, B., Silva, M. F., Ferreira, P. D., & Guedes, P. B. (2019); Diez, M., Corral, J., Zubizarreta, A. & Pinto, C. (2020); Abad-Segura, E., González-Zamar, M-D., Infante-Moro, JC., & Ruipérez García, G. (2020); Trott, C., Weinberg, A. & McMeeking, LS. (2018); Hermann, R.R., & Bossle, M.B. (2020); Cahill, A. & Warwick, P. (2019); Castro, MP. & Zermeño, MG. (2020).
Organisational	Compartmentalisation, Silos, lack of integration.	Clifford, KL., Zaman, MH. (2016); Matzembacher, DE., Raudsaar, M., de Barcellos, MD. & Mets, T. (2019); Sroufe, R. (2020); Orozco-Messana, J., De la Poza, E. & Calabuig Moreno, R. (2020); Cottafava, D., Cavaglià, G. & Corazza, L. (2019); Lim, M., Jørgensen, P. & Wyborn, C. (2018)
	Inflexibility, leadership-faculty disconnect and lack of frameworks.	Strachan, S., Marshall, S., Murray, P., Coyle, E. & Sonnenberg-Klein, J. (2019); Tejedor, G., Segalas, J. et al (2019); Venkiteswaran, V. & Cohen, M. (2018);
	Sustainability is ignored and not translated into policy, curriculums etc.	Franco, I., Saito, O., Vaughter, P. et al (2019); Fleacă, E., Fleacă B., & Maiduc, S. (2018); Purcell, W., Henriksen, H. & Spengler, J. (2019); Annan-Diab, F. & Molinari, C. (2017); Fomunyam, K. (2020); Ramboarisata, L. & Gendron, C.. (2019).
	Lack of planning, focus, applicability, continuity.	Ávila, L., Filho, W. et al (2017); Chankseliani, M., Qoraboyev, I., & Gimranova, D. (2021); Cicmil, S., Gough, G. & Hills, S. (2017); Greenberg, D. N. et al (2017)
Social Ills	post-conflict settings, displaced persons	Rashid, L. (2019); Haraké, M-F., Saliba, L., Ibrahim, MA. & Moussa, N. (2020); Wade, R. (2020).
	lack of resources, training, infrastructure or corruption	Kasulo, V., Holm, R., Tembo, M., Singini, W. & Mchenga, J. (2020); Fayomi, O.S.I, Okokpujie, I., Fayom, G.U. & Okolie, S. (2019); Serhan-Murray, H. & Yannou-Le Bris, G. (2020); Mawonde, A. & Togo, M. (2019).
	patriarchal divisions or indigenous affiliation	Aluko, Y. & Okuwa, O. (2018); Commer, P., Sci, S., Ul, M., Naz, A. & Hassan, M. (2020); Perales Franco, C. & McCowan, T. (2021).
Industry	Outdated views on economic development	Kopnina, H. (2018); Shu, Y., Ho, S-J., & Huang, T-C. (2020)
	Failed collaborations, disjointed theory and practice, failure to launch and scale ventures	Francis, JNP., Henriksson, K. & Alonso, JS. (2021); Burbridge, M. 2017; Fischer, B., Guerrero, M., Guimón, J. and Schaeffer, P.R. (2021).
	Academic reluctance to adopt novel tactics due to lacking results, lack of funding to solve this	Rosenbloom, A., Gudić, M., Parkes, C. & Kronbachd, B. 2017; Storey, M., Killian, S., & O'Regan, P. (2017); Vorontsova, A., Vasylieva, T., Bilan, Y., Ostasz, G., & Mayboroda, T. (2020).

A final theme of the literature when it comes to barriers, is the interaction between industry and academia (e. g., Kopnina, 2018; Burbridge, 2017; Rosenbloom et al., 2017). One of the more daunting conflicts between industry and academia, especially as it relates to the intersection between innovation, entrepreneurship and sustainability, is not only are conventional neoliberalist understandings of economic development infused into the Sustainable Development Goals from their inception, but the underlying power-structures that govern industry and the development ecosystem are far from always susceptible to collaborative efforts that attempt to bridge theory and practice resulting in failed attempts to launch and scale projects. On the academic side, this muddled approach leads to reluctance and indecisiveness in terms of best practices and clear goals, which is further complicated by a lack of state-sponsored support and funding required to cement the importance of adherence to the SDGs as a framework and alleviate a lack of successful collaboration.

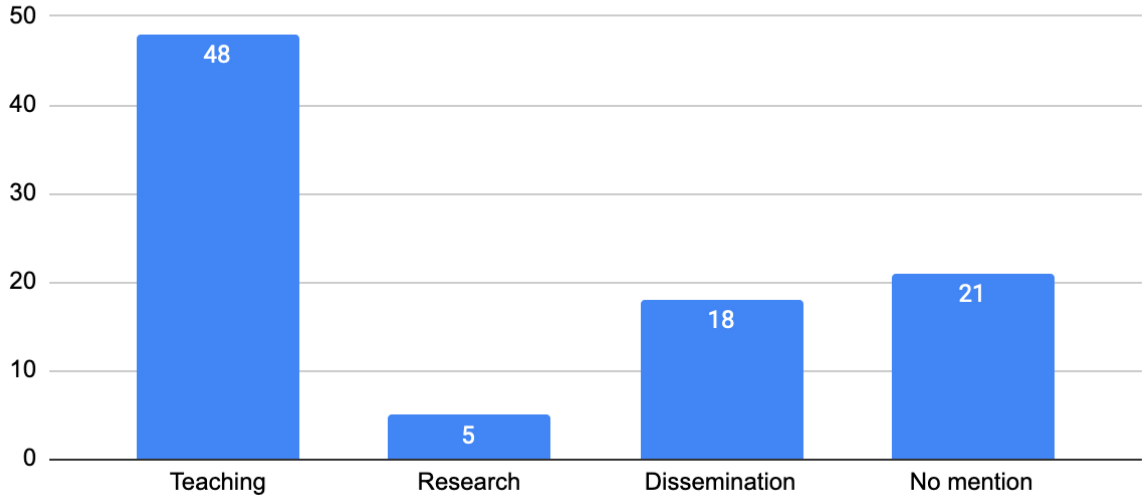
3.3 University Missions

In general terms, universities as institutions are built on three different foundational pillars that operate both in relation to each other, and simultaneously in conjunction with each other; *teaching*, *research,* and *dissemination*. These pillars are the basis for generally all university charters and strategies across the world. *Ideally*, these three pillars carry their weight equally–and operate iteratively, staff are allowed to teach incoming student bodies novel information based on sound research, they are given time and resources to continually further their research and in turn can participate in external forums to convey their findings to their communities, industries, and colleagues. Sound research that benefits society is iterated upon and eventually feeds into the loop of teaching new students best practices and ideas, is subjected to further academic scrutiny and so on.

Based on previous work on publications exploring the impact of university mission statements on operations relating to sustainability (see Olsen, 2021), a variable focusing on which level of operation; teaching, researching, disseminating - that each reviewed article adhered to, was included in the review matrix. Interestingly, the articles used in this review highlight a remarkable congruence with the arguments put forward by Trencher et al. (2014) who conclude that efforts to introduce the concept of sustainability and green innovation into these three missions has yet to produce much in the way of results within academia. The concept of moving beyond these three conventional academic mission statements will be explored further in the following section, while this subsection will merely outline the results of the synthesis into the variable of university mission statements.

While there are some articles that make no mention of university missions at all or do not distinguish between the different conceptual functions of academia–there are 71 mentions of activities that align with at least one of these functions (in some cases more than one is mentioned). It should be made clear at the outset that none of the articles make *specific* reference to “university mission statements" in an exploratory sense or deal with them at any length save for Beynaghi et al. (2015) which is an article very much in line with Trencher et al. (2014). Setting aside (n=21) articles that deal with institutions of higher learning as singular organisational units within the context of society or governance broadly (with no focus on any distinct functions or elements), the remaining articles adhere to the conventional three-pronged mission structure; *teaching* (48 mentions), *research* (5 mentions) and *dissemination* or sometimes more accurately *knowledge transferral* (18 mentions) – on their surface at least.

Figure 8: University missions



Without exception, the articles reviewed in this study share a single commonality in that they are all case studies of experimental and non-conventional attempts to add sustainability to academic operations while adhering to the conventional mission statement structure of *teaching*, *research,* and *dissemination/knowledge transferal*. In this case, entrepreneurship, and innovation act as propellants to push sustainability forwards, shifting several parameters that underpin the current conventional, didactic, and teacher-centred, mode of the instructional lecture-based paradigm. The case studies skew heavily towards teaching methodologies, alternative forms of pedagogy and findings from experimental classroom settings. The proclivity for findings based in environments of teaching is likely due to the readily available experiences that translate into empirical data by researchers in their roles as educators. Research into research itself, i.e. meta-research, is not very common within the dataset and the articles that go the route tend to be extremely niche and mostly rely on a very limited focus, such as research into future prospects for young women within a single village or challenges faced by researchers in resource-poor areas. Those articles that deal with dissemination or the transferral of knowledge, predominantly do so as natural extension of novel forms of teaching using student internships or similar active engagement with local communities.

As mentioned above, there is, aptly enough, an overarching focus on the role of pedagogy to disburse insights related to sustainability within the literature used herein. Only a few of the articles mention conventional lecture-based educational tactics to convey the complexities of sustainability as it relates to local communities and the world more broadly–and even those that do, contain some element of non-conventionality (field trips, presentations from stakeholders and so on). Most cases presented in the literature relate attempts at novel forms of **academic pedagogy** that break the mould in a didactic sense. While these efforts break down into five different categories (see Table 5), it should be noted that a number of these tend to interlink in some capacity–i.e., students working closely with local industry to combat poverty, or students competing in regional academic competitions to find the best sustainable solutions to community-based problems. A common thread is a reliance on hybrid-pedagogy that makes use of student-led experimentation and collaboration beyond the classroom. One recurring solution is the curricular implementation of living labs, maker spaces or rooms for vertically integrated projects that are open to the student body and involve multidisciplinary or transdisciplinary efforts. In some cases, these experiments can take place in purpose-built facilities, or they can span an entire campus or even spill out into parts of a city or town. Similarly popular are different types of competitions or workshops that ask students to collaborate with students from other universities or regions, industry or civic stakeholders and academics in

coming up with sustainable solutions for pressing issues facing local and global communities. The UNleash programme is one such effort mentioned. A different tactic is one of curricular internships or engagement with industries, NGOs, or national institutions (including municipalities and so on) as it relates to innovation and entrepreneurship. Generally, this type of engagement relies on some form of real-world problem-based learning or engaged scholarship that students pursue throughout one or more semesters to solve some particularly tricky issue, in our case through innovation and entrepreneurship. Some of these focus on economic development and entrepreneurship while others focus on certain social ills such as poverty, conflict, and marginalisation. While there is rarely a research-based component attached to these pedagogical efforts (as the focus tends to be on undergraduate-courses), there is always a natural element of dissemination embodied within these methods. As much as these efforts to teach sustainability draw on external influences, there is an implicit expectation that these projects result in solutions that are in turn projected back into the community for the common good.

Table 5. Mission statements.

MISSION	ELEMENTS	REFERENCED IN
Teaching	Living labs, maker spaces, competitions, workshop and similar	Sroufe, R. (2020); Sanabria-Z, J. & Davidson, A., Romero, M. & Quintana, T. (2020); Orozco-Messana, J., De la Poza, E. & Moreno, R.C. (2020); Purcell, W., Henriksen, H. & Spengler, J. (2019); Burbridge, M. (2017); Malheiro, B., Silva, M. F., Ferreira, P. D., & Guedes, P. B. (2019); Strachan, S., Marshall, S., Murray, P., Coyle, E. & Sonnenberg-Klein, J. (2019); Buralli, R., Canelas, T. et al (2018); Baskin, R., & Sommer, C. (2017).
	Industry engagement and social entrepreneurship	Fischer, B., Guerrero, M., Guimón, J. and Schaeffer, P.R. (2019); Hermann, R.R., & Bossle, M.B. (2020); Sher A., Abbas A., Mazhar S. & Lin G. (2020); Kopnina, H. (2018); Killian, S., Lannon, J. et al (2019); Kolb, M., Fröhlich, L., & Schmidpeter, R. (2017); Filho, N. (2017); Wade, R. (2020); Tejedor, G., Segalas, J. et al (2019); Warner, K., Lieberman, A. & Roussos, P. (2016); Castro, MP. & Zermeño, MG. (2020); Kuo, W-Y., Kim, S-H., Lachapelle, P. (2020); Shu, Y., Ho, S-J. & Huang, T-C. (2020); Diez, M., Corral, J., Zubizarreta, A. & Pinto, C. (2020); Aluko, Y. & Okuwa, O. (2018).
	External collaborations with government, other institutions and bodies	Fichter, K. & Tiemann, I. (2017); Paletta, A. & Bonoli, A. (2019); Mugisha, F. (2017); Clifford, KL., Zaman, MH. (2016); Junior, R., Fien, J. & Horne, R. (2019).
	Social ills, poverty, gender, marginalisation	Ortiz, D. & Huber-Heim, K. (2017); Storey, M., Killian, S., & O'Regan, P. (2017); Mugisha, F. (2017).
	Civil society, NGOs, local community engagement	Perales Franco, C. & McCowan, T. (2020); Greenberg, DN., Deets, S. et al (2017); Venkiteswaran, V. & Cohen, M. (2018); Brugmann, R., Côté, N., Postma, N., Shaw, EA., Pal, D. & Robinson, JB. (2019); Meza, M., Herremans, I., Wallace, J. et al (2018); Mann, L., Chang, R. et al (2019); Kuo, W-Y., Kim, S-H., Lachapelle, P. (2020); Hashim, I. & Samsudin, S. (2020); Kasulo, V., Holm, R., Tembo, M., Singini, W. & Mchenga, J. (2020); Cahill, A. & Warwick, P. (2019); Cottafava, D., Cavaglià, G. & Corazza, L. (2019); Haraké, M-F., Saliba, L., Ibrahim, MA. & Moussa, N. (2020).
Research	Participatory research and collaborative joint efforts to gain knowledge	Fomunyam, K. (2020); Fayomi, O.S.I, Okokpujie, I., Fayom, G.U. & Okolie, S. (2019); Trott, C., Weinberg, A. & McMeeking, LS. (2018).
Dissemination	Industry engagement and entrepreneurship	Fischer, B., Guerrero, M., Guimón, J. and Schaeffer, P.R. (2019); Tejedor, G., Segalas, J. et al (2019); Warner, K., Lieberman, A. & Roussos, P. (2016); Aluko, Y. & Okuwa, O. (2018); Chankseliani, M., Qoraboyev, I., & Gimranova, D. (2020).
	External collaborations with government, other institutions and bodies	Filho, WL., Vargas, R. et al (2019); Paletta, A. & Bonoli, A. (2019); Mugisha, F. (2017); Clifford, KL., Zaman, MH. (2016); Junior, R., Fien, J. & Horne, R. (2019); Regueiro-Picallo, M., Rojo-López, G. & Agudo, J. (2020).
	Social ills, poverty, gender, marginalisation	Mugisha, F. (2017); Domenech, MA., Bello, J. & Pittendrigh, B. (2018); Brugmann, R., Côté, N., Postma, N., Shaw, EA., Pal, D. & Robinson, JB. (2019).
	Civil society, NGOs, local community engagement	Francis, JNP., Henriksson, K. & Alonso, JS. (2020); Kasulo, V., Holm, R., Tembo, M., Singini, W. & Mchenga, J. (2020).

Limited in scope, the focus on **research** still reveals concerns that academia is not doing enough to engage pragmatically with matters related to sustainability–and that it has a lot to offer in terms of actionable real-world problem solving. The articles that deal with research as a core component argue for more participatory action-based research and joint efforts from multiple stakeholders and geographic regions to solve current and impending crises. These articles are mainly concerned with research staff, but the arguments made therein with regards to researchers–are broadly comparable to the ethos inherent in the educational efforts outlined earlier; pragmatic engagement with real-world issues in collaboration with stakeholders aiming for common good.
The articles that deal mostly with **dissemination** of knowledge break down into very similar categories as the articles dealing with education. While some feature both places and are the result of deliberate attempts to disseminate projects used as part of curricula or activities such as innovation competitions, there are several articles that focus heavily on the importance of spreading academic knowledge and technical transferal from academia to other sectors. The commonality lies in the overarching focus on academic expertise and insights that can align themselves with economic and social development. While student-led projects can be assumed to perhaps have limited impact, institutional engagement with local areas and regions, on the other hand, is expected to aid governance and function as a centralised actor helping to reforming communities collaboratively with stakeholders.

4.0 Discussion

This review was not initially intended, or expected, to result in a focus on university mission statements. It was assumed that the articles collected for the review would be a showcase of how well-suited entrepreneurship education was as a means to further sustainability and socially oriented innovation as a means to counter very complex systemic issues. While this is still very much be the case (plain and actionable guidelines for implementation of the SDGs can be seen here: Kerstin et al., 2017), the coherent narrative illustrating just how hard it seems to be to actually implement sustainability-focused educational into current academia was instrumental in shifting the focus of the article towards the underlying systemic operations of institutions of higher learning. While an initial focus was assumed to be a foray into best practices and relaying the merits of sustainability-oriented innovation and entrepreneurship education, it took multiple drafts to realise that the core story being told through the case studies recorded within the reviewed articles centred on a single issue with two conflicting sides. On the one hand we see clear evidence of a multitude of drivers pushing the SDGs and sustainability education forwards, but on the other hand there is an equal amount of barriers and resistance to change from inside of academia. Looking at the cases presented herein through the basest functions of academic institutions; their missions of teaching, researching and disseminating, it becomes clear that the emerging trends and efforts described are in a category of their own, or at the very least go beyond these conventional missions. Looking at the drivers and barriers mentioned above using university mission statements as an anchor, we come very close to the framework proposed by Trencher et al., (2014) describing the make-up of an additional fourth academic mission statement of *Co-Creation for Sustainability*.

They (Ibid:156) argue that “social contribution“ is a sensible way of describing the general motivation behind the third mission. However, they go on to argue that “the idea of societal contribution is today widely perceived and promoted as being chiefly an economic contribution” championed by OECD efforts to “emphasise the economic benefits and gains in international competitiveness for governments when universities focus their third-stream activities on innovation transfer and spurring regional development” (ibid:156–157). Critiquing this third mission regime, they conclude that efforts to introduce the concept of sustainability and green innovation into the existing third mission has yet to produce much in the way of results—since the majority of funding and knowledge transfer relates

to medicine, biomedical- and computer research. Based on their analysis of the current state, their position is that the potential of the third mission regime to function as a useful guiding concept or propelling force in the quest for low-carbon development and sustainable transformation of individual towns, cities, and regions is yet to be proven". They (ibid:157–9) then argue for a fourth mission statement. They do not argue that this new mission should supplant the third mission, but rather supplement it in compounding the effects of all four mission statements by transforming *Entrepreneurial Universities* into *Transformative Universities* (ibid:169, emphasis is of the author) that weave together: teaching, research, dissemination, and co-creation for sustainability. This mission, they argue (ibid:158) is one that requires the transformative university to encompass a broad range of transdisciplinary sciences working together long-term on crucial issues that are place and stakeholder oriented. Further, they call for large-scale coalitions with multi-helix specialists and non-specialists utilising Open Innovation tactics to produce socially embedded knowledge and mutual learning.

It is, rather surprisingly, precisely these sentiments that become apparent in the review of the literature focusing on ways to introduce sustainability and the SDGs into academic settings. The drivers speak to a willingness to actively engage with the concept of transformative university operations on the one hand, and suffocating barriers relating to organisational stiffness and ineffectiveness on the other. Through this lens we can argue that sustainability implementation is the *square peg* to academia's *round hole*. The things that the efforts presented in the articles used herein are attempting to achieve struggle to fit with the way universities and their missions have been structured historically.

4.1 Alignment with 4th mission paradigms

Trencher *et al.,* (2014:4) outline their definition of a 4th mission statement as consisting of eight different research and social engagement paradigms: Living laboratories, Transdisciplinarity, Service learning, Cooperative extension systems, Participatory and action research, Regional development, Urban reform, and Technology transfer. When merged, these paradigms result in a novel mission statement heavily focused on sustainability and co-creation. In Table 6 below the adherence of the articles used herein, to these paradigms has been overlaid on Trencher *et al*'s original table.

On the far left of the table, we can see that the conventional three missions of teaching, researching, and disseminating fit neatly within the overall structure. The core theme of almost all the individual reviewed articles similarly correspond to the eight different constituent research and social engagement paradigms as they are listed by Trencher et al., That is, all the case studies seen in section 3.3 are situated within one (or more) of the conventional academic mission statements–while simultaneously adhering to at least one of the given paradigms argued to partially constitute this novel 4th mission.

Looking at the articles used within this review as an indication of grouping of publications dealing with how to further implement innovation and entrepreneurship to speed adaptation of sustainability and the SDGs within academia around the world, a persistent narrative emerges. As explained in the introduction to section 3.0, these articles are all from a period just following the adoption of the SDGs and display elements of early sensemaking and curiosity towards this new framework and how it can be employed to further innovation, entrepreneurship, and sustainability. In simple terms, these articles are for the most part the product of researchers attempting to implement new forms of operations within the confines of restrictive institutional and organisational structures. Like a square peg, the transdisciplinary pedagogy and multi-stakeholder engagement required to convey the complexities of sustainability do not easily fit into the round hole of currently conventional academia. This is a reality that is clear from the data. The main barriers being brought up are precisely ones of systemic

Table 6. Review papers overlayed 4th mission.

Trencher et al (2014) list the following eight constituent parts as, when combined, making up the 4th mission statement:

MISSIONS	FEATURED IN ARTICLES Based on literature review	RESEARCH & SOCIAL ENGAGEMENT PARADIGMS Lifted from *Figure 1* in Trencher et al (2014:4)		
Teaching	Sroufe, R. (2020); Sanabria-Z, J. & Davidson, A., Romero, M. & Quintana, T. (2020); Orozco-Messana, J., De la Poza, E. & Moreno, R.C. (2020); Purcell, W., Henriksen, H. & Spengler, J. (2019); Burbridge, M. (2017); Malheiro, B., Silva, M. F., Ferreira, P. D., & Guedes, P. B. (2019); Strachan, S., Marshall, S., Murray, P., Coyle, E. & Sonnenberg-Klein, J. (2019); Buralli, R., Canelas, T. et al (2018); Baskin, R., & Sommer, C. (2017).	**LIVING LABORATORIES** Engagement of university research and expertise to establish, monitor and evaluate real-life experiments and social inventions. Use of urban environment as open collaboration area	Merging Of Paradigms And Integration Of Sustainable Development Values	**CO-CREATION FOR SUSTAINABILITY** Collaborating with diverse social actors to create societal transformations in the goal of materialising sustainable development in a specific location, region or societal sub sector.
	Perales Franco, C. & McCowan, T. (2020); Greenberg, DN., Deets, S. et al (2017); Venkiteswaran, V. & Cohen, M. (2018); Brugmann, R., Côté, N., Postma, N., Shaw, EA., Pal, D. & Robinson, JB. (2019); Meza, M., Herremans, I., Wallace, J. et al (2018); Mann, L., Chang, R. et al (2019); Kuo, W-Y., Kim, S-H., Lachapelle, P. (2020); Hashim, I. & Samsudin, S. (2020); Kasulo, V., Holm, R., Tembo, M., Singini, W. & Mchenga, J. (2020); Cahill, A. & Warwick, P. (2019); Cottafava, D., Cavaglià, G. & Corazza, L. (2019); Haraké, M-F., Saliba, L., Ibrahim, MA. & Moussa, N. (2020).	**TRANSDISCIPLINARITY** Joint problem solving of real-world problems with multiple actors from society and academia. Practice oriented approach		
	Ortiz, D. & Huber-Heim, K. (2017); Storey, M., Killian, S., & O'Regan, P. (2017); Mugisha, F. (2017), Perales Franco, C. & McCowan, T. (2020); Greenberg, DN., Deets, S. et al (2017); Venkiteswaran, V. & Cohen, M. (2018); Brugmann, R., Côté, N., Postma, N., Shaw, EA., Pal, D. & Robinson, JB. (2019); Meza, M., Herremans, I., Wallace, J. et al (2018); Mann, L., Chang, R. et al (2019); Kuo, W-Y., Kim, S-H., Lachapelle, P. (2020); Hashim, I. & Samsudin, S. (2020); Kasulo, V., Holm, R., Tembo, M., Singini, W. & Mchenga, J. (2020); Cahill, A. & Warwick, P. (2019); Cottafava, D., Cavaglià, G. & Corazza, L. (2019); Haraké, M-F., Saliba, L., Ibrahim, MA. & Moussa, N. (2020).	**SERVICE LEARNING** Application of educational programmes to extra-curricular activities for tackling localised, real-world problems		
	Fischer, B., Guerrero, M., Guimón, J. and Schaeffer, P.R. (2019); Hermann, R.R., & Bossle, M.B. (2020); Sher A., Abbas A., Mazhar S. & Lin G. (2020); Kopnina, H. (2018); Killian, S., Lannon, J. et al (2019); Kolb, M., Fröhlich, L., & Schmidpeter, R. (2017); Filho, N. (2017); Wade, R. (2020); Tejedor, G., Segalas, J. et al (2019); Warner, K., Lieberman, A. & Roussos, P. (2016); Castro, MP. & Zermeño, MG. (2020); Kuo, W-Y., Kim, S-H., Lachapelle, P. (2020); Shu, Y., Ho, S-J. & Huang, T-C. (2020); Diez, M., Corral, J., Zubizarreta, A. & Pinto, C. (2020); Aluko, Y. & Okuwa, O. (2018).	**COOPERATIVE EXTENSION SYSTEM** Dating back to 1914 and the land-grant system, an outreach and technology transfer portal to drive local community and rural development		
Research	Fomunyam, K. (2020); Fayomi, O.S.I, Okokpujie, I., Fayom, G.U. & Okolie, S. (2019); Trott, C., Weinberg, A. & McMeeking, LS. (2018).	**PARTICIPATORY AND ACTION RESEARCH** Collaborative problem defining, fusion of researcher and subjects, empowerment of reflective social change		
Dissemination	Mugisha, F. (2017); Domenech, MA., Bello, J. & Pittendrigh, B. (2018); Brugmann, R., Côté, N., Postma, N., Shaw, EA., Pal, D. & Robinson, JB. (2019), Francis, JNP., Henriksson, K. & Alonso, JS. (2020); Kasulo, V., Holm, R., Tembo, M., Singini, W. & Mchenga, J. (2020).	**REGIONAL DEVELOPMENT** Alignment of university functions with regional economic development goals. University plays active role in regional governance		
	Filho, WL., Vargas, R. et al (2019); Paletta, A. & Bonoli, A. (2019); Mugisha, F. (2017); Clifford, KL., Zaman, MH. (2016); Junior, R., Fien, J. & Horne, R. (2019); Regueiro-Picallo, M., Rojo-López, G. & Agudo, J. (2020).	**URBAN REFORM** Targeted economic revitalisation through direction of university financial resources to local community and real-estate development		
	Fischer, B., Guerrero, M., Guimón, J. and Schaeffer, P.R. (2019); Tejedor, G., Segalas, J. et al (2019); Warner, K., Lieberman, A. & Roussos, P. (2016); Aluko, Y. & Okuwa, O. (2018); Chankseliani, M., Qoraboyev, I., & Gimranova, D. (2020).	**TECHNOLOGY TRANSFER** Commercialisation of research results, societal contribution through economic development		

Table 6: Based on *Figure 1. Key properties of co-creation for sustainability* in Trencher et al (2014:4).

operationalization that is not able to take on the wicked-problems, rigid and inflexible outdated modes of pedagogy that does not produce students capable of effectively solving issues of sustainability confined within academically compartmentalised silos with faltering communication and integration.

While there is, of course, not enough data to speak to any one specific institution involved in the case studies presented in the readings, only few give a sense of having internalised or operationalised sustainability or the SDGs as a matter of policy throughout the institution. Rather, there is a sense that most of the examples given operate within an environment where sustainability is set aside and treated as a curiosity and struggles to be adapted into policies and curricula. While we can present Table 6 above as an example of initiatives happening to fall in line with a greater proposed framework–at best we can argue that there are forces at play globally, within the zeitgeist, that have found similar solutions to the same problems. This is not to say that these attempts are a concerted effort between academia, industry, and governments in any meaningful way, but rather a natural progression in developing novel operational modes to more effectively attack wicked problems that are not necessarily within the scope of conventional academia.

While academia itself might function as its own stopgap, several additional barriers are also mentioned. A number of these have to do with social ills and malaise that can be extremely difficult to combat and function as their own wicked societal problems, conflicts, displacement and divisions, lack of resources, corruption, or health related issues. These are problems that further raise the barrier for entry for some academic institutions. Equally, calls for lacking participation from governments and industry are similar external barriers that can be hard to overcome.

The cases analysed illustrate that those involved are not attempting to round-off their square pegs for them to fit within an old system. Rather, they expand our understanding of such a dichotomy. The driving forces behind these experimental modes of teaching, doing research and disseminating knowledge are egged on by several stakeholders, industrial requirements and demands for problem-solving post-graduates able to navigate complex production methods and demands for sustainability, community requirements to solve local issues and internal pressure from staff and students to engage with tangible solutions to highly complex real-world issues. To accommodate these new demands, academia seems to be slowly evolving; hybrid-pedagogy fused with local community engagement, problem-based student-driven learning, utilitarian types of competitions and workshops and unconventional forms of engaged scholarships and action research seems to be emerging as a new academic norm. New operational modes that very much follow the parameters of a 4th mission statement of sustainable co-creation.

5.0 Conclusion

This paper is a systematic literature review of publications between 2015-2020 that focus on implementation of sustainability and the SDGs in universities around the world employing innovation- and entrepreneurship education. The initial aim of the review was to explore best practices and emerging patterns within academia related to such implementations. What we found, however, was that the complexities and broad scope of *sustainability* as a topic is often in conflict with the current academic paradigm found in most modern universities. A general lack of departmental collaboration, transdisciplinary resistance and outmoded operational forms hinder adoption of novel forms of pedagogy and broad systemic adoption of sustainability on both organisational and institutional levels. We asked what barriers can hinder, and what drivers can foster, progress in academic engagement and involvement with matters relating to the SDGs. A synthesis of the examples and experiments explored in the articles used herein reveals several systemic barriers resulting from an outdated academic structure, which is unable to rapidly respond to the complex requirements needed to solve complex societal challenges.

Broadly speaking, the articles used for this review are a testament to the resolve and dedication of the educators and researchers involved in producing not only the articles themselves, but also the novel *square-peg* forms of education struggling to fit within their respective *round-hole* academic realities. Article after article, we see university staff struggling to adapt unconventional forms of education that lean into community and industry engagement through co-creation, innovation, entrepreneurship, and transdisciplinary efforts especially focused on local concerns and issues related to sustainability.

We assumed that the review would reveal that additional support of courses related to innovation and entrepreneurship would allow institutions to increase their involvement in matters related to sustainability. While the review did not find any evidence that this is *not* the case–it did reveal that fundamental systematic changes must take place within academia before novel modes of teaching, researching and dissemination can take place efficiently. The solution, it seems, is likely a radical revision of how universities conduct themselves through their mission statements. This became apparent when we compared the barriers, drivers and the output presented in the used articles with the work done by Trencher et al (2014), arguing for a new academic mission centred around community-based co-creation as a solution to systemic academic adoption of sustainability. In fact, the efforts on display by the university staff behind the articles reviewed, slot neatly into the different research and social engagement paradigms proposed by Trencher et al., (living laboratories, transdisciplinarity, service learning, cooperative extension systems, participatory and action research, regional development, urban reform, and technology transfer) that underpin a new 4th academic mission statement.
If we wish to see institutions of higher learning contribute as leaders in the field and direct governance in terms of global sustainability, a fourth mission statement of sustainable co-creation would be a viable solution. The implications of this would reach far in terms of institutional and organisation restructuring, both in terms of internal and external policy changes. While there are unquestionably academic institutions around the world who have taken it upon themselves to strive to be leaders in the field of sustainability, the articles featured in this review also reveal that there are yet a fair number of institutions of higher learning which are indeed struggling to keep up with the changing academic landscape needed to engage with and combat the multitude of challenging issues facing the modern world. The call for a novel mission statement put forward by Trencher et al. in the form of a new 4th academic mission statement reliant on sustainable co-creation with local communities outlines an actionable framework, which relies heavily on the production of innovative and entrepreneurial ideas, that should be taken into consideration in parallel with policy changes.

This literature review was purposely limited to the years immediately following the adoption of the SDGs to limit the scope of the review (2015-2020). It was also limited to peer-reviewed articles published in English. We are similarly aware of work relating to the subject-matter of this article, that has not been documented or published. We would suggest further explorations into more current publications, to seek out academic examples and experiments being done in this vein in non-English speaking regions and at smaller resource-poor universities around the world, as a fair number of the articles used herein were produced in larger, perhaps more affluent, institutions of higher learning.

6.0 Appendix: Articles featured in the review

Abad-Segura E, González-Zamar M-D, Infante-Moro JC, Ruipérez García G. (2020) Sustainable Management of Digital Transformation in Higher Education: Global Research Trends. Sustainability. 2020; 12(5):2107.

Aluko, Y. & Okuwa, O. (2018). Innovative solutions and women empowerment: Implications for sustainable development goals in Nigeria. African Journal of Science, Technology, Innovation and Development. 10. 1-9.

Annan-Diab, F. & Molinari, C. (2017) Interdisciplinarity: Practical approach to advancing education for sustainability and for the Sustainable Development Goals. The International Journal of Management Education. 15.

Ávila, L., Filho, W., Brandli, L., Macgregor, C., Molthan-Hill, P., Gokcin Ozuyar, P. & Moreira, R. (2017) Barriers to Innovation and Sustainability at Universities Around the World. Journal of Cleaner Production. 164. 10.1016/j.jclepro.2017.07.025.

Bagur-Femenias, L., Buil-Fabrega, M., & Aznar, J. (2020) Teaching digital natives to acquire competencies for sustainable development. International Journal of Sustainability in Higher Education. ahead-of-print. 10.1108/IJSHE-09-2019-0284.

Baskin, R. & Sommer, C. (2017). Gen X: A Generation That Can Help Save the Planet? Generations: Journal of the American Society on Aging, 41(3), 43–47.

Beynaghi, A., Trencher, G., Moztarzadeh, F., Mozafari, M., Maknoon, R. & Filho, W. (2015) Future sustainability scenarios for universities: Moving beyond the United Nations Decade of Education for Sustainable Development. Journal of Cleaner Production. 112.

Brugmann, R., Côté, N., Postma, N., Shaw, EA., Pal, D. & Robinson, JB. (2019) Expanding Student Engagement in Sustainability: Using SDG- and CEL-Focused Inventories to Transform Curriculum at the University of Toronto. Sustainability. 2019; 11(2):530.

Buralli, R., Canelas, T., Martins de Carvalho, L., Duim, E., Itagyba, R., Fonseca, M., Oliver, S., & Sanchez, N. (2018) Moving towards the Sustainable Development Goals: The UNLEASH Innovation Lab experience. Ambiente & sociedade. 21. 10.

Burbridge, M. (2017) If Living Labs are the Answer – What's the Question? A Review of the Literature. Procedia Engineering. 180. 10.1016/j.proeng.2017.04.335.

Cahill, A. & Warwick, P. (2019) Reimagining applied practices: a case study on the potential partnership between applied practices and education for sustainable development, Research in Drama Education. The Journal of Applied Theatre and Performance, 24:3, 390-396.

Chankseliani, M., Qoraboyev, I. & Gimranova, D. (2021) Higher education contributing to local, national, and global development: new empirical and conceptual insights. Higher Education. 81. 109-127. 10.1007/s10734-020-00565-8.

Cicmil, S., Gough, G. & Hills, S.. (2017) Insights into responsible education for sustainable development: The case of UWE, Bristol. The International Journal of Management Education. 15. 293-305. 10.1016/j.ijme.2017.03.002.

Clifford, KL. & Zaman, MH. (2016) Engineering, global health, and inclusive innovation: focus on partnership, system strengthening, and local impact for SDGs. Glob Health Action. 2016 Jan 19;9:30175.

Commer, P., Sci, S., Ul, M., Naz, A. & Hassan, M. (2020) Education for Women Entrepreneurial Attitudes and Intentions: The Role of Perceptions on Gender Equality and Empowerment. Pakistan Journal of Commerce and Social Sciences. 14. 63-98.

Cottafava, D., Cavaglià, G. & Corazza, L. (2019) Education of sustainable development goals through students' active engagement: A transformative learning experience. Sustainability Accounting, Management and Policy Journal. 10.

Diez, M., Corral, J., Zubizarreta, A. & Pinto, C. (2020) Including the United Nations Sustainable Development Goals in Teaching in Engineering: A Practical Approach. In: Pisla, D., Corves, B., Vaida, C. (eds) New Trends in Mechanism and Machine Science. EuCoMeS 2020. Mechanisms and Machine Science, vol 89. Springer, Cham.

Domenech, MA., Bello, J. & Pittendrigh, B. (2018) Scientific Animations Without Borders (SAWBO): An innovative strategy for promoting education for sustainable development. Sustainability Science. 14. 1-12. 10.1007/s11625-018-0624-8.

Fabregá, M. Masferrer, N., Patau, J., & Pérez, AP. (2020) Self-consciousness competence as driver of innovation and environmental commitment in higher education students. International Journal of Sustainability in Higher Education, v21 n7 p1507-1523 2020.

Fayomi, OSI., Okokpujie, I., Fayom, GU. & Okolie, S. (2019) The Challenge of Nigeria Researcher in Meeting up with Sustainable Development Goal in 21st Century. Energy Procedia. 157. 393-404.

Fichter, K. & Tiemann, I. (2017) Factors influencing university support for sustainable entrepreneurship Insights from explorative case studies. Journal of Cleaner Production. 175.

Filho, N. (2017) The agenda 2030 for responsible management education: An applied methodology. The International Journal of Management Education. 15. 183-191.

Filho, WL., Vargas, R. et al (2019). The role of higher education institutions in sustainability initiatives at the local level. Journal of Cleaner Production. 233. 1004-1015.

Filser, M., Kraus, S., Roig-Tierno, N., Kailer, N. & Fischer, U. (2019) Entrepreneurship as Catalyst for Sustainable Development: Opening the Black Box. Sustainability. 2019; 11(16):4503.

Fleacă, E., Fleacă, B., Maiduc, S. (2018) Aligning Strategy with Sustainable Development Goals (SDGs): Process Scoping Diagram for Entrepreneurial Higher Education Institutions (HEIs). Sustainability. 2018; 10(4):1032.

Fomunyam, K. (2020) Research and Innovation in Agricultural Engineering in a University in KwaZulu-Natal. International Journal of Engineering Research and Technology. 13. 1497.

Francis, JNP., Henriksson, K. & Stewart Alonso, JS. (2021) Collaborating for transformation: applying the Co-Laboratorio approach to bridge research, pedagogy and practice. Canadian Journal of Development Studies / Revue canadienne d'études du développement, 42:3, 416-439.

Franco, I., Saito, O., Vaughter, P. et al. (2019) Higher education for sustainable development: actioning the global goals in policy, curriculum, and practice. Sustain Sci 14, 1621–1642 (2019).

Greenberg, DN., Deets, S., Erzurumlu, S., Hunt, J., Manwaring, M., Rodgers, V. & Swanson, E. (2017) Signing to living PRME: Learning from a journey towards responsible management education. The International Journal of Management Education, Volume 15, Issue 2, Part B.

Haraké, MF., Saliba, L., Audeh Ibrahim, M., Moussa, N. (2020) Service-Learning Initiatives & the Challenges of Unstable Environments. PM World Journal, Vol. IX, Issue VI, June.

Hashim, I. & Samsudin, S. (2020) Practices of Problem-Based Learning (PBL) in Teaching Islamic Studies in Malaysian Public Universities. International Journal of Innovation, Creativity and Change, Volume 11, Issue 10, 2020.

Hermann, RR. & Bossle, MB. (2020) Bringing an entrepreneurial focus to sustainability education: A teaching framework based on content analysis. Journal of Cleaner Production, 246, 119038.

Junior, R., Fien, J., & Horne, R. (2019) Implementing the UN SDGs in Universities: Challenges, Opportunities, and Lessons Learned. Sustainability: The Journal of Record. 12. 129-133. 10.1089/sus.2019.0004.

Kasulo, V., Holm, R. Tembo, M., Singini, W. & Mchenga, J. (2020) Enhancing sustainable sanitation through capacity building and rural sanitation marketing in Malawi. Environment, Development and Sustainability. 22. 10.1007/s10668-018-0191-2.

Killian, S., Lannon, J., Murray, L., Avram, G., Giralt, M. & O'Riordan, S. (2019) Social Media for Social Good: Student engagement for the SDGs. The International Journal of Management Education. 17.

Knudsen, M., Frederiksen, M. & Goduscheit, R. (2019) New forms of engagement in third mission activities: a multi-level university-centric approach. Innovation. 23. 1-31. 10.1080/14479338.2019.1670666.

Kolb, M., Fröhlich, L., & Schmidpeter, R. (2017) Implementing sustainability as the new normal: Responsible management education – From a private business school's perspective. The International Journal of Management Education, 15, 280-292.

Kopnina, H. (2018) Teaching Sustainable Development Goals in The Netherlands: a critical approach. Environmental Education Research, 24:9, 1268-1283.

Kuo, WY., Kim, SH. & Lachapelle, P. (2020) Incorporating community culture in teaching food innovation: ideation, prototyping, and storytelling. J Food Sci Educ. 2020; 19: 292– 307.

Lim, M., Jørgensen, P. & Wyborn, C. (2018) Reframing the sustainable development goals to achieve sustainable development in the Anthropocene—a systems approach. Ecology and Society. 23. 10.5751/ES-10182-230322.

Mann, L. et al. (2021) From problem-based learning to practice-based education: a framework for shaping future engineers. European Journal of Engineering Education, 46:1, 27-47.

Malheiro, B., Silva, MF., Ferreira, PD., & Guedes, PB. (2019). Learning Engineering with EPS@ISEP: Developing Projects for Smart Sustainable Cities. International Journal of Engineering Pedagogy (iJEP), 9(4), pp. 33–49.

Matzembacher, DE., Raudsaar, M., de Barcellos, MD. & Mets, T. (2019) Sustainable Entrepreneurial Process: From Idea Generation to Impact Measurement. Sustainability. 2019; 11(21):5892.

Mawonde, A. & Togo, M. (2019) Implementation of SDGs at the University of South Africa. International Journal of Sustainability in Higher Education. ahead-of-print. 10.1108/IJSHE-04-2019-0156.

Meza, M., Herremans, I., Wallace, J., Althouse, N., Lansdale, D. & Preusser, M. (2018) Strengthening sustainability leadership competencies through university internships. International Journal of Sustainability in Higher Education. 19. 10.1108/IJSHE-06-2017-0097.

Mugisha, F. (2017) Negotiating Sustained Action for Sustainable Development – Application to Students in South Sudan. Glob Policy, 8: 582-586.

Muñoz La Rivera, F., Hermosilla, P., Delgadillo, J. & Echeverría, D. (2020) The Sustainable Development Goals (SDGs) as a Basis for Innovation Skills for Engineers in the Industry 4.0 Context. Sustainability. 2020; 12(16):6622.

Orozco-Messana, J., De la Poza, E. & Calabuig Moreno, R. (2020) Experiences in Transdisciplinary Education for the Sustainable Development of the Built Environment, the ISAlab Workshop. Sustainability. 12. 1143.

Ortiz, D. & Huber-Heim, K. (2017) From information to empowerment: Teaching sustainable business development by enabling an experiential and participatory problem-solving process in the classroom. The International Journal of Management Education. 15.

Paletta, A. & Bonoli, A. (2019) Governing the university in the perspective of the United Nations 2030 Agenda: The case of the University of Bologna. International Journal of Sustainability in Higher Education. 20. 10.1108/IJSHE-02-2019-0083.

Paletta, A. et al. (2019) Universities, industries, and sustainable development: Outcomes of the 2017 G7 Environment Ministerial Meeting. Sustainable Production and Consumption, Volume 19, 2019, Pages 1-10, ISSN 2352-5509.

Perales Franco, C. & McCowan, T. (2021) Rewiring higher education for the Sustainable Development Goals: the case of the Intercultural University of Veracruz, Mexico. High Educ 81, 69–88 (2021).

Ploum, L., Blok, V., Lans, T., & Omta, O.S. (2018) Exploring the relation between individual moral antecedents and entrepreneurial opportunity recognition for sustainable development. Journal of Cleaner Production, 172, 1582-1591.

Portuguez Castro, M. & Gomez Zermeño, M. (2020) Challenge Based Learning: Innovative Pedagogy for Sustainability through e-Learning in Higher Education. Sustainability. 12. 1-15. 10.3390/su12104063.

Purcell, W., Henriksen, H. & Spengler, J. (2019) Universities as the engine of transformational sustainability toward delivering the sustainable development goals: “Living labs” for sustainability. International Journal of Sustainability in Higher Education. 20. 1343-1357.

Ramboarisata, L. & Gendron, C. (2019) Beyond moral righteousness: The challenges of non-utilitarian ethics, CSR, and sustainability education. The International Journal of Management Education. 17.

Rashid, L. (2019) Entrepreneurship Education and Sustainable Development Goals: A literature Review and a Closer Look at Fragile States and Technology-Enabled Approaches. Sustainability. 2019; 11(19):5343.

Regueiro-Picallo, M., Rojo-López, G. & Agudo, J.. (2020) A-CITEEC: a strategic research consortium for R&D&I and transfer of results in civil engineering and building. International Journal of Sustainability in Higher Education, Vol. 21 No. 7, pp. 1297-1310.

Rodríguez-Abitia, G., Pérez, S., Ramírez-Montoya, MS. & Lopez-Caudana, E. (2020) Digital Gap in Universities and Challenges for Quality Education: A Diagnostic Study in Mexico and Spain. Sustainability. 12. 9069. 10.3390/su12219069.

Rosenbloom, A., Gudić, M., Parkes, C. & Kronbachd, B. (2017) A PRME response to the challenge of fighting poverty: How far have we come? Where do we need to go now? The International Journal of Management Education. 15.

Sanabria-Z, J., Davidson, AL., Romero, M. & Quintana, T. (2020) Macro-dissemination of Maker Cultures: 21st century competencies through an Ideaton. Revista de Educación a Distancia (RED), 20(62).

Serhan-Murray, H. & Yannou-Le Bris, G.. (2020) The engineering of food with sustainable development goals:policies, curriculums, business models, and practices. International Journal of Sustainable Engineering. 14. 10.1080/19397038.2020.1722765.

Sher A., Abbas A., Mazhar S. & Lin, G. (2020) Fostering sustainable ventures: Drivers of sustainable start-up intentions among aspiring entrepreneurs in Pakistan. Journal of Cleaner Production, 262, 121269.

Shu, Y., Ho, SJ., & Huang, TC. (2020) The Development of a Sustainability-Oriented Creativity, Innovation, and Entrepreneurship Education Framework: A Perspective Study. Frontiers in Psychology. 11. 10.3389/fpsyg.2020.01878.

Sierra, J. (2020) The potential of simulations for developing multiple learning outcomes: The student perspective. The International Journal of Management Education, Volume 18, Issue 1, 2020, 100361.

Sroufe, R. (2020) Business Schools as Living Labs: Advancing Sustainability in Management Education. Journal of Management Education. 44. 105256292095159. 10.1177/1052562920951590.

Storey, M., Killian, S., & O'Regan, P. (2017) Responsible management education: Mapping the field in the context of the SDGs. The International Journal of Management Education, 15, 93-103.

Strachan, S., Marshall, S., Murray, P., Coyle, E. & Sonnenberg-Klein, J. (2019) Using Vertically Integrated Projects to embed research-based education for sustainable development in undergraduate curricula. International Journal of Sustainability in Higher Education. 20. 10.1108/IJSHE-10-2018-0198.

Tejedor, G. et al. (2019) Didactic Strategies to Promote Competencies in Sustainability. Sustainability. 11. 2086. 10.3390/su11072086.

Trott, C., Weinberg, A. & McMeeking, LS. (2018) Prefiguring Sustainability through Participatory Action Research Experiences for Undergraduates: Reflections and Recommendations for Student Development. Sustainability. 2018; 10(9):3332.

Venkiteswaran, V. & Cohen, M. (2018) Digital storytelling and sustainable development goals: Motivating business students to engage with SDGs. Social business, vol. 8, no. 4, pp. 411-428.

Vorontsova, A., Vasylieva, T., Bilan, Y., Ostasz, G. & Mayboroda, T. (2020) The influence of state regulation of education for achieving the sustainable development goals: case study of Central and Eastern European countries. Administratie si Management Public. 34. 6-26. 10.24818/amp/2020.34-01.

Wade, R. (2020) 'How can Migrant Entrepreneurship Education Contribute to the Achievement of the Sustainable Development Goals? The Experience of the Fresh Start Programme'. Policy and Practice: A Development Education Review, Vol. 30, Spring, pp. 146-170.

Warner, K., Lieberman, A. & Roussos, P. (2016) Ignatian Pedagogy for Social Entrepreneurship: Twelve Years Helping 500 Social and Environmental Entrepreneurs Validates the GSBI Methodology. Journal of technology management & innovation. 11. 80-85.

References

Adams et al. (2016) Sustainability-oriented Innovation: A Systematic Review. International Journal of Management Reviews, 2016(18):180-205. doi.org:10.1111/ijmr.12068.

Akins, E. et al. (2019) Sustainability Education and Organizational Change: A Critical Case Study of Barriers and Change Drivers at a Higher Education Institution. Sustainability 2019, 11, 501.

Awan, Sroufe & Shahbaz (2021) Industry 4.0 and the circular economy: A literature review and recommendations for future research. Bus Strat Env. 2021; 30: 2038– 2060. https://doi.org/10.1002/bse.2731

Belmonte-Ureña, Plaza-Úbeda, Vazquez-Brust & Yakovleva (2021) Circular economy, degrowth and green growth as pathways for research on sustainable development goals: A global analysis and future agenda. Ecological Economics, Volume 185, 2021, 107050, https://doi.org/10.1016/j.ecolecon.2021.107050.

Beynaghi, A., Trencher, G., Moztarzadeh, F., Mozafari, M., Maknoon, R., & Filho, Wa. (2015) Future sustainability scenarios for universities: Moving beyond the United Nations Decade of Education for Sustainable Development. Journal of Cleaner Production. 112.

Business and Sustainable Development Commission (2017) Better Business Better World: The report of the Business & Sustainable Development Commission. Published by the UN Foundation.

Filho, WL. et al. (2019a) Sustainable Development Goals and sustainability teaching at universities: Falling behind or getting ahead of the pack? Journal of Cleaner Production, Volume 232, 2019, Pages 285-294.

Filho, WL. et al. (2019b) The integration of social responsibility and sustainability in practice: Exploring attitudes and practices in Higher Education Institutions, Journal of Cleaner Production, Volume 220:152-166.

Filho, WL., Vargas, R. et al (2019). The role of higher education institutions in sustainability initiatives at the local level. Journal of Cleaner Production. 233. 1004-1015.

Filho, WL. et al. (2021) A framework for the implementation of the Sustainable Development Goals in university programmes. Journal of Cleaner Production,Volume 299.

García-Feijoo, E. & Rica-Aspiunza (2020) Systematic Review of Sustainable-Development-Goal Deployment in Business Schools. Sustainability, 12(1):440. doi.org/10.3390/su12010440.

Kerstin, T. et al (2017) Getting started with the SDGs in universities: A guide for universities, higher education institutions, and the academic sector. Australia, New Zealand and Pacific Edition. Sustainable Development Solutions Network – Australia/Pacific, Melbourne.

Lasi, H. et al (2014) Industry 4.0. Business & Information Systems Engineering, 6, 239-242. https://doi.org/10.1007/s12599-014-0334-4

Liu, J., et al. (2019) On knowledge generation and use for sustainability. Nat Sustain 2, 80–82 (2019). https://doi.org/10.1038/s41893-019-0229-y

Mio, C. er al (2020) Sustainable Development Goals and the Strategic Role of Business: A Systematic Literature Review. Business Strategy and the Environment. 2020;1-26.

Okoli & Schabram (2010) A Guide to Conducting a Systematic Literature Review of Information Systems Research. Sprouts: Working Papers on Information Systems, 10(26). doi.org/10.2139/ssrn.1954824.

Olsen, MM. (2021) An Academic Lead in Developing Sustainable Arctic Communities: Co-Creation, Quintuple Helix, and Open Social Innovation. Chapter 7 in: Natcher, D. and Jokela, T. (eds) (2021) Renewable Economies in the Arctic. Routledge.

Portuguez Castro, M. & Gomez Zermeño, M. (2020) Challenge Based Learning: Innovative Pedagogy for Sustainability through e-Learning in Higher Education. Sustainability. 12. 1-15. 10.3390/su12104063.

PRISMA (2020) PRISMA Statement. Available online at prisma-statement.org.

Schardt, et al. (2007) Utilization of the PICO framework to improve searching PubMed for clinical questions. BMC Medical Informatics and Decision Making, 2007, 7(16). doi.org/10.1186/1472-6947-7-16.

Serafini, P. et al (2022) Sustainable Development Goals in Higher Education Institutions: A systematic literature review. Journal of Cleaner Production. 370.

Sianes A. et al. (2022) Impact of the Sustainable Development Goals on the academic research agenda. A scientometric analysis. PLoS ONE 17(3): e0265409. https://doi.org/10.1371/journal.pone.0265409

Tilbury, D. (2009) Tracking Our Progress: A Global Monitoring and Evaluation Framework for the UN DESD. Journal of Education for Sustainable Development. 2009;3(2):189-193.

Trencher, G. et al. (2014) Beyond the Third Mission: Exploring the Emerging University Function of Co-Creation for Sustainability. Science and Public Policy, Vol. 41:151-197.

Trott, et al. (2018) Prefiguring Sustainability Through Participatory Action Research Experiences for Undergraduates: Reflections and Recommendations for Student Development. Sustainability, 2018, 10:3332.

UN (2000) United Nations Millennium Declaration. A /RES/55/2.

UN (2012) The Future We Want. A/RES/66/288*.

UN (2015) Transforming Our World: The 2030 Agenda for Sustainable Development. A/RES/70/1.

UNESCO (nd) UN Decade of ESD. Available online at: en.unesco.org/themes/education-sustainable-development/what-is-esd/un-decade-of-esd

4.4 An academic lead in developing sustainable Arctic communities: Co-creation, quintuple helix, and open social innovation

This article has been peer-reviewed and published. See: Olsen, MM. (2021) *An Academic Lead in Developing Sustainable Arctic Communities: Co-Creation, Quintuple Helix, and Open Social Innovation*. Chapter 7 in: Natcher, D. and Jokela, T. (eds) (2021) *Renewable Economies in the Arctic*. Routledge.

An academic lead in developing sustainable Arctic communities: Co-creation, quintuple helix, and open social innovation

In the pursuit of renewable economies and communities within the Arctic, it is essential that we keep in mind the regenerative properties and inherent potential for renewal contained within the region's institutions of higher learning. While colleges and universities in the periphery naturally tend to be smaller and less resourceful compared to their metropolitan counterparts—they are, more often than not, centres of specialised local and regional knowledge. Not only do institutions of higher learning located in remote regions often play a vital part in maintaining and developing local languages, practices, and cultures—they are also ideal incubators for the education and training of local agents of change capable of making a genuine impact on both local and regional issues. Realising that smaller institutions can often be protective and somewhat conservative, it is nevertheless of growing importance that they make an increased, systematic, and collaborative effort toward engagement in issues of sustainability on multiple operational levels in order to combat many issues facing the Arctic region; climate change and ecological challenges that affect the sustainability of communities, political, geopolitical, and securitisation issues, effects from resource extraction, impacts of increasing tourism, etc (Arctic Council, 2016).

While it may be easy to tout the benefits and values of small, local, and specialised universities—it should also be acknowledged that universities in the periphery are fighting at least two distinct, yet interwoven, problems. On the one hand, Arctic universities often rely heavily or entirely on government subsidies that are often subject to prevailing political moods and often see allocations differ from year to year, making it hard to plan ahead and plan for long-term commitments or strategies. Located in smaller countries and communities, they are also often unable to attract major sources of external funding from benefactors or industry and establishment of large-scale research projects is similarly rare. As issues of sustainability facing the Arctic mentioned align with all three aspects of sustainability; economic, environmental, and social—the involvement of universities as key stakeholders is paramount for the development of much-needed solutions. At the same time, unfortunately, such demands for solutions to often very complex issues can place an even greater burden upon the universities.

In this chapter, I will argue that smaller institutions of higher learning within the Arctic must play a greater role in tackling the issues facing the region in a more practical sense. They should work with geographically embedded knowledge in a real-work setting and focus on solutions relevant to the area and its stakeholders. However, I will also argue that for this to become a reality, changes to how many small Arctic universities currently operate must be made. What follows is an attempt to outline an operational framework that addresses the two problematics mentioned above; issues of resources and sustainability. The framework presented is an early attempt at a conceptual visualisation of all the different practical aspects that universities in the Arctic will need to consider systematically in order to minimise reliance on input resources in order to maximise their sustainability output. The framework is being developed for use by the new Innovation Unit at the University of the Faroe Islands and is under continual revision. In order to explain the basic framework, a point-by-point analysis of each step in the process will be given, outlining a theoretical basis and practical considerations.

Background and context

Before we get to the conceptual framework, there are two contextual aspects that should be clarified. First, some background on how this project is based on prior work and attempts to speak to some objective needs with Arctic academia, and secondly, a short description of the newly formed Innovation Unit at the University of the Faroe Islands, and their role in the project, will be given.

Initial insights

The chapter is an attempt to follow up on our recent review of emerging trends within the Arctic academic environment (for more, see, Blaxekjær et al., 2018). The first of these trends is a cross-sector demand for more innovative and entrepreneurial skills to be included in academic courses and curriculums. Where the main justification for entrepreneurship and innovation in an academic setting was initially economic growth—it can now be found in most academic fields (Chiu, 2012; Reffstrup & Kærn Christiansen, 2017). Second, there is a growing interest in going beyond the three main pursuits that are at the core of most university mission statements (teaching, research, and dissemination). This fourth emerging mission statement, at times, referred to as “co-creation of sustainability” (Trencher et al., 2014) is in many cases a way for universities to experiment with novel triple- and quadruple helix models that can facilitate cooperation, but has also allowed them to diversify from purely economic pursuits to a wider array of non-commercial purposes dealing with sustainability (Trencher et al., 2014; Rosenlund, Rosell, & Hogland, 2017). Third, the Sustainable Development Goals (SDGs) have also, however slowly, begun to take hold in the Arctic region. Places of higher learning, such as the University of the Faroe Islands, the University of Greenland, and local

stakeholders in general, are noticing the benefits of taking a stance on including sustainability into their missions. In recent years, there has been a positive increase in the amount of focus given to the SDGs within Arctic universities. And, fourth, as is evidenced by the number of conferences and university collaborations with a focus on the Arctic and sustainability—there is a genuine window of opportunity for smaller regional universities to make their mark and take part in the growing interest in the region and the resources available. While we have seen an increasing interest in these trends over the last couple of years, it is important to note that for smaller Arctic universities, acting on and realising these interests can be a challenge. As has been mentioned above, a large number of Arctic universities are publicly funded, are lacking in resources and staff, are spread out over a vast geographic area where travel is expensive and cumbersome, and often lack networking possibilities and the patronage of large donors or collaborators.

The innovation unit[21]

Reacting to these emerging trends, the University of the Faroe Islands decided to initiate a response in the form of a small and lean project office that will be tasked with analysing and mapping best practices available to a relatively small and resource-weak institution. Novel to the University of the Faroe Islands, we were able to secure funding for a full-time member of staff that was not bound by any teaching responsibilities or office work. The Innovation Unit is headed by a coordinator not affiliated with any specific department or academic discipline, rather she answers to the rector and the board of directors. The unit is intended to be flexible and nimble in that it can incorporate members of staff for short-term projects as well as initiate long-term working groups for larger initiatives. As such, the name Innovation Unit was deliberately chosen in order to convey its ad hoc configuration and the non-physical placement within the conventional organisational hierarchy.

The main intent behind the Unit is to have it function as an auxiliary support on matters that would otherwise be beyond the scope of the duties of the university management staff and beyond the resources of the research staff. It is meant to facilitate and coordinate projects and initiatives that would previously likely have fallen into the boundary between two organisational camps, resulting in inaction. By adhering to the tenets of boundary spanning, the unit attempts to push a holistic agenda of maximising benefits on behalf of not only the university as a whole, but also the wider community it finds itself in (Tushman, 1977). It purposely looks to deal with complex projects that can be classified as “wicked issues,” projects that cross academic disciplines and rely on the participation of multiple departments, civil society, municipalities, governmental agencies, and industry to solve (Williams, 2002).

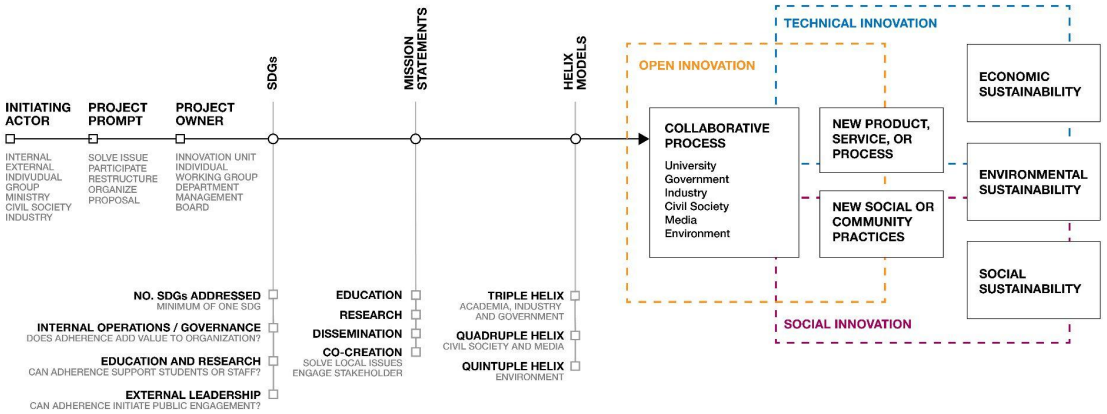
The initial findings for the Innovation Unit reveal that there are four distinct, yet overlapping, foundational changes that should be made at an institutional level in order to meet these growing trends relating to sustainability. First, using the SDGs as primary guidelines in decision making and in the evaluation of the viability of new projects or existing modes of operation. Second, adding to the core mission statements of the organisation (teaching, researching, and knowledge transferal) to include a fourth mission statement of sustainable co-creation. Third, revising and formalising how the university deals with external stakeholders based on sound Helix models. Fourth, the implementation of modern innovation protocols such as Open Innovation and Social Innovation in order to foster local capacity building, dialogue, a shared sense of ownership, and mechanisms that can mitigate risk and help launch socially beneficial initiatives beyond the initial stages of prototyping and proof-of-concept.

[21] At the time of publishing the Innovation Unit (now formally the Research and Enterprise Unit) has chosen to initially focus on mission two (research).

A framework for the future

In an effort to outline the conceptual framework proposed for the Innovation Unit, what follows is an analysis of the constituent theoretical elements contained within it. First, I will argue for a systematic implementation of the Sustainable Development Goals. Secondly, I will give an historical summary of the university mission statement and then turn my attention to the arguments for a review of the beneficial addition of a fourth-mission statement based on sustainability co-creation as is outlined in Trencher et al. (2014). Third, I will give a quick overview of the Triple Helix approach and then focus in on Ranga and Etzkowitz (2013) analysis of Triple Helix Spaces, followed by a quick outline of the benefits and utility of quadruple- and quintuple-helix models as they are outlined in Carayannis and Campbell (2012) and Carayannis, Barth, and Campbell (2012). Fourth, I will provide some background relating to both Open and Social Innovation and then focus on how these two approaches could favorably be combined into the new concept of Open Social Innovation as has been outlined in Chesbrough and Di Minin (2014) and Martins and De Souza Bermejo (2014). I will then conclude that these four theoretical concepts (the SDGs, academic mission statements, Helix Models, and innovation frameworks), when combined into a framework, allow a small university such as the University of the Faroe Islands to put forward a set of guidelines that are both rigid in terms of adherence to sustainability and co-creation, while also being flexible in terms of scale and resources.

The conceptual operational framework, as seen in **Figure 1**, has been adapted and expanded upon based on the initial work done by Martin and De Souza Bermejo (2014). The structure of the framework is based on common project management tactics and equally assumes a project management approach to its use and function. The flow is fairly straightforward, from left to right, beginning as all projects do, with an initiation that involves ownership and description of the project or process, moving on to an auditing phase where adherence to SDGs, university strategy and collaborative approaches are defined, a processing phase is then initiated where participants follow Open Innovation guidelines in order progress to an output phase—which in turn leads to an impact phase. While important, the initiation phase will not be covered below.



Adapted from: Martins & De Souza Bermejo (2014) *Open social innovation.* Chapter 9 (144-163) in Dolicanin, C. et al (2014) *Handbook of Research on Democratic Strategies and Citizen-Centered E-Government Services.* IGI Global: Pennsylvania.

The sustainable development goals

Since the near-global agreement on the UN's Sustainable Development Goals in 2015, the Faroe Islands have been relatively slow to officially adopt the goals and their targets. While the Faroese government did not officially announce Faroese adherence to the SDGs until February of 2018, interest in-and dissemination of the SDGs was quickly picked up by a few key stakeholders (Government of the Faroe Islands, 2018). Since early 2018, the Prime Minister's Office has been developing a local baseline for the tracking of progress, the University of the Faroe Islands has organised a number of workshops, events, and conferences based on the SDGs, the Municipality of Tórshavn has voted to implement the SDGs as guidelines for future policy work, salmon farmer Bakkafrost has publicly announced an adherence to a number of key goals, and the SDG are often debated and referred to by politicians and stakeholders. Along with these efforts, the University green-lit the establishment of a long-intended cross-disciplinary SDG working group overseen by the Innovation Unit. The work of this group is two-fold: best practices for internal implementation of the SDG throughout the University in terms of daily operations, curriculums, and projects—and simultaneously through external collaborations.

Academic focus on sustainability and sustainable development are not new to HEIs. A very vocal cry for academic engagement with sustainability, in general, has been very visible in the literature since the 1990s and especially since the early 2000s. Definitions of and frameworks for sustainability within HEIs sustainable operations, sustainable research, environmental literacy, ethics, curriculum development, and internal and external multi-helix partnerships and collaborations have already been outlined and analysed many years ago, the use of positive feedback loops and Education for Sustainable Development (ESD) tactics, accountability, assessments and measurements of the impact of sustainability development in HEIs and the use of systems transitions and participatory design processes in relation to stakeholder engagement in relation to HEI sustainability, etc. (Lukman & Glavič, 2007; Wright, 2002; Godemann et al., 2014; Ferrer-Balas, Buckland, H., & de Mingo, M., 2008). Much of the recent literature on sustainability and sustainable development that has been published after the SDG's launch in 2015 is thematically preoccupied with addressing the Sustainable Development Goals head-on, but in many regards, the arguments and theoretical basis are much the same and build on previous works such as those mentioned.

For the Innovation Unit at the University of the Faroe Islands, the initial question with regards to the SDGs was very binary and simple: "In doing this, are we working against the principles of any of the SDGs?" If the operation or project could be argued to have a negative impact on any of the SDGs, they would be scrapped or reworked. However, in a broader sense, this simplistic way of filtering does nothing to further implementation or garner collaborative support for further development internally or externally, and the need for a proactive stance rather than a reactive one quickly became apparent. In the context of a larger operational framework, the first question we should be asking is: "In doing this, are we furthering the principles of the SDGs – if so, how many and to what extent?" Cross-referencing with a national baseline would, of course, also benefit an initial scoring as this is able to provide far better metrics on the benefits of a certain operation or project. If the answer is positive, we should (as is outlined in SDSN Australia/Pacific, 2017, pp. 10–30) ask ourselves how the operation can contribute to the SDGs through: internal operations and governance, education, research, and external leadership.

This type of early stage evaluation is typical to general project management along with risk assessment and delegation of ownership, but the really beneficial aspect to this type of scoring is that is lends itself to a speedier and more nimble learn-by-doing style of SDG implementation, not unlike Jeff Sutherland's SCRUM methodology (Sutherland, 2014). Rather than spending years developing

local implementation guidelines that run the risk of being too unwieldy or dated—an early scorecard with simple metrics outlining benefits and drawbacks that allow for easy reporting and quick iterations will allow for better results, the option for broader inclusiveness and collaborations, and an accumulative positive net effect in relation to expertise and know-how down the line. There are, of course, more elaborate and technical ways of assessing the implementation of the SDGs on an academic level. Laurent, A. et al.'s (2019) SDG Assessment Methodology is one such tool.

University strategy and mission statements

With a solid foundation ensuring adherence to the SDGs and considering their implications as they relate to internal operations, education, research, and external leadership, as seen above, an operational framework is slowly starting to take shape. With the initiating participant having covered ownership and the factoring in of sustainable development goals and targets, it is equally important that they experience there being a willing institutional support toward practical societal contributions within the organisation.

The three common missions that can be found in most university charters or strategies are education, research, and dissemination. While the University of the Faroe Islands and its staff generally strive to go beyond these three missions, there is no codified or systematic approach to any such operations. Arguing for a systemic approach to academic work that goes beyond these three common missions, I will be relying on Trencher, Yarime, McCormick, Doll, and Kraines' (2013) analysis of an emerging fourth mission they refer to as: co-creation for sustainability. In order to discuss this new type of academic mission, a very brief outline of the missions relating to teaching, research and dissemination will follow below before I return to an analysis. It is important to note that these activities are in no way stand-alone within academia, each are pillars supporting the same roof and the same is true for any fourth pillar we might add. Trencher et al. (2013) illustrate this point very well in Figure 7.4 of their paper (Trencher et al., 2013, p. 168).

Teaching

Growing out of cathedral and monastic schools of late mediaeval Europe, the first institutions historically to be acknowledged as "universities" were the University of Bologna and the University of Paris, established in the eleventh and twelfth centuries, respectively. The driving force behind these and more than 100 universities that were established around Europe between the twelfth and the fifteenth century, was the expansion of the Catholic Church and the need for a systematic approach to instruct students in matters relating to the church; theology, law, and medicine (Arbo & Benneworth, 2007, p. 19). This first mission of teaching was to be the main objective of early universities well into and beyond the Enlightenment.

Research

Following the Enlightenment, a genuine demand for academic reform was raised in the established European academic institutions. As new types of schools and disciplines were developed in order to cater to social changes brought on by the Enlightenment, the French Revolution, the Industrial Revolution, and the growing field of natural sciences—the older institutions were increasingly seen as part of the l'ancien régime of days past. Following the carnage of the Napoleonic Wars, a renaissance was to hit the Prussian academic establishment that would cement the second mission of research as a cornerstone of academia. Brought on by the shuttering of a number of prominent Prussian universities during the wars and a renewed sense of nationalism following the wars, the establishment of the Berlin University in 1810 was guided by the "ideals of Bildung, academic freedom

and the collective research process as its corner-stones" (Östling, 2018, pp. 23–9). This notion of Bildung has generally attributed to Wilhelm von Humboldt, and the transition from an academic environment focused purely on teaching, to one of teaching and research were to be codified in what became known as the Humboldtian Reform or Humboldtian Model (see Wittrock, 1993; Östling, 2018) which dictated a more holistic approach to academic education where students were given academic autonomy to pursue their interest and engage with the world through reason and self-determination. Within this ideal, the pursuit of knowledge was to be available to all and aim to change the world for the better independently of economic interests. In other words, knowledge for the sake of knowledge (see Östling, 2018; Anderson, 2004).

Dissemination and technical transferal

While the third mission encompasses academic dissemination to peers and the public in a variety of forms not covered by the first and second missions, the focus here is rather on the technical transferral of knowledge for use outside of the academic realm (E3M Project, 2012). The rise of this part of the third mission emerged from Vannevar Bush, 1945 conceptualisation of a "university-industrial complex" following World War 2 (Bush, 1945). Bush's blueprint for academia was meant to "establish a link between university research and business innovation" in order to "advance economic well being" (Zomer & Benneworth, 2011, p. 83). As Clark (1998) and Etzkowitz (2002) point out, the connection between academia and industry within a third mission formulation dates back to the European agricultural universities and the American land-grant universities of the Industrial Revolution. However, Bush's university-industrial complex did not pick up speed until the 1980s, helped along with the passing of the Bayh-Dole Act of 1980 that allowed researchers to claim ownership of federally funded inventions and technical advancements through patents (Mowery, 2007 as cited in Trencher et al., 2013). This new law was instrumental in capitalising, commercialisation, and commodification of knowledge (Zomer & Benneworth, 2011, p. 84; Etzkowith, 1998, p. 826). This commodification, in turn, gave rise to the Entrepreneurial University (see for example: Clark, 1998; Etzkowitz, 1998; Etzkowitz, Webster, Gebhardt, & Terrad, 2000), where external funding often dictates the direction of research and applied sciences in order to maximise profits outside of the university. Led by MIT and Stanford—for the Entrepreneurial University, "identifying, creating and commercialising intellectual property have become institutional objectives [with the aim of] improving regional or national economic performance as well as the university's financial vantage and that of its faculty" (Etzkowitz et al., 2000, p. 313 as cited in Trencher et al., 2013, p. 151).

It should be noted here that technical transfer of knowledge in the form of patents or products might not be relevant to the majority of smaller Arctic universities. In cases where this commercial component is missing, the argument for organisational focus on social issues such as sustainability would be a much simpler sell as that addition of the next mission we will deal with will show.

Co-creation for sustainability

As is argued by Trencher et al. (2014, pp. 156–157), the term "social contribution is a useful synonym for describing the core notion of the third mission." However, they go on to argue that "the idea of societal contribution is today widely perceived and promoted as being chiefly an economic contribution" championed by OECD efforts to "emphasise the economic benefits and gains in international competitiveness for governments when universities focus their third-stream activities on innovation transfer and spurring regional development" (Trencher et al., 2014, pp. 156–157). In their critique of the third-mission regime, Trencher et al. (2014) conclude that efforts to introduce the concept of sustainability and green innovation into the existing third mission has yet to produce much in the way of results—likely due to the fact that the majority of funding and knowledge transfer relates

to medicine, biomedical- and computer research. Based on their analysis of the current state, their "position is that the potential of the third mission regime to function as a useful guiding concept or propelling force in the quest for low-carbon development and sustainable transformation of individual towns, cities, and regions is yet to be proven" (Trencher et al., 2014, pp. 156–157). They (Trencher et al., 2014, pp. 157–9) then argue for a fourth mission statement, one of co-creation for sustainability. They do not argue that this new mission should supplant the third mission, but rather supplement it in compounding the effects of all four mission statements by transforming Entrepreneurial Universities into Transformative Universities (Trencher et al., 2014, p. 169, emphasis is of the author) that weave together: teaching, research, dissemination, and co-creation for sustainability. This mission, they argue (Trencher et al., 2014, p. 158) is one that requires the transformative university to encompass a broad range of transdisciplinary sciences working together long-term on crucial issues that are place and stakeholder oriented. Further, they call for large-scale coalitions with multi-helix specialists and non-specialists utilising Open Innovation tactics in order to produce socially embedded knowledge and mutual learning. To clarify, let us take a look at Helix models and Innovation frameworks in turn.

Helix models

If the Berlin University of 1810 could be said to be Single Helix and the addition of industry to form the Entrepreneurial University of the 1980s could be said to be a Double Helix, then the addition of government as a third actor is what makes up the Triple Helix Model. Conceptualised by Etzkowitz (1993) and Etzkowitz and Leydesdorff (1995) in an effort to interpret the shift from a dualistic relationship between universities and industry in the industrial society, to the triadic relationship between academia, industry, and government in the modern knowledge society, the Triple Helix Model is commonly seen as the standard for modern academic cooperation.

Triple Helix

Often depicted as three intertwined strands in the style of the classic representation of DNA, the Triple Helix model is probably better illustrated in the style of a Venn diagram consisting of three circular spheres of influence; academia, industry, and government overlapping. Since Etzkowitz and Leydesdorff early work of the 1990s, an abundance of theoretical development has pushed the conceptual framework of the model forwards immensely and we will not be able to gain a complete overview of the literature here. A majority of the early literature is concerned with the in-depth analysis of systemic and organisational interactions at fairly large scales where actors tend to be portrayed as entire universities, entire companies or entire governments—often ignoring the roles of individual actors such as members of staff or specialised working groups. While much of the early theoretical work on the topic provides a good foundational approach to how these three spheres of influence can come together, they do not, however, "provide an explicit analytical framework for conceptualising Triple Helix interactions in an innovation system" (Ranga & Etzkowitz, 2013, p. 238) and the large-scale holistic focus on "'block' entities, without going deeper to the level of sphere-specific actors" (Ranga & Etzkowitz, 2013, p. 242) are not conducive to the Arctic conditions dealt with here. For the sake of the operational framework, I will be relying on Ranga and Etzkowitz's (2013) more fine-grained analysis of the Triple Helix systems approach below.

In very broad strokes, the conventional theoretical approach to the Triple Helix model is based on two complementary perspectives; one institutional and one evolutionary. Within the institutional approach, the way the three spheres of influence interoperate fall into three different configurations: A statist configuration, where the government acts as the main driver and planner for innovation and development. A laissez-faire configuration with limited governmental control is where the industry is the main driver and universities provide skilled workers. And, a balanced configuration where the

institutions act jointly in formalised partnerships (Ranga & Etzkowitz, 2013, p. 239; Etzkowitz & Leydesdorff, 2000, p. 111). For our sake, my references to the Triple Helix model will refer to the balanced configuration where trilateral networks and hybrid organisations are possible (this is also similar to the notion of Triple Helix type 3 as noted by Etzkowitz & Leydesdorff, 1998, p. 197). The evolutionary perspective argues that universities, industry, and government exist and co-evolve within social systems where they are influenced by markets, technological advancement, environmental concerns, and so on. The interoperation between the stakeholders here relies heavily on two processes of communication—a functional and indirect one between science and markets, and an institutional and direct one between private and public control that allows for selective adjustments that ensure a regeneration of the system (Ranga & Etzkowitz, 2013, p. 240). Especially the move from Triple to Quadruple and Quintuple Helix is very much contingent on the view that stakeholders must operate within a social system of change through individual actors that are able to set up lines of communications and work together in order to adjust and reshape the system.

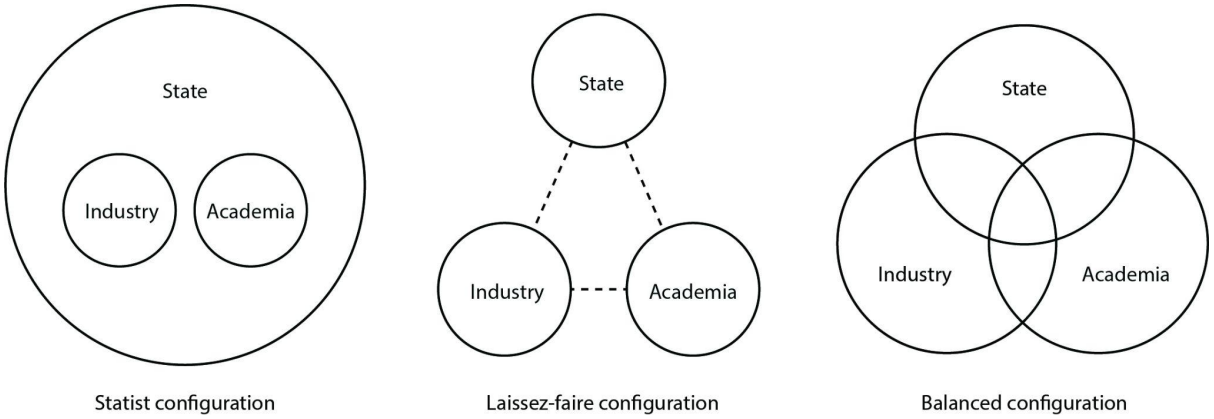


Figure 2 The three different configurations of the way the three spheres of influence interoperate in the institutional approach.

Ranga and Etzkowitz (2013, pp. 241–254) break down the conventional understanding of the Triple Helix model using the innovation systems concept or, as it was later known; national innovation systems (NIS) (Ranga & Etzkowitz, 2013, pp. 240–241) in order to analyse it at a more granular scale. Their Triple Helix systems approach breaks down the Triple Helix model into three elements: First, system components (and their boundaries), these are the institutional spheres of university, industry, and government—consisting of the institutional actors themselves and any individual actors, and where these networks overlap. While the institutional actors can, as such, be argued to interact—the interest here is rather on the individual actors involved; innovational initiators, entrepreneurial researchers, R&D staff, the management or policy writers. Second, relationships between the system components, meaning direct collaboration, conflict moderation, collaborative leadership, and so on. It is through meaningful and carefully moderated relationships that actors are able to work together, transfer knowledge, network and replicate the system. Third, the functions of the system relate to the generation, diffusion, and use of knowledge and innovation as an absolute main ideal. This is the end product of the model, the coming together of different stakeholders in order to produce and disseminate new knowledge that can be utilised to benefit a greater need.

Ranga and Etzkowitz (2013, pp. 247–250), however, argue that in order to get to this end product, it will need to be realised through what they call Triple Helix spaces: the Knowledge Space, the Innovation Space, and the Consensus Space. Very much relevant to our operational framework, they can, in an Arctic low-resource context, be understood as follows: The Knowledge Space is where an aggregation of local and regional research and knowledge exists. This could take the form of a local

database managed by local research councils, tracking the output and needs of universities, industry, and government in order to ensure that research is not fragmented or needlessly duplicated[22]. Up to date data on the knowledge being produced and governmental or municipal projects needing attention could help streamline collaboration. The Knowledge Space should also aim to attract funding and leading research through networking and dialogue. The aim of the Innovation Space is to provide a common platform for stakeholders to manage the development of new and innovative firms and industries. This can be done through the creation of integrated environments where academia, research, and the needs of industry, governments, and municipalities can come together in order to find solutions. The Consensus Space is a coming together of stakeholders into a forum where they are interdependent and can begin to see themselves as part of something greater than their department, company, town, or country. This can take the form of brainstorming meetings and dialogue sessions that aim to solve issues that are not solvable by any one sector of society, such as housing shortages, unemployment, pollution etc.

Quadruple Helix

If we reconsider the earlier steps in this proposed framework, the academic mission statement of co-creation for sustainability is predicated on the collaboration between academia, industry, government—and also civil society and the media. This broad and inclusive approach is very much in line with the arguments made by Carayannis and Campbell (2009, pp. 206–207) for a fourth dimension to the existing Triple Helix model, and it is similarly very close to the evolutionary perspective of the triadic arrangement of academia-industry-government needing to exist within a malleable and changing social system and not a theoretical vacuum (Ranga & Etzkowitz, 2013, p. 240). For Carayannis and Campbell (2009, pp. 206–207), a Quadruple Helix model considers the necessity of the media as a means to transport public discourse and playing a vital role in the communication of social realities, norms, and values. Adding to that, a Quadruple Helix model also incorporates the actions of agents of culture, civics, and arts within the community. As such, the Quadruple Helix model is easily able to accommodate the Helix spaces mentioned above, and there are no practical barriers to the inclusion of NGOs, interest groups and cultural movements. This inclusiveness has the possibility of, as Carayannis and Campbell (2009, p. 207) argue, result in a "democracy of knowledge, driven by a pluralism of knowledge and innovation [...]."

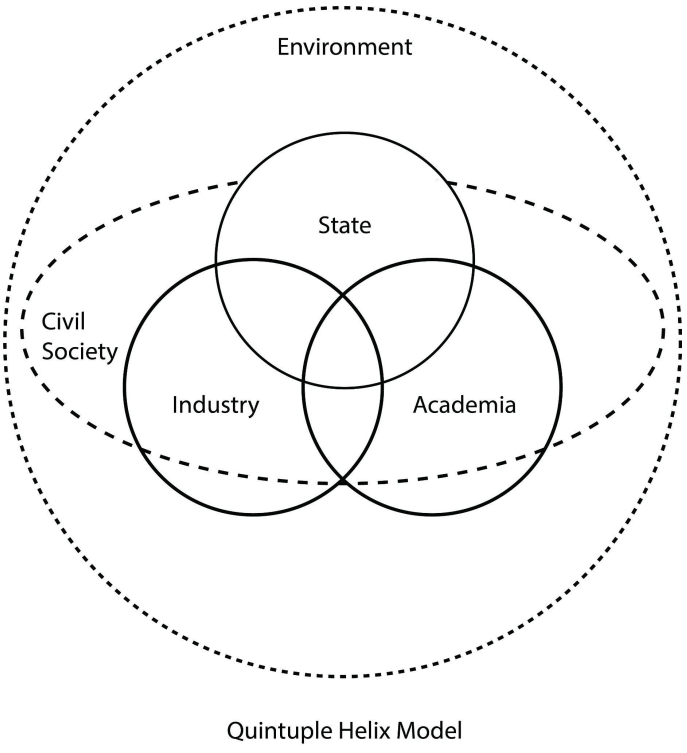


Figure 3 Quintuple-Helix model.

[22] www.isaaffik.org is one such initiative.

Quintuple Helix

Returning to the Sustainable Development Goals and their focus on sustainable development and ecological stewardship, there is yet another Helix Model that concerns itself with these issues. Building on their argument for a Quadruple model, Carayannis and Campbell (2010) go on to argue for the fifth sphere of influence; the environment. While the Triple- and Quadruple Helix models concern themselves mainly with economic and cultural innovations and gains, the Quintuple Helix model adds elements of sustainable development and social ecology, and ultimately argues that this added level of the model has the ability to structure the Helix model approach in such a way that it can allow stakeholders to concern themselves with eco-innovation and eco-entrepreneurship (Carayannis & Campbell, 2010, pp. 58–63).

Innovation frameworks

While the three different Helix Models outlined above concern themselves with variations of theoretical and practical takes on collaboration and innovation, there are two further conceptual manifestations of innovation that can be favourably considered in this context. At one end, we have the profit maximisation of Open Innovation—and on the other end, the maximisation of social good inherent in Social Innovation. While these initially seem diametrically opposed, I hope to make a convincing argument that by combining these two approaches to innovation at the tail end of a framework an Open Social Innovation approach to innovation might have a useful role to play in making sustainable development viable within the Arctic.

Open innovation

The initial ideas relating to open innovation date back to the 1960s onset of the Information Age and the spread of computers, but the formalised term used in reference to industry opening up their silos of research and development to external researchers and developers in order to licence, spin out, and divest products was conceptualised and coined by Henry Chesbrough in 2003. While Chesbrough's (2003) initial conceptualisation was heavily slanted toward accelerated development of new technologies and goods by making an organisation's boundaries more permeable and hopefully more profitable, later refinements of the term argue that the process can also be a useful way of managing the flow of knowledge across organisational boundaries both internally and externally simultaneously using "pecuniary and non-pecuniary mechanisms in line with the organisation's business model" (Chesbrough & Bogers, 2014)—that is, measured in both monetary and non-monetary terms.

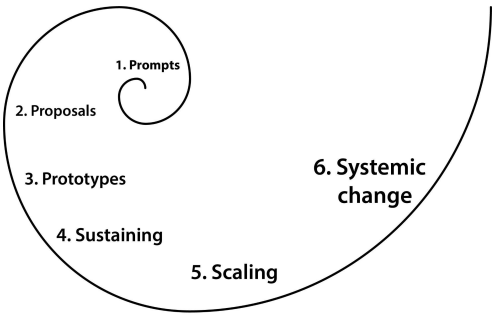
In short, Chesbrough and Bogers (2014) argue that Open Innovation is based on the premise that the drive for innovation and the sources of knowledge that can drive innovation are dispersed widely in society and the economy. They invoke Bill Joy's (co-founder of Sun Microsystems) Law that states that "most of the smartest people work for someone else" (Chesbrough & Bogers, 2014). Open Innovation, briefly, is a way to scale the boundaries of otherwise closed-off organisations in order to allow for novel approaches to stagnant problems by outside expertise. In practice, this involves the industry establishing an Open Business Model (Vanhaverbeke & Chesbrough, 2014) that is inclusive to external stakeholders and innovators. This type of model sets up a "division of innovation labour" where one party might research and develop a new idea—and another party, in turn, carries it to market (Vanhaverbeke & Chesbrough, 2014, pp. 52–53). Vanhaverbeke and Chesbrough (2014, p. 54) give a number of examples of how this approach can be useful; inside-out modes that result in licensing agreements and spin-offs, outside-in modes that draw in external expertise and combine it with an existing business model and modes where an industry makes use of external or internal knowledge to develop entirely new business models. While Chesbrough's definition of the term is

generally applied to a commercial setting—the notion that very capable and innovative actors are to be found outside the boundaries of an organisation is just as likely to hold true to non-commercial organisations such as a university, a municipality or an NGO. While the literature on Open Innovation is too broad and varied to cover here, this main takeaway of being able to look beyond institutional and organisational walls for expertise and inspiration is the key. While the more typical combination of Open Innovation and academia is fairly commonplace at many technical universities and business schools around the world—applying the same mindset of openness that a business might employ to further commercial interest to an academic reality allows for even more and more diverse collaborative arrangements when combined with the tenets of Social Innovation. Especially for small non-technical Arctic universities, when combined with the fourth mission statement of co-creation for sustainability and a strong multi-helix approach, the concept of Open Innovation is easily transformed from a profit-making industry strategy into an academic collaborative approach based on openness and stakeholder inclusion. By utilising Open Innovation as a core strategy, the operational framework allows the university and its stakeholders to move forward both in a conventionally technical innovation track, or it can use the same tactics to focus its energy on maximising social good through Social Innovation. Further, Open Innovation when employed from the perspective of a university can even facilitate technical and social innovation in parallel—facilitating the development of a viable new product or service based on social issues. The majority of literature dealing with Open Innovation deals with how it benefits Technical Innovation, so I will not be covering it here. Its exclusion should, however, not be seen as it being of lesser interest or importance to the framework. For the sake of understanding how small institutions can better target social issues, we will concern ourselves with the value of Social Innovation and how Open Innovation can be used as an important tool to realise social innovation-based projects.

Social innovation

Open Innovation is, at least from a theoretical standpoint, very much tied to business innovations which in turn are motivated by profit maximisation. Social Innovation, on the other hand, is predominantly motivated by the goal of meeting social needs (Mulgan, 2006, p. 146). Social Innovation can be defined as "innovations that are social both in their ends and their means. [They are] new ideas (products, services, and models) that simultaneously meet social needs and create new social relationships or collaborations. In other words, they are innovations that are both good for society and enhance society's capacity to act" (Murray and Mulgan, 2010, p. 3).

A very different aspect to Social Innovation, as opposed to innovation in a more broad sense, is that Social Innovations need not be wholly new ideas—but can be new to those benefiting from them. Further, Social Innovations tend not to be inherently new in and of themselves, but rather a combination of already available technologies or solutions (Mulgan, 2006, p. 151). Boelman and Davies (2015, p. 6) also argue for this newness criteria along with the requirements that Social Innovations should meet a social need in positive ways, they should be put into practice, they should engage and mobilise beneficiaries through governance and they should transform social relations through greater access to power and resources. They further argue that Social Innovations (Boelman & Davies, 2015, p. 7) can take many different forms; new services, products, practices, processes, rules, regulations, and organisational forms.



Social Innovation stages

Figure 4 Social innovation stages.

A core distinction between Open Innovation and Social Innovation, is that Social Innovation aims to solve issues not generally solved by commercial interests (Nicholls, Simon, Gabriel, & Whelan, 2015, p. 3). They can be issues such as human rights, environmental concerns, healthcare, or education—often in developing or remote regions of the world. According to Murray and Mulgan (2010) and Rayna and Striukova (2019) the Social Innovation process can be broken down into six different stages:

1. **Prompts, inspirations, and diagnoses**: Initial stage during which various factors trigger the need for innovation, after which a diagnostic of the problem and the framing of the question ensue.
2. **Proposals and ideas**: Idea generation stage using a variety of methods based on insight and experience.
3. **Prototyping and pilots**: Stage during which ideas are put into practice to be tested and, subsequently, refined.
4. **Sustaining**: Stage at which the idea is adopted for everyday use and is, as a result, streamlined. Income streams are identified at this stage.
5. **Scaling and diffusion**: Stage at which there is an attempt to scale up and diffuse the innovation beyond its original test bed.
6. **Systemic change**: This stage is the ultimate goal of social innovation, but also the most difficult to achieve due to its wide-scale, the large number of stakeholders it involves and the multiple barriers to change that exist.

Of these six stages, the first three are relatively straightforward even in resource-poor situations and areas. Broadly they rely on idea generation as a response to social issues that can be undertaken by even small groups of people or even individuals. In a small-scale academic setting, this is generally how far a group of students would be expected to be able to push a project for an assignment or the level of refinement a group of independent volunteers might be able to develop a project funded by a small municipality or government (of which I have taken part in more than my fair share). It is only in the last stages of the innovation process that any meaningful impact will be seen. The main reason for failure at steps 4 and beyond is often the obvious lack of income streams for projects that aim to do social good in areas where there tends to be little in terms of economic value. While these types of small-scale projects can be a good way to illustrate proofs-of-concept (free communal urban gardens, for example), they quickly tend to fizzle out after only a short time due to a lack of resources.

Another, perhaps not so obvious, reason for failure at this crucial point in the process is often the absence of supportive networks. Mulgan (2007) and Rayna and Striukova (2019) point out that failures to connect with networks that can provide expertise and experience are a common pitfall for social innovation processes. Similar to how the industry might employ Open Innovation as a means to entice external expertise into the fold—they argue that this is a tactic that could be extremely applicable in terms of bringing social innovation to market, so to speak. Rayna and Striukova (2019, p. 385) argue that "[b]y enabling access to a larger pool of resources and skills, as well as diffusion paths, applying open innovation paradigm to social innovation could enable to overcome critical challenges at all six stages of the social innovation process."

Open social innovation

I have argued that Open Innovation and Social Innovation are two rather different strands of innovation frameworks that serve very different needs. Yet the similarities of bringing products to market tie the two processes together in more ways than one. In both cases, maximising profits and maximising social good, the processes hinge on networking, external expertise, and novel business models. While commercial enterprises make use of business models in order to turn a profit, social innovations will ultimately have to rely on some form of operational resources (likely in the form of monetary funding) in order to sustain themselves and in turn scale, diffuse and enact systemic changes.

The concept of Open Social Innovation seems to be first proposed by Dominic Chalmers (2013). In his article, he argues for similarities between the Open and Social Innovation similar to the ones noted above. As argued above, some main reasons for failures to launch social innovation processes are lack of long-term operation resources and a lack of expert networking.

Chalmers expands upon the knowledge searching and networking issues by arguing that social innovators would do well to focus more on their users as well as initiating boundary-spanning knowledge searches that look for expertise and innovation that exist beyond their organisation's traditional domains to combat "industry blindness" (Chalmers, 2013, p. 25).

Chalmers (2013) goes on to identify a third stumbling block (related to resources) that is common for social innovation processes; risk aversion. He argues that a common barrier "to the adoption of social innovation lies in the risk associated with disruptive innovation [in that] those offering sup- port to social innovators in the form of capital are institutionally conditioned to favour incremental 'safer' forms of innovation" (Chalmers, 2013, p. 26). In order to combat risk aversion, Chalmers argues for five different propositions for social and community-based organisations (Chalmers, 2013, pp. 27–28):

1. Adopting a more "open" approach will mitigate risks associated with introducing new innovations.
2. Adopting problem solutions from different domains will reduce the risk of new innovations failing.
3. Incorporating user knowledge into the innovation process will increase their chances of success.
4. Participating in some form of open, networked innovation will be more effective at developing innovations addressing the root causes of social problems.
5. Engaging in "open source" collaboration will be more effective in tackling vested interests and dominant competitors.

Here we see the beginnings of the merging of Open and Social Innovation. In applying Open Innovation mechanisms to the issues facing Social Innovation, social innovators should adhere to a networking paradigm that involves multiple boundary-spanning stakeholders—which in turn would help mitigate risk aversion from investors and funders.

Martins & De Souza Bermejo (2014) follow up on Chalmers work and argue as the main point that "when Social Innovation is seen from a collaborative point of view, organisations become more porous structures that make it possible to overcome the barriers that prevent communities from innovation from the bottom up. Thus, when organisations are open they strengthen localism and provide a means for civil society to become involved in finding solutions" (Martins & De Souza Bermejo, 2014). They go further to attempt a conceptual model of the relationship between Open Innovation and Social Innovation seen in Figure 5.

They argue that the collaborative interplay between Open and Social Innovation not only has the capacity to produce new solutions to social problems and changes to social practices, but at the same time is also able to facilitate and stimulate new technical innovations in the form of new products, services or processes that in turn result in economic development. At the same time, Chesbrough and Di Minin (2014, p. 170) venture a definition of the concept. They defined Open Social Innovation (OSI) to be "the application of either inbound or outbound open innovation strategies, along with innovations in the associated business model of the organisation, to social challenges" (Chesbrough & Di Minin, 2014, p. 170). They argue that Open Social Innovation is especially apt at solving stages 3–5 of the Social Innovation process (Chesbrough & Di Minin, 2014).

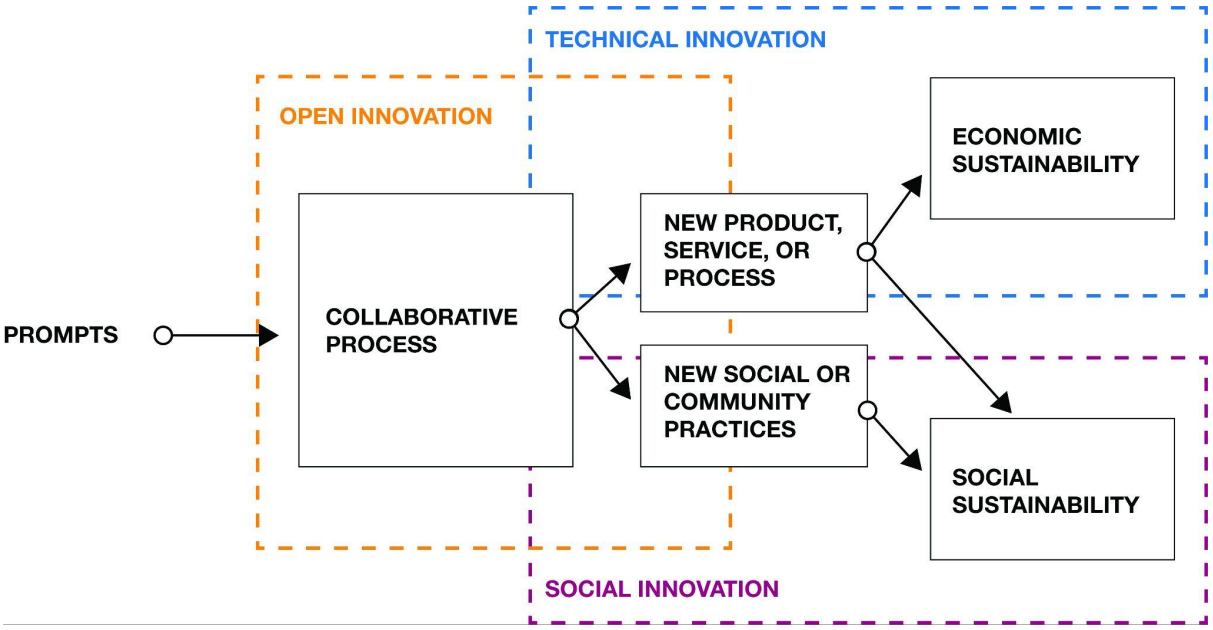


Figure 5 Conceptual model of the relationship between open innovation and social innovation.

Regardless of where the prompt originates; industry, government, academia, or civil society—social innovation and socially innovative projects more broadly will mostly follow the six steps outlined above. They will need to pass through a phase of idea generation, prototyping, and testing phase, and eventually a process of sustaining itself so that it can scale and hopefully change society for the better. Most of these socially conscious community-based efforts at social change will likely struggle to move beyond the initial prototyping and proof of concept stages due to the lack of operation resources. And as Chalmers (2013) argues, it can be hard to find funding for risky disruptive innovation aimed at a segment of society that might not be seen as very profitable, politically incorrect or otherwise unpalatable for whatever reason.

Before moving on how this might look from an academic perspective, I hope that (albeit brief) the arguments for utilising Open Innovation tactics in conjunction with Social Innovation processes will seem compelling. How they can be made to push Social Innovation initiatives beyond stages of initial prototyping and proof-of-concept, how they can mitigate risk and how they can break down institutional borders and attract external expertise. None of the examples used so far have concerned themselves with academia. They have all focused on industry and NGOs. What is wholly absent from the literature is a perspective from within academia. In the following concluding section, I will attempt to outline why I think the framework presented is such a natural fit for small Arctic universities.

An academic perspective

As I have noted above, Open and Social Innovation tactics are generally considered to belong in the domains of commercial enterprises and action-oriented civic groups such as NGOs or governmental agencies. Only in rare instances does the literature attempt to shine a light on how these tactics could be employed by academia in an effort to pursue issues of sustainability, innovation, entrepreneurship, or social change. The University of the Faroe Islands is comparable to a number of Arctic universities. It is a small, publicly funded university servicing around 800 students in five different departments. Apart from offering courses in social sciences, economy, law, natural science, and Faroese, it also houses a teacher's college and a degree in nursing. In relation to mainland Europe and the Arctic

region broadly, it is a geographically isolated university with a relatively low level of contact with other institutions of higher learning in the region.

At the time of writing, the University is facing a number of issues. It is seeking to modernise, systematise, and professionalise a wide array of operational aspects of the organisation; this includes the development of a new university strategy and updated mission statements. It is also attempting to broaden its local, regional, and international reach in terms of collaborations, research networking, and funding—all with very limited resources. Further, the university is also reacting to the emerging trends within the Arctic academic environment described above (Blaxekjær et al., 2018). The small size of the University of the Faroe Islands and other similar universities in the Arctic that often exist to service the local population and seldom profile themselves in a manner that would attract an international student body or sizeable amounts of external funding, must often make do with local networks and draw on local sources of funding for research—or relegate themselves to taking on smaller and often non-technical roles within larger European or Arctic research projects.

The current lack of much international research presence facing many of the smaller Arctic universities does, however, allow them to occupy academic niche positions relating to local knowledge and development. This hyper-specialisation and localisation of knowledge has, especially in recent years, become a growing trend within the Arctic and often sees small Arctic universities being able to punch above their weight, participating in a much more level footing on their home turf due to valuable local insights and expertise. Coming to terms with how valuable these smaller universities are to their local communities and how much social good they are able to initiate through socially conscious activities would not only maximise organisational output, but it would also have the added benefit of building up local competences and credibility with regards to regional and international collaborations.

In order to operate optimally, an operational framework such as the one presented here would need to be functional on a number of levels in order to deliver practical lasting results. If the output is to be sustainable social innovation, it must cover the three general aspects of sustainability - economic, environmental and social. To reach that level, it must, therefore, encompass some form of technological innovation that creates local jobs or adds positively to the economy in the form of new products or services and it must also contain an element of social innovation that results in new sustainable practices or developments. However, in order to have commercial and social innovations complement each other in a sustainable way, university-led initiatives will need to rely on a collaborative process with industry on one side and civil society and government on the other. This process, the Innovation Unit argues, fits perfectly with the mechanisms of Open Innovation. It is here that university-led Open Innovation is able to facilitate openness, dialogue, networking, risk and stakeholder management, and a collaborative effort to push projects beyond stages four and five of the social innovation track.

To get to a point where this facilitation of sustainable development between academia, industry, and civil society becomes possible, the university must progress through a preparatory phase of internal auditing that ensures the inclusiveness of stakeholders, the strategic value for the university and a strict adherence to sustainability throughout the process. Before the Open Innovation tactics can be utilised in an open, collaborative process, the university and key stakeholders should conduct a Helix-model audit. Following a Triple Helix model stakeholders would only include academia, government, and industry (Etzkowitz, 1993; Etzkowitz & Leydesdorff, 1995). Using a Quadruple Helix model would include civil society in the process (Caryannis & Campbell, 2009). Even better, by utilising a Quintuple Helix model the university is able to include a fifth sphere of influence: the environment (Caryannis & Campbell, 2010). A prerequisite for successful Helix model collaborations led by the

university is of course that the university takes on an active and participatory role. In order for the university to do so, projects must have a strategic value that complement university missions statements of education, research, and dissemination. In order to boost impact, the Innovation Unit advocates that the university goes beyond these three common mission statements and initiates a fourth mission statement of sustainable co-creation as is put forward by Trencher et al. (2013). As noted above, there is a clear wish from a number of Arctic universities that the UN Sustainable Development Goals be implemented as a guiding framework for curricula and daily operations. If the output of this operational framework is to be sustainability in its different forms, then the SDGs are currently likely the best way to audit the sustainability of initiatives. The SDGs are simple, easy to understand, give participants a common language through their goals and targets and are at the same time not very confrontational as a tool. As a yardstick, simply asking whether a project or an initiative would be counter to the tenets found in the SDGs would be a good start. If so, it should be reconsidered or scrapped. If a project is not counter to the SDGs, an audit and analysis of how well the project is in line with the SDGs, how many goals and targets it will cover and a measurement of impact should be produced. Also, the university should consider how participation in the project or initiative and subsequent adherence to the SDGs might positively impact internal operations and governance of the organisation and the institution, how it might be used for educational purposes, for research purposes—and how it might be used as a way for the university, along with stakeholders, to illustrate leadership and commitment toward sustainability within the community.

References

Anderson, R.D. (2004) *European Universities from the Enlightenment to 1914*. Oxford Scholarship Online (2010): Oxford.

Arbo and Benneworth (2007) *Understanding the regional contribution of higher education institutions: A literature review*, OECD Education Working Paper, No. 9. OECD: Paris.

Arctic Council (2016). *Arctic Resilience Report*. M. Carson and G. Peterson (eds). Stockholm Environment Institute and Stockholm Resilience Centre, Stockholm. [www.arctic-council.org/arr].

Boelman, V. et al (2015) *Growing Social Innovation: A Guide for Policy Makers*. Available at the Young Foundation website: youngfoundation.org/wp-content/uploads/2015/04/YOFJ2786_Growing_Social_Innovation_16.01.15_WEB.pdf [Accessed 5 December 2019].

Bush, V. (1945) *Science: The Endless Frontier: a Report to the President by Vannevar Bush, Director of the Office of Scientific Research and Development, July 1945*. National Science Foundation (www.nsf.gov/od/lpa/nsf50/vbush1945.htm) [Accessed March 5th, 2019].

Caryannis and Campbell (2009) *'Mode 3' and 'Quadruple Helix': toward a 21st century fractal innovation ecosystem*. International Journal of Technology Management, Vol. 46:201-34.

Caryannis and Campbell (2010) *Triple helix, Quadruple helix and Quintuple helix and how do Knowledge, Innovation and the Environment relate To Each other? a Proposed Framework for a Trans-disciplinary analysis of Sustainable development and Social Ecology*. International Journal of Social Ecology and Sustainable Development, Vol. 1(1):41-69.

Carayannis and Campbell (2012) *Mode 3 Knowledge Production in Quadruple Helix Innovation Systems*, SpringerBriefs in Business 7.

Carayannis, Barth and Campbell (2012) *The Quintuple Helix innovation model: global warming as a challenge and driver for innovation*. Journal of Innovation and Entrepreneurship. 1(1):2.

Chalmers, D. (2013) *Social Innovation, An Exploration of the Barriers Faced by Innovating Organizations in the Social Economy*. Local Economy, 28(1):17-34.

Chiu, R. (2012) *Entrepreneurship education in the Nordic countries: Strategy implementation and good practices*. Nordic Innovation Report, 2012:24. Nordic Council of Ministers: Copenhagen.

Chesbrough, H. (2003) *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Harvard Business School Press; Boston, Mas.

Chesbrough and Bogers (2014) *Explicating Open Innovation: Clarifying an Emerging Paradigm for Understanding Innovation*. Chapter 1 in: Chesbrough, Vanhaverbeke and West (eds) *New Frontiers in Open Innovation*. Oxford: Oxford University Press.

Chesbrough & Di Minin (2014) *Open Social Innovation*. Chapter 9 in: Chesbrough, Vanhaverbeke and West, eds. (2014) *New Frontiers in Open Innovation*. Oxford: Oxford University Press.

Clark, B. R. (1998). *Creating Entrepreneurial Universities: Organization Pathways of Transformation*. Guildford, UK: Pergamon.

E3M Project (2012) *Green Paper: Fostering and Measuring "Third Mission" in Higher Education Institutions*. (www.esna.tv/files/div/GreenPaper_ThirdMission.pdf) [Accessed May 5th, 2019].

Etzkowitz, H. (1993) *Enterprises from Science: the Origins of Science-Based Regional Economic Development*. Minerva, Vol. 31:326-60.

Etzkowith, H. (1998) *The Norms of Entrepreneurial Science: Cognitive Effects of the New University-Industry Linkages*. Research Policy 27(1998): 823-33.

Etzkowitz, H., et al (2000). *The future of the university and the university of the future: evolution of ivory tower to entrepreneurial paradigm*. Research Policy, 29(2), 313-330.

Etzkowitz, H. (2002). *MIT and the Rise of Entrepreneurial Science*. London: Routledge.

Etzkowitz, H. and Leydesdorff, L. (1995) *The Triple Helix, University-Government relations A Laboratory for Knowledge Based Economic Development*. EASST Review 14(1):14-19.

Etzkowitz & Leydesdorff (1998) *The Triple Helix as a Model for Innovation Studies*. Conference Report, Science and Public Policy, Vol 25:3-195-203.

Etzkowitz, H. and Leydesdorff, L. (2000) *The Dynamics of Innovation: From National Systems and "Mode 2" to a Triple Helix of University-Industry-Government Relations*. Research Policy, Vol 29-2:109-23.

Ferrer-Balas, D. et al (2008) *Explorations on the University's Role in Society for Sustainable Development through a Systems Transition Approach: Case Study of the Technical University of Catalonia (UPC)*. Journal of Cleaner Production, Vol. 17:1075-1085.

Goodman, J. et al (2014) *Higher Education and Sustainable Development: Exploring Possibilities for Organisational Change*. Accounting, Auditing & Accountability Journal, Vol 27-2:218-33.

Laurent A. et al (2019) *UN SDG Assessment Methodology and Guideline. Version 1.01*. Quantitative Sustainability Assessment Group, Technical University of Denmark, Kgs. Lyngby, DK.

Lau Øfjord Blaxekjær, Martin Mohr Olsen, Hanne Thomasen, Maria Tammelin Gleerup, Sune Nordentoft Lauritsen, Anne Lise Kappel, Kristoffer Buch, Pål Simon Fernvall, and Jay Friedlander (2018) *The Sustainable Development Goals and Student Entrepreneurship in the Arctic*, In: Heininen L., H. Exner-Pirot and J. Plouffe (eds.) (2018). Arctic Yearbook 2018 - Arctic Development: In Theory and In Practice. Akureyri, Iceland: Northern Research Forum.

Leydesdorff, L., & Etzkowitz, H. (1998) *The triple helix as a model for innovation studies*. Science and public policy, 25(3), 195-203.

Lukman, R. and Glavič, P. (2007) *Review of Sustainability Terms and Their Definitions*. Journal of Cleaner Production, 15:1875-85.

Løgmansskrivstovan (2018) *United Nations Sustainable Development Goals*. The Government of the Faroe Islands, the Prime Minister's Office; February 2018.

Martins & De Souza Bermejo (2014) *Open social innovation*. Chapter 9 (144-163) in Dolićanin, Ć. et al (2014) *Handbook of Research on Democratic Strategies and Citizen-Centered E-Government Services*. IGI Global: Pennsylvania.

Mulgan, G. (2006) *The Process of Social Innovation*. Innovations, Vol. 1, issue 2.

Mulgan, G. (2007) S*ocial Innovation: What It Is, Why It Matters and How It Can Be Accelerated*. Working Paper, Skill Centre for Social Entrepreneurship. Said Business School, University of Oxford, UK.

Murray, Caulier-Grice and Mulgan (2010) *The Open Book of Innovation*. The Young Foundation: London.

Nicholls, Simon and Gabriel, eds. (2015) *New Frontiers in Social Innovation Research*. Palgrave Macmillan: London.

NMR (2017) *Nordic Entrepreneurship Islands, Status and Potential Mapping and Forecasting – Entrepreneurship Education on Seven Selected Nordic Islands*. Tilde Reffstrup & Susanne Kæm Christiansen (eds), Nordic Council of Ministers: Copenhagen.

Östling, J. (2018) *Humboldt and the Modern German University: An Intellectual History*. Lund University Press: Lund.

Ranga and Etzkowitz (2013) *Triple Helix Systems: An Analytical Framework for Innovation Policy and Practice in the Knowledge Society*. Industry and Higher Education, Vol 27-3:237-62.
- Rayna & Striukova (2019) Open Social Innovation Dynamics and Impact: Exploratory Study of a Fab Lab Network. R&D Management, 49:3.

Rosenlund, Rosell, and Hogland (2017) *Overcoming the triple helix boundaries in an environmental research collaboration*. Science and Public Policy, 44(2): 153–162.

SDSN Australia/Pacific (2017) *Getting Started with the SDGs in Universities: A Guide for Universities, Higher Education Institutions, and the Academic Sector*. Australia, New Zealand and Pacific Edition. Sustainable Development Solutions Network – Australia/Pacific, Melbourne.

Sutherland, J. (2014) *SCRUM: The Art of Doing Twice the Work in Half the Time*. Random House; London.

Trencher, G. et al. (2013) *Beyond the Third Mission: Exploring the Emerging University Function of Co-Creation for Sustainability*. Science and Public Policy, Vol. 41:151-197.

Tushman, M. (1977) *Special Boundary Roles in the Innovation Process*. Administrative Science Quarterly, 22(4):587-605.

Vanhaverbeke and Chesbrough (2014) *A Classification of Open Innovation and Open Business Models*. Chapter 3 in: Chesbrough, Vanhaverbeke and West, eds. (2014) *New Frontiers in Open Innovation*. Oxford: Oxford University Press.

Vanhaverbeke, Chesbrough & West (2014) *Surfing the New Wave of Open Innovation Research*. Chapter 15 in: Chesbrough, Vanhaverbeke and West, eds. (2014) *New Frontiers in Open Innovation*. Oxford: Oxford University Press.

Wittrock, B. (1993) *The Modern University: The Three Transformations*, Chapter 9:303-62 in: Rothblatt, S. and Wittrock, B. (eds) *The European and American University Since 1800: Historical and Sociological Essays*. CUP: New York.

Williams, P. (2002) *The Competent Boundary Spanner*. Public Administration Vol. 80, 1:103-24.

Wright (2002) Definitions and Frameworks for Environmental Sustainability in Higher Education. Higher Education Policy, 15:105-20.

Zomer and Benneworth (2011) *The Rise of the University's Third Mission*, chapter 6 in: Enders, J, de Boer, H.F., and Westerheijden, D.F. (eds) (2011) *Reform of Higher Education in Europe*. Sense Publishers: Rotterdam.