

**Hospital Management in the Anthropocene:
an International Examination of Lean-based Management Control Systems and Alienation
of Nurses in Operating Theatres**

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Statement of Originality

This thesis is being submitted to Macquarie University and l'Université de Nantes in accordance with the Cotutelle agreement dated 27/09/2017. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

.....

Zeyad Mahmoud

Dedication

I dedicate this thesis to the memory of my grandmother, Rasmia El Sayed, my best friend, Samantha Kotcharian, and my mentor, Thierry Garrot. Thank you for your continuous support, encouragement, and love—and for believing in me. You are gone, but without you, this journey would have not been possible.

Author's Academic Contributions during the course of the PhD

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Abstract

In the Anthropocene, healthcare systems face unprecedented challenges from increases in the aging population and expanding needs for acute and aged care services. To cope, hospitals are applying Lean-based management control systems (MCSs) to improve their efficiency and reliability by streamlining their existing processes. While literature shows the adoption of Lean-based MCSs in hospitals may lead to some significant productivity enhancements, the consequences of this new performance management approach for healthcare professionals is understudied.

This thesis examines the impact of Lean-based MCSs on operating theatre nurses. Fieldwork was conducted between October 2016 and January 2019 in two countries, France, and Australia. It comprised 230 hours of non-participant observations and 47 semi-structured interviews. Findings revealed differences in how the MCSs were experienced—positively or negatively—between staff working at the two sites and the factors influencing such experiences.

This research is the first to present an in-depth qualitative analysis of the ways Lean-based MCSs are implemented in operating theatres and how they are experienced by nursing staff. It is also the first international comparative study covering this subject and the first to provide a conceptual foundation for understanding the impacts of Lean-based MCSs in high acuity settings. This research not only contributes to the body of literature on the future of healthcare in the Anthropocene, it provides a theoretical foundation for future investigations of Lean and its consequences on healthcare staff.

Keywords: *Lean Management, Healthcare, Operating theatres, nursing staff, Management control, Alienation, Anthropocene.*

Résumé

Les hôpitaux, et plus généralement les systèmes de soins, font face à des défis sans précédent dans notre ère moderne, l'ère de l'anthropocène : population croissante et vieillissante, augmentation de l'espérance de vie, prévalence des maladies chroniques et modifications des besoins de soins. Pour y faire face, ils se tournent de plus en plus vers l'adoption de nouveaux Systèmes de Contrôle de Gestion (SCG) basés sur la philosophie japonaise du Lean Management. Bien que la littérature scientifique montre que l'adoption de pratiques inspirées du Lean peut en effet conduire à des améliorations significatives de la productivité et de l'efficacité, les conséquences de ces nouvelles approches organisationnelles pour les professionnels de santé restent encore peu étudiées.

Cette thèse examine l'impact des SCG-Lean sur les infirmières des blocs opératoires. Les travaux empiriques ont été menés entre 2016 et 2019 en France et en Australie. Les résultats de la recherche révèlent comment et pourquoi les SCG-Lean peuvent être vécus comme aliénants ou non-aliénants. Cette recherche est la première à présenter une analyse qualitative approfondie de la mise en œuvre des SCG-Lean dans les blocs opératoires et de leurs effets sur le personnel infirmier.

La thèse est la première étude comparative internationale sur ce sujet et la première à fournir une base conceptuelle pour comprendre les impacts des SCG-Lean dans des environnements de haute fiabilité comme les blocs opératoires. Cette recherche contribue à la littérature sur l'avenir des hôpitaux à l'ère de l'Anthropocène et fournit un fondement théorique pour les futures études examinant les SCG et leurs conséquences sur les employés.

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Glossary of Abbreviations

ABF	Activity Based Funding
ACI	Agency for Clinical Innovation
AHHA	Australian Healthcare and Hospitals Association
AIHI	Australian Institute of Health Innovation
AXN	Auxiliary Nurse
CGT	Critical Grounded Theory
CL	Collective Learning
CNC	Clinical Nurse Consultant
CNE	Clinical Nurse Educator
CNS	Clinical Nurse Specialist
CR	Critical Realism
DOSA	Division of Surgery and Anaesthesia
DRG	Diagnosis Related Group
FM	Floor Manager
GDP	Gross Domestic Product
GLH	Grand Lac Hospital
IBU	Integrated Booking Unit
KPI	Key Performance Indicator
LM	Lean Management
MCS	Management Control System
MDN	Medical Devices Nurse
MOH	Ministry of Health

MSS	Master Surgical Schedule
NHS	National Health Service
NPM	New Public Management
NSW	New South Wales
OECD	Organisation for Economic Co-operation and Development
OPN	Over Production
OR	Operating Room
OT	Operating Theatre
OTRMC	Operating Theatre Resource Management Centre
OVH	Ocean View Hospital
PFP	Private for Profit
PNFP	Private Not for Profit
POUS	Point of Use Storage
SAC	Severity Assessment Code
SN	Scheduling Nurse
TA	Thematic Analysis
UK	United Kingdom
UN	United Nations
US	United States of America

Condensé de la thèse

Le monde est en mutation. Dominée par les Homo sapiens, notre planète a été considérablement transformé poussant les scientifiques à annoncer l'existence d'une nouvelle ère géologique : l'Anthropocène. Bien que cette nouvelle ère présente de nombreuses caractéristiques, l'un de ses caractéristiques clés est qu'elle est dominée par des organisations qui cherchent à être rationalisées et rentables. Cette thèse porte sur une manifestation particulière de l'Anthropocène - la recherche constante de l'efficacité, en particulier dans le secteur de la santé, dans les blocs opératoires.

« Comment faire plus avec moins ? » est en effet la question qui anime les débats actuels dans les différents secteurs économiques, y compris celui de la santé. Partout dans le monde, le problème de soutenabilité des systèmes de soins face aux demandes croissantes de nouvelles procédures médicales, au vieillissement de la population et à la réduction des financements positionne la recherche d'efficacité à la tête des priorités managérielles. Sur le plan réglementaire, ce credo d'efficacité trouve ses origines dans la doctrine du Nouveau Management Public (NMP) présentée comme l'un des piliers majeurs des réformes de services publics dans le monde. Le mouvement NMP plaide en faveur de l'inversion des doctrines cardinales de l'administration publique progressiste en réduisant les différences entre les secteurs publics et privés (Hood, 1995). Plus récemment, et compte tenu des limites critiques du NMP particulièrement dans le secteur de la santé (fragmentation des services et risques potentiels en matière de sécurité et de qualité), une nouvelle doctrine globale de soins intégrés promue par l'Organisation Mondiale de la Santé a vu le jour. Néanmoins, la

quête d'une plus grande efficience reste une priorité absolue à la fois d'un point de vue macroéconomique et organisationnel. Au Royaume-Uni, par exemple, le plan stratégique du National Health Service (NHS) place les gains d'efficience comme une condition essentielle pour garantir l'accessibilité, la qualité et la soutenabilité des services de soins (NHS, 2014). Outre que le Royaume-Uni, la majorité des pays développés mettent de plus en plus en place des politiques visant à contenir l'augmentation des dépenses de leurs services de soins qui font face aux défis sans précédent de l'Anthropocène (Carrin & Hanvoravongchai, 2002; Cases, 2008; Hilless & Healy, 2011; Safon, 2017). De façon générale, les tendances épidémiologiques, économiques et politiques mondiales soulignent un grand besoin pour de nouvelles organisations de soins axées sur l'efficience et l'optimisation des ressources (Arcidiacono, Matt, & Rauch, 2017; Poksinska, 2010; Organisation mondiale de la santé, 2008, 2010).

Sur un plan organisationnel, cette focalisation constante sur l'efficience a conduit les hôpitaux à adopter des pratiques comptables basées sur une modélisation améliorée de l'activité médicale. Par exemple, le modèle américain des groupes homogènes de diagnostics, Diagnostic related groups (DRG), mis au point dans les années 1970 offrait un moyen d'appliquer la technique comptable du coût d'absorption aux soins de courte durée. Ce modèle a été adopté par des différents gouvernements dans le monde entier et à former la base des nouveaux modèles de paiement prospectif de plus en plus répandus (Angelé-Halgand, 2009; Duckett, 2008; Moisdon, 2000). En Australie, par exemple, l'adoption du financement basé sur l'activité (ABF) basé sur une version modifiée des DRG a sans doute été l'une des réformes majeures connues par le secteur de la santé dans le pays au cours de la dernière décennie (Chapman et al.,

2013; O'Reilly et al., 2012; Street, Vitikainen, Bjorvatn et Hvenegaard, 2007). Une situation similaire peut être observée en France avec l'adoption du système dit de la Tarification à l'Activité. La logique de paiement prospectif au cœur de ces réformes visait à inciter les hôpitaux à réduire leurs dépenses en dissociant les fonds qu'ils recevaient de leurs coûts réels d'activité (Jegers, Kesteloot, De Graeve et Gilles, 2002). De plus, et conformément aux principes du NMP, la plupart des pays du monde se sont engagés à la mise en œuvre de nouvelles réglementations visant à introduire une concurrence entre les différents fournisseurs de soins dans l'espoir de les inciter davantage à réduire leurs coûts (Angelé-Halgand, 2009; Braithwaite, 1997; Moisdon, 2000) tout en renforçant une plus grande responsabilisation par le biais d'une contractualisation accrue (Angelé-Halgand, 2009) .

C'est dans ce contexte, et dans un souci d'être plus efficient au niveau opérationnel, que les hôpitaux s'intéressent de plus en plus à des nouvelles approches organisationnelles comme le Lean Management (LM) afin d'optimiser leurs processus, réduire leurs délais et contrôler leurs coûts de production (Aij, Simons, Widdershoven et Visse, 2013; Brandao de Souza, 2009; Poksinska, 2010; Radnor et Boaden, 2008). Le LM a été créé dans l'industrie automobile au Japon où il a été présenté comme une alternative radicale à la philosophie occidentale de production de masse (Womack, Jones et Roos, 1991). Le LM repose sur la conviction que des gains d'efficience peuvent être obtenus grâce à l'optimisation constante des processus de production en éliminant les gaspillages et les activités non-créatrices de valeur ajoutée (Aij et al., 2013; Simon & Canacari, 2012). À partir des années 1990, le LM a progressivement quitté le monde industriel pour devenir, au cours de la décennie suivante, l'une des philosophies organisationnelles les plus largement utilisées par les institutions

publiques, y compris dans le monde de la santé (Brandao de Souza, 2009; Radnor & Boaden, 2008; Waring et Bishop, 2010; Young et McClean, 2008; Zidel, 2006).

Dans le secteur de la santé, les recherches menées jusqu'à présent ont associé le LM à des réductions des listes d'attentes (Dickson, Singh, Cheung, Wyatt et Nugent, 2009; Ng, Vail, Thomas et Schmidt, 2010), une optimisation des flux de patients (Tragardh et Lindberg, 2004), une réduction des erreurs médicales (Agence Technique de l'Information sur l'Hospitalisation, 2017; Australian Institute of Health and Welfare, 2018b; Guzzanti, Mastrilli, Mastrobuono, & Mazzeo, 1996) et des améliorations significative de productivité (D'Andreamatteo, Ianni, Lega, & Sargiacomo, 2015). Cependant, malgré le nombre croissant de recherche sur l'utilisation du LM dans le domaine hospitalier, un grand nombre d'études récentes ont relevé plusieurs sujets qui sont encore sous-examinés (Costa et Godinho Filho, 2016; D'Andreamatteo et al., 2015; Holden, 2011; Mazzocato, Savage, Brommels, Aronsson et Thor, 2010; Poksinska, 2010). Par exemple, la plupart des études actuelles se concentrent sur la présentation de résultats de l'utilisation du LM sans divulguer suffisamment d'information sur les processus relatifs à sa mise en œuvre. Lorsque la mise en œuvre est discutée, les résultats sont souvent présentés en se focalisant sur l'optimisation de processus isolés et souvent avec peu de portée organisationnelle (Mazzocato et al., 2010). De plus, l'impact du LM ou ses conséquences sur le personnel soignant reste encore très peu étudié (Holden, 2011). En effet, il existe une minorité d'études associant le LM soit à des expériences positive, négatives ou une combinaison des deux à la fois. Ainsi, l'objectif principal de cette thèse était de combler ces lacunes en identifiant les facteurs associés aux impacts positives ou négatives du LM sur le personnel soignant.

La découverte de tels facteurs n'est possible qu'après une analyse approfondie de la mise en œuvre du LM et de comment il est vécu par les employés hospitaliers.

En ce qui concerne la mise en œuvre, la thèse conceptualise les pratiques et outils du LM comme constitutives d'un Système de Contrôle de Gestion (SCG) conçu pour soutenir la réalisation des objectifs stratégique d'élimination de gaspillage et de création de valeur. S'appuyant sur l'interprétation des SCG faite par Ferreira et Otley (2009, p. 264), ces SCG-Lean peuvent être définis comme un ensemble de mécanismes, processus, systèmes et réseaux formels et informels interconnectés utilisés pour améliorer l'efficacité, éliminer les gaspillages dans les processus de production et créer plus de valeur ajoutée. Les différents outils du LM sont utilisés pour faciliter la gestion stratégique et opérationnelle des organisations en fournissant un cadre d'analyse, de planification, de mesure, de contrôle et de récompense tout en facilitant l'apprentissage et le changement au niveau organisationnel.

En ce qui concerne les expériences des employés, cette thèse utilise la taxonomie de l'aliénation créée par Blauner (Blauner, 1964) pour décrire l'impact des SCG-Lean sur les employés. Pour le sociologue américain, l'aliénation est le résultat de l'incapacité des travailleurs à contrôler leurs processus de travail immédiats, à développer un sens et une fonction dans l'exécution de leurs tâches, à se sentir intégrés dans leurs communautés de travail et à réaliser un travail expressif. Considérée comme un concept multidimensionnel, l'aliénation augmente les risques d'objectivation et de déshumanisation des travailleurs. L'aliénation peut être considéré comme un produit de l'époque actuelle et caractérise dans ce sens l'ère de l'Anthropocène.

Compte tenu de la littérature existante sur le LM, et dans le but d'examiner le lien entre les SCG-Lean et l'aliénation, cette thèse a adressé les questions de recherche suivantes :

1. Quelles sont les caractéristiques des SCG-Lean ?
2. Dans quelle mesure et de quelle manière les SCG-Lean sont-ils perçus comme étant aliénants ou non-aliénants ?
3. Quels facteurs influencent la mesure dans laquelle les SCG-Lean sont perçus comme étant aliénants ou non aliénants ?

Méthodologie

Cette thèse repose sur une posture épistémologique de réalisme critique. Les travaux empiriques ont été conduits suivant une méthodologie qualitative mobilisant une approche de théorie critique enracinée, Grounded Critical Theory (CGT) (Belfrage & Hauf, 2017). Contrairement à l'approche traditionnelle de la théorie enracinée (Glaser et Strauss, 1967), la CGT reconnaît le rôle joué par la théorie dans la construction d'un objet de recherche émergent. L'approche combine à la fois des modes de raisonnement déductif et inductif pour fournir des explications contextualisées à des problèmes sociaux comme, dans le cas de cette thèse, l'aliénation.

La thèse comprend deux études de cas qui ont été menées en France et en Australie. Le matériel empirique est constitué de 230 heures d'observations non-participantes et de 56 heures d'entretiens semi-directifs et a été complété par une analyse documentaire approfondie dans les deux pays. Les observations ont permis d'appréhender le contexte organisationnel dans lequel les SCG-Lean ont été utilisés. Les

entretiens ont été enregistrés et retranscrits avant d’être analysés suivant une approche de codage thématique en six étapes (Braun et Clarke, 2006). L’analyse a permis l’identification des tendances récurrentes permettant ainsi à rendre compte des dimensions aliénantes ou non-aliénantes des SCG-Lean. L’analyse documentaire était une source essentielle de triangulation des données et a fourni des éléments contextuels sur l’environnement externe dans lequel opéraient les organisations étudiées.

La collecte de données s’est concentrée sur les blocs opératoires, un centre de coûts et de revenus majeurs où les gains d’efficience ont le plus de chances d’avoir un impact significatif sur la performance globale des hôpitaux. Ce choix du périmètre a été davantage renforcé par la nature séquentielle et technique des activités chirurgicales (Aronsson, Abrahamsson, & Spens, 2011) et par leur fort potentiel de standardisation (Nicolay et al., 2012) qui les rends particulièrement adaptés à l’utilisation de méthodes de production industrielles, telles que le LM. Au sein des blocs, la recherche s’est particulièrement intéressée au personnel infirmier qui constitue la majorité des employés.

Résultats

Le tableau ci-dessous présente un résumé des résultats des études de cas réalisés dans le cadre de la thèse soulignant comment ils permettent de répondre aux questions de recherche initialement posées.

Questions	Résultats des études de cas
Quelles sont les caractéristiques des SCG-Lean ?	<ul style="list-style-type: none">• Les techniques de production à flux continue, à flux tiré et de lissage par mix de produit ont été utilisées pour éviter la surproduction.• Une plus grande polyvalence du personnel a permis de réduire le temps inter-chirurgical.• Modélisation de l'activité chirurgicale pour aligner la disponibilité des ressources avec la demande et améliorer l'utilisation des salles opératoires.• Création de nouveaux postes essentiellement concentré sur le lissage de la production.• Utilisation de contrôles visuels pour réduire les temps d'attente.• Création de poste de gestionnaire de flux pour identifier et résoudre les problèmes pouvant causer des délais dans un système de flux tendus.• Approvisionnement en juste à temps pour réduire les stocks.• Création de nouveau poste de gestionnaire d'approvisionnement pour veuille à l'optimisation des stocks.• Utilisation d'un logiciel de gestion électronique des stocks pour optimiser les achats et la rotation des stocks.• Reconfiguration spatiale pour réduire la nécessité de transporter les équipements fréquemment utilisés.• Une plus grande standardisation des pratiques pour éviter les gestes inutiles et assurer la qualité de la production.• Usage de systèmes électroniques de gestion des incidents pour signaler les erreurs et les défauts de qualité.• Plus grand recours à la formation professionnelle continue pour assurer le respect des normes et améliorer la qualité des soins.• Mise en place de réunion fréquentes pour communiquer des informations sur le contexte interne et externe de l'organisation et vérifier la conformité des pratiques.

<p>Dans quelle mesure et de quelle manière les SCG-Lean sont-ils perçus comme étant aliénants ou non-aliénants ?</p>	<p>Résultats de l'étude de cas 1 – Bloc Z</p> <p>Le SCG-Lean était considéré comme aliénant par le personnel infirmier. Les trois dimensions de l'aliénation de Blauner ont été identifiées : manque de contrôle, perte de sens et isolement. Le SCG est résisté et déploré.</p>	<p>Résultats de l'étude de cas 2 – Bloc X</p> <p>Le SCG-Lean était considéré comme non-aliénant par le personnel infirmier. Les dimensions non-aliénantes de Blauner ont été identifiées : un sens de contrôle, un sens de fonction, une forte intégration sociale et un sens d'épanouissement personnel. Le SCG a été considéré comme adapté à l'exécution des tâches.</p>
<p>Quels facteurs influencent la mesure dans laquelle les SCG-Lean sont perçus comme étant aliénants ou non aliénants ?</p>	<ul style="list-style-type: none"> • Approche de standardisation : ascendante ou descendante • Degré d'autonomie versus surveillance • Niveau d'intelligibilité du contexte organisationnel interne et externe 	

Contributions et apports

La thèse a de nombreux apports empiriques et théoriques qui sont résumés ci-dessous.

Apports empiriques

- La thèse est la première initiative internationale examinant le lien entre l'aliénation des infirmières et l'utilisation des SCG-Lean dans les blocs opératoires.
- Individuellement, les études de cas menées dans le cadre de la thèse contribuent chacune à la littérature existante sur l'utilisation du Lean dans le secteur de la santé. Ils ont fourni des détails sur la mise en œuvre des pratiques Lean dans les blocs opératoires et ont présenté une liste de mesures pouvant être utilisées pour améliorer l'efficacité et assurer l'accessibilité de ces structures.
- Les études de cas sont les premières à adopter une approche holistique en examinant la mise en œuvre du Lean dans les blocs opératoires. Au lieu d'un ensemble de pratiques isolées, la thèse a conceptualisé les différents outils Lean comme constituante d'un système global de contrôle de gestion.
- Les études de cas contribuent également à la littérature sur l'impact du Lean sur les professionnels de la santé. Elles présentent de façon détaillée comment les SCG-Lean peuvent, ou pas, conduire à l'aliénation du personnel soignant.

Apports théoriques

- Théoriquement, la thèse contribue à la littérature existante sur l'aliénation et ses déterminants en milieu de travail. Les données empiriques mettent en évidence une limitation du cadre de Blauner qui n'explique pas pourquoi le degré d'aliénation peut diverger entre des organisations possédant des structures techniques et des caractéristiques de produit similaires. Plutôt que les technologies organisationnelles en soi, cette thèse indique que le niveau d'aliénation peut être liée à la conception et l'usage de ces technologies en milieu de travail. La thèse présente des preuves empiriques à l'appui des développements théoriques récents sur l'utilisation et la conception des technologies organisationnelles et de leur impact sur les employés.

- Les résultats de cette thèse contribuent en outre à la littérature existante sur les SCG. En utilisant le cadre de Blauner, la recherche a montré que les SCG sont perçus comme aliénants quand ils génèrent un sentiment d'impuissance, de perte de sens et d'isolement chez les employés. En revanche, ils sont perçus comme non-aliénants lorsqu'ils favorisent le contrôle, un sens de fonction et une intégration sociale. Les résultats de la recherche constituent la base d'un nouveau modèle conceptuel qui pourrait être utilisé dans les futures recherches examinant les SCG et leur impact sur les employés. Le modèle prolonge les travaux de Broadbent et Laughlin (Broadbent et Laughlin, 2009) en suggérant que l'étude des aspects fonctionnels des SCG est insuffisante si l'on souhaite comprendre leurs impacts sur les employés. En effet, la thèse démontre que l'aliénation est plus associée à l'utilisation des SCG qu'à leurs composantes fonctionnelles.

Implications

- Pour les gouvernements, la recherche souligne le rôle clé que joue les indicateurs de performance dans la définition des stratégies organisationnelles, en particulier celles des établissements de santé publics. Comme le démontrent les études de cas, l'atteinte des indicateurs de performance a été une force motrice qui a fortement influencé les SCG-Lean adoptés dans chacun des établissements. Pour éviter les tendances aliénantes de ces SCG, les indicateurs de performances devraient être plus représentatifs des intérêts des différentes parties prenantes, et pas seulement de ceux des organismes de gouvernance et de financement.

- Les résultats de la recherche fournissent aux gestionnaires des établissements de santé un cadre d'intervention qui peut être facilement mis en œuvre et qui pourrait améliorer l'expérience des travailleurs, si des SCG-Lean sont utilisés. Les tendances aliénantes de ces systèmes pourraient être évitées si le personnel participe davantage à l'élaboration et l'amélioration des normes et protocoles de travail, si les structures hiérarchiques traditionnelles de commandement et de contrôle sont remplacées par des structures plus participatives et si le personnel développait une bonne compréhension des contextes organisationnels internes et externes.

- Pour le personnel soignant, cette thèse présente les différents défis auxquels sont confrontés les établissements de soin dans l'Anthropocène. Dans le contexte actuel, l'optimisation des processus et l'amélioration de l'efficacité sont en effet indispensables. Aujourd'hui, les modèles existants de prestation de services de santé doivent être de plus en plus repensés pour optimiser l'utilisation des ressources

existantes. Développer la compréhension des soignants de ce contexte pourrait améliorer leur satisfaction au travail et réduire les tendances aliénantes des SCG-Lean.

- Pour les patients, la recherche a des implications importantes sur la qualité et la sécurité des soins qu'ils reçoivent. S'assurer que le personnel travaille dans des conditions optimales est en effet une condition préalable à la réduction des erreurs qui pourraient avoir des conséquences fatales pour les patients.

Part 1: Introduction and literature review

Chapter 1

Thesis introduction

The modern world is in flux. Geologists had, until recently, labelled the current era—since the last ice age 10,000 years ago—the Holocene. Now, the world dominated by Homo sapiens has been altered substantially. It is being re-labelled the Anthropocene: the age of humans. While this world has many characteristics, a key one is that it is home to many organisations that strive to be streamlined and cost-effective as they face greater pressures in a context of resource scarcity. This thesis looks at one particular manifestation of the Anthropocene—the pursuit of efficiency, specifically in healthcare, with a particular focus on Operating Theatres (OTs).

Indeed, “How to do more with less?” has been the question driving current debates in the healthcare sector, and other sectors, across the globe. Worldwide, the problem of sustainability in the face of increasing demand for new procedures, aging populations and reduced funding highlights the need for greater efficiency as a managerial priority in healthcare establishments. On the regulatory front, this credo of efficiency was first introduced by the so-called New Public Management (NPM) doctrine in the late 1970s and then put forward as one of the pillars of public service reforms worldwide. As noted by Hood (1995, p. 94) the NPM movement argues in favour of reversing the fundamental doctrines of progressive public administration by

reducing the differences between the public and private sector and shifting the focus towards greater accountability in terms of results with a strong emphasis on efficiency. More recently, critical limitations of the NPM doctrine in healthcare have been raised. Of note was the greater corporatisation and fragmentation of services which were associated with potential negative impacts on the safety of patients and the quality of care. As a result, a new global doctrine of integrated care has emerged, promoted by the World Health Organization (WHO) amongst others (World Health Organization, 1996). Nevertheless, efficiency remains a high priority from both macroeconomic and organisational perspectives. In the United Kingdom (UK) for instance, the National Health Service (NHS) Five Years Forward View, published in October 2014, puts efficiency gains as a condition for maintaining universal access to high-quality health services and supporting the sustainability of the NHS (NHS, 2014).

More generally, developed countries have been striving to contain increasing healthcare expenditures as they face unprecedented challenges in the Anthropocene (Carrin & Hanvoravongchai, 2002; Cases, 2008; Hilless & Healy, 2011; Safon, 2017). Global epidemiological, economic and political trends call for new health delivery models that are centred around efficiency and resource rationing (Arcidiacono, Matt, & Rauch, 2017; Poksinska, 2010; World Health Organization, 2008, 2010).

This constant focus on efficiency has led hospitals to adopt accounting practices based on an improved modelling of healthcare activity that enables increased accountability to funding bodies. When it was first implemented in the 1970s, the United States (US) Diagnosis Related Groups (DRG) model provided a means to apply absorption costing techniques to acute care by designing case-mix of outputs. These were used by governments worldwide as a basis for prospective payments systems

(Angelé-Halgand, 2009; Duckett, 2008; Moisdon, 2000). In Australia, for example, the Activity Based Funding (ABF) scheme was built on a modified version of the American DRGs (Chapman et al., 2013; O'Reilly et al., 2012; Street, Vitikainen, Bjorvatn, & Hvenegaard, 2007). A similar situation can be observed in France with the so-called “Tarification à l’Activité” system. The prospective funding logic at the heart of these reforms was meant to provide hospitals in the two countries with strong incentives to cut costs and improve efficiency as the funds they received no longer depended on their actual costs (Jegers, Kesteloot, De Graeve, & Gilles, 2002). Consistent with the NPM principles, most countries around the world are adopting new regulations aimed at introducing competition between providers in hopes of driving costs down and increasing accountability through the extensive use of contracts (Angelé-Halgand, 2009; Braithwaite, 1997; Moisdon, 2000).

It is in this context, and the broad-based drive to be more efficient on an operational level, that providers have become increasingly interested in utilising process re-engineering methodologies such as Lean Management (LM) to streamline their processes and cut down their delivery costs (Aij, Simons, Widdershoven, & Visse, 2013; Brandao de Souza, 2009; Poksinska, 2010; Radnor & Boaden, 2008). LM was first introduced in the Japanese auto industry as a radical alternative to the classic Western mass production philosophy (Womack, Jones, & Roos, 2007). At its core is the belief that efficiency can be improved by continuously streamlining processes and eliminating non-value adding activities, often referred to as waste (Aij et al., 2013; Simon & Canacari, 2012). Starting in the 1990s, LM slowly made its way out of manufacturing to become, over the following decade, one of the most prominently used organisational philosophies across public institutions, including those delivering

healthcare (Brandao de Souza, 2009; Radnor & Boaden, 2008; Waring & Bishop, 2010; Young & McClean, 2008; Zidel, 2006).

Applied to hospitals, research to date has associated LM with reduced waiting lists (Dickson, Singh, Cheung, Wyatt, & Nugent, 2009; Ng, Vail, Thomas, & Schmidt, 2010), improved clinical pathways (Tragardh & Lindberg, 2004), fewer medical errors (Agence Technique de l'Information sur l'Hospitalisation, 2017; Australian Institute of Health and Welfare, 2018b; Guzzanti, Mastrilli, Mastrobuono, & Mazzeo, 1996) and significant productivity enhancement (D'Andreamatteo, Ianni, Lega, & Sargiacomo, 2015). However, despite the growing body of research in favour of the use of LM, a number of recent reviews have noted several under-investigated issues in need of further in-depth examination (Costa & Godinho, 2016; D'Andreamatteo et al., 2015; Holden, 2011; Mazzocato, Savage, Brommels, Aronsson, & Thor, 2010; Poksinska, 2010). Most of the published studies focus on reporting outcomes without disclosing sufficient information on the processes of implementing LM. When implementation is discussed, the results are often presented from a technical process engineering point of view, with little to no organisational reach or understanding (Mazzocato et al., 2010). Little is known, for example, about how staff experience Lean in situ (Holden, 2011). The review of the literature conducted for this thesis revealed that when made known, staff's experiences of Lean are alternately described as either positive, negative or a mix of both.

The main objective of this thesis is to address these gaps by identifying the factors influencing the extent to which LM is experienced positively or negatively by staff. Uncovering such factors is only possible after an in-depth analysis of how LM is implemented and experienced by employees.

Regarding implementation, instead of a set of distinct practices used to improve efficiency and productivity, the thesis conceptualises Lean tools as constitutive parts of a Management Control System (MCS) designed to support the execution of the strategic Lean-goals of value creation and waste elimination. Building on Ferreira and Otley's (2009, p. 264) interpretation of MCSs, a Lean-based MCS is defined in this thesis as a set of interconnected formal and informal mechanisms, processes, systems and networks used to achieve greater efficiency, eliminate waste in production processes and create more value for customers. Lean tools (such as value stream mapping, production levelling, 5S, standardisation and continuous quality improvement) are used to assist with the strategic and operational running of organisations, providing a framework for analysis, planning, measurement, control, rewards and broadly managing performance while facilitating learning and change on an organisational level.

Regarding employees' experiences, the research outlined in this thesis uses U.S. sociologist Robert Blauner's taxonomy of alienation (Blauner, 1964) to characterise how Lean-based MCSs are experienced by staff. According to Blauner, alienation is the result of workers' inability to control their immediate work processes, develop a sense of meaning and function in carrying out their tasks, feel integrated into their work communities and conduct work that is self-expressive. Seen as a multidimensional concept, the conditions that create alienation also increase the likelihood of objectifying and dehumanising workers. Alienation is a product of the times; it too can be seen as a characteristic of the Anthropocene era.

Within the context of the literature discussed above, and with the aim of examining the link between Lean-based MCSs and alienation, this thesis will answer the following research questions:

1. What are the characteristics of Lean-based MCSs?
2. To what extent and in what ways are Lean-based MCSs experienced as alienating or non-alienating?
3. What factors influence the extent to which Lean-based MCSs are experienced as alienating or non-alienating?

The research presented in this thesis is underpinned by a critical realist epistemology and was carried out using a qualitative critical grounded theory (CGT) approach (Belfrage & Hauf, 2016). In contrast to the traditional grounded theory methodology (Glaser & Strauss, 1967), CGT acknowledges the role played by theory in shaping an emergent research object. It combines both deductive and inductive reasoning methods to provide contextualised explanations to a social problem, such as alienation.

In regard to design, the research comprises two case studies that were conducted: one in France and the other in Australia. Empirical fieldwork involved 230 hours of non-participant observations, 56 hours of semi-directive interviews and was complemented by an in-depth document analysis in both countries. Observations were conducted to develop a greater understanding of the organisational context in which the Lean-based MCSs were used. Interviews, which were transcribed and analysed using a theory-informed six-stage thematic analysis (Braun & Clarke, 2006) that allowed the identification of recurring patterns, helped account for how participants experienced the Lean-based MCSs. Document analysis was an essential source of data triangulation and provided contextual elements on the external environments in which the examined organisations were operating.

This thesis confines its focus to OTs, a major cost and revenue centre where efficiency gains are most likely to have a significant impact on the overall performance of hospitals. This choice of the focus on OTs is further reinforced by the sequential and technical nature of surgical activities (Aronsson, Abrahamsson, & Spens, 2011) and their high potential for standardisation (Nicolay et al., 2012). This makes a compelling argument for the use of industrial process engineering methodologies, such as LM. Within OTs, the research was mainly concerned with nurses, who constitute most of the workforce and who bear most of the responsibility for managing the OTs.

The thesis is made up of four parts broken into ten chapters (Figure 1.1). Part 1 consists of an introduction and a review of the literature. Part 2 discusses the research design and methods. Part 3 presents the empirical work, and Part 4 brings the thesis to a close, highlighting its empirical and theoretical contributions. Chapter 2, which follows this introduction, continues Part 1. It completes the introductory phase and focuses on the Anthropocene with the aim of contextualising the research and presenting the rationale behind it. Chapter 3 consists of a systematic literature review focusing on LM and its human impacts on healthcare professionals. The review will highlight the gaps in the existing literature which will be addressed in this thesis. Chapter 4 presents alienation as a suitable theoretical framework to account for the ways in which employees experience Lean-based MCSs. These four chapters complete Part 1. Moving to Part 2 in Chapter 5, the research design and methods underpinning this research will be presented.

The empirical work conducted for this thesis constitutes the three chapters forming Part 3. Chapter 6 presents the findings of the first case study conducted at Grand Lac Hospital (GLH) in France. Chapter 7 presents the results of the second case

study carried at Ocean View Hospital (OVH) in New South Wales, Australia (these hospital names have been fictionalised to preserve confidentiality). These two chapters characterise the Lean-based MCSs in use and how they were experienced by OT nurses in each of the hospitals thus addressing the first two research questions. Chapter 8 is a comparative analysis in which the empirical findings of the two case studies are compared and contrasted. Chapter 9 reveals three factors that could be associated with the varying forms and intensity of alienation reported by the nurses in the OTs.

Finally, Chapter 10 discusses the research findings considering the existing literature, highlights the implications and outlines directions for future research. Figure 1.1 provides a schematic summary of the thesis's structure.

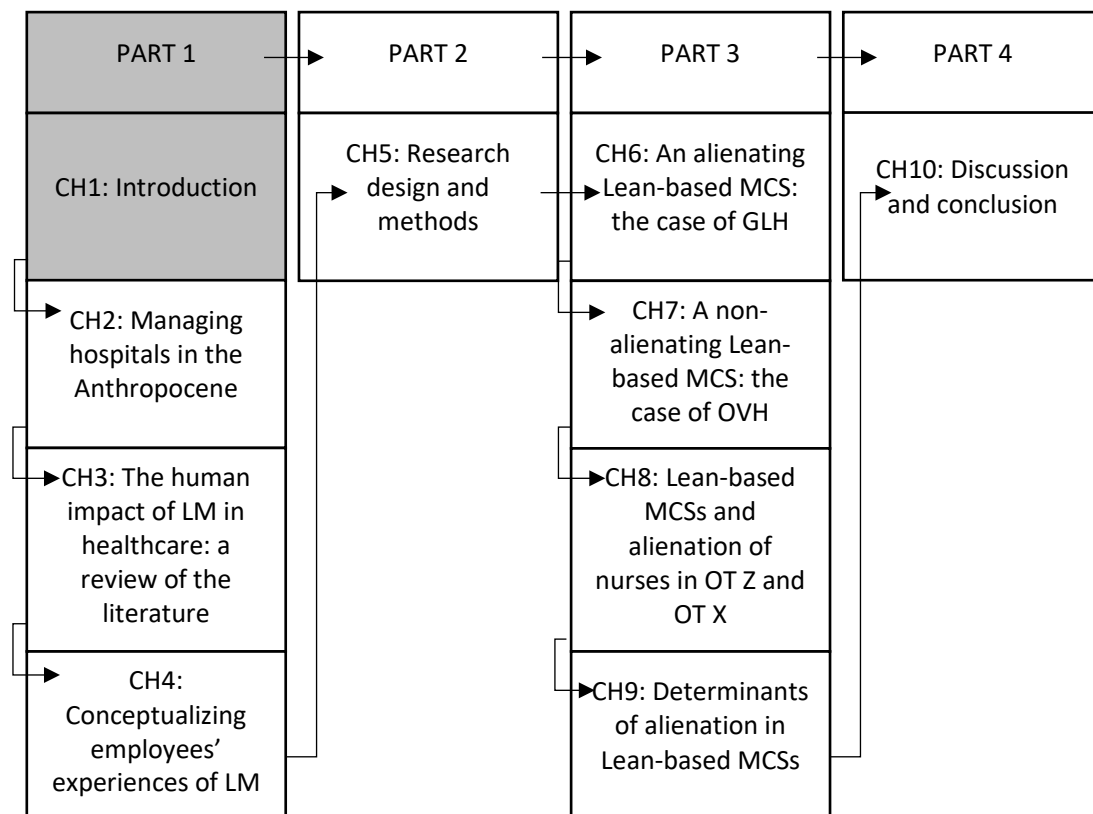


Figure 1.1: Thesis structure overview

Source: Author's conceptualisation

Chapter 2

Managing hospitals in the Anthropocene

The research presented in this thesis is inherently connected and inseparable from the broader changes taking place in a complex global system of human evolution. This is a system that has been slowly evolving and intensifying in power and intricacy over thousands of years to the point of impelling our planet into a new geological epoch—the Anthropocene. The term Anthropocene was popularised in the year 2000 by the Dutch atmospheric chemist Paul Crutzen (Slaughter, 2012), who felt a new word was needed to define the unprecedented human domination over the environment. Crutzen's work on the depletion of the ozone layer showed incontrovertibly for the first time that human activity interferes substantially with the natural processes of our planet (Crutzen, 2002). Collectively, the individual actions of millions of humans were enough to fundamentally alter the planet to the point of risking its destruction (Rockström et al., 2009). Today, more than ever, the sustainability of Earth and the survival of our species are at stake. Despite the controversies surrounding the acceptance and use of this new denomination as a formal geological marker, this thesis argues that the Anthropocene is a robust reflective framework that can be used to shed new light on the issues health organisations around the world are facing and the managerial models they are adopting in response. The current pressure exerted on health systems is undeniably linked to the broader trends that characterise the Anthropocene, particularly population growth, the drive to be more efficient, and changes in world demographics.

This chapter has three sections and aims to contextualise and document the rationale behind this thesis. The first section, Section 2.1, examines the ways in which Collective Learning (CL), the unique ability of our species to accumulate knowledge, has engendered the development of increasingly complex organisational and societal structures over the past 300,000 years of human existence. The second section, Section 2.2, reveals how this rise in complexity is impacting healthcare. Contemporary data from France and Australia will demonstrate how the changes in demographics and health needs, which characterise the Anthropocene, are challenging the sustainability of the healthcare delivery systems in the two countries. Despite being contextual, this data is of international relevance to other developed countries as it echoes international trends. The third and final section of the chapter, Section 2.3, focuses on the economic and regulatory pressures driving hospitals towards the adoption of new managerial models geared towards greater efficiency and accessibility. As Figure 2.1 shows, this chapter follows on logically from the introduction within the first part of this thesis.

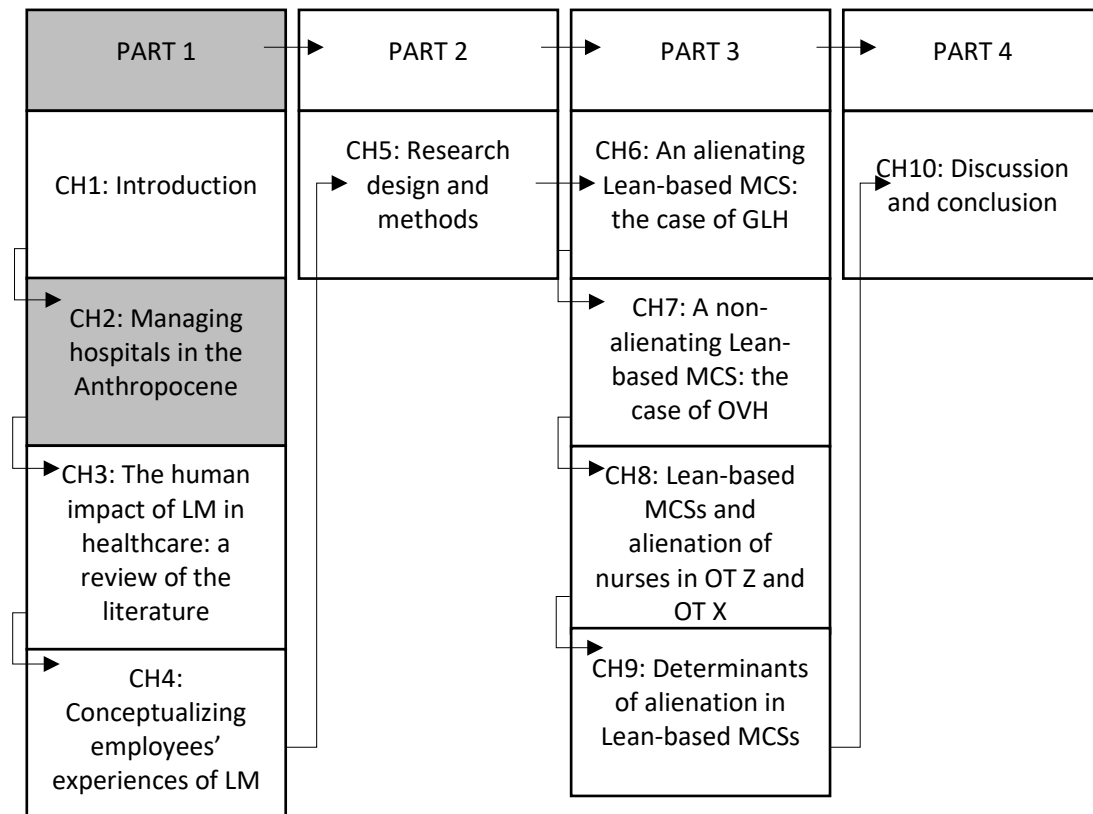


Figure 2.1: Thesis structure overview – Chapter 2

Source: Author's conceptualisation

2.1 Collective Learning and the Anthropocene

Traces of our early ancestors, members of the genus *Homo*, date back two and a half million years. For generations, the earliest hominids lived on this planet with countless other organisms without particularly standing out for their impact on the environment. Despite their large brains, their ability to use tools and their advanced social abilities—characteristics that separated them from other animals—hominids remained largely marginal (Harari, 2014; Hart, 2009). Our ancestors were hunters and gatherers who clustered in small bands, but they were also hunted by bigger, stronger, and more powerful predators (Hart, 2009).

Fast forward to 300,000 years ago, when the very first evidence of our species—now known as "Wise Man" or *Homo sapiens* (in Latin)—appeared in Africa (Galway-Witham & Stringer, 2018). Specific characteristics made *Homo sapiens* different from other members of the *Homo* genus, including smaller teeth and jaws, bipedal locomotion, and bigger brains believed to be responsible for more developed cognitive abilities. It is precisely these abilities that allowed us, *Homo sapiens*, to develop and use language to communicate knowledge and information. Language has played a pivotal role in our ascent as Earth's most dominant species (Christian, 2018; Harari, 2014), shaping our social structures and relationships and, most importantly, allowing us to envisage and communicate things outside of our immediate presence—through our imagination. Some prehistorians believe that our ability to collectively share imagined realities was vital in enabling large-scale cooperation that quickly transformed our social structures while shaping the real world around us at the same time (e.g., Harari, 2014). Indeed, most of our institutions today are built on imagined realities: companies, universities, governments, hospitals, and even nations exist because we thought of the benefits they could provide and imagined how they could be before we designed and built them. This is at the heart of human abilities. The capacity to create shared myths, creative thoughts, imaginative structures and more importantly to use language, unleashed a powerful evolutionary ability of our species: CL.

CL is the capacity to transmit and accumulate knowledge across generations (Baker, 2015a; Christian, 2011). It was critical to the expansion of *Homo sapiens* in at least three ways (Garavan & Carbery, 2012): it allowed the species to adapt to the changing conditions of their environment, to create new knowledge while building on and refining existing practices, and to build highly advanced societies capable of

reflecting on their actions and dealing with feedback cycles. Ultimately, by dramatically accelerating the pace of change and innovation, CL increased the carrying capacity of our species, i.e. the maximum population that could be sustained in a given environment. It also allowed *Homo sapiens* to harvest the necessary energy needed to maintain the rising complexity resulting from their expansion (Baker, 2015a, 2015b). CL has been at work throughout human history, and because it is responsible for creating the conditions for its development, is highly relevant when trying to understand the dramatic changes that characterise the Anthropocene.

Although the exact start date of the Anthropocene is subject to controversy, it is often linked to the unprecedented spurt in human activity that began in the twentieth century, in particular following the Second World War. The post-war era has been marked by an exceptional expansion of human societies, often referred to as the great acceleration (Steffen et al., 2015). The staggering evolutionary success of *Homo sapiens* underpins this acceleration; in only fifty years, between 1950 and 2000, the world population more than doubled, reaching a total of 6.1 billion individuals (United Nations, Department of Economic and Social Affairs, & Population Division, 2018). This growth is historically unparalleled. It took the human population thousands of years to reach its first billion, but just over a decade to add the last one in 2011 (Christian, 2011, 2018; Maddison, 2006; McNeill & Engelke, 2016). By November 2019, it was estimated to be 7.7 billion (United Nations et al., 2018).

As human societies grew in number, so did the challenge of creating more resources to support their expansion. That challenge was met thanks to our CL ability that allowed us to harness the power of fossil fuels and gave rise to a significant number of innovations in agriculture, manufacturing, transportation, medicine, and sanitation.

These, in turn, enabled our species to flourish to a greater extent than at any other time in history (Christian, 2018). While essential to our development, our growing need for energy, coupled with our capacity for technological innovation, has expanded the scale, intensity, and environmental implications of human activities. Since the Second World War, non-renewable energy consumption levels have been exceptionally high, and today energy sources are being used beyond their capacity to replenish themselves (British Petroleum, 2018; McNeill & Engelke, 2016). Whether we, as humans, can sustain our growth without destroying the planet and the environment, is the pressing question humanity faces in the Anthropocene (Christian, 2011, 2018; McNeill & Engelke, 2016; Schwagerl, 2014).

As an epoch of unprecedented changes fuelled by a rapid acceleration in CL, the Anthropocene provides a framework in which not only humans can understand their past interactions with the planetary ecosystem but also, and most importantly, decide the future shape of such interactions (Erlandson & Braje, 2013). Linking the past, present and future is one of the most appealing aspects of this reflective lens—beyond being a new geological epoch, the Anthropocene is first and foremost a change of mindset, a way of reframing how we think about the world, and a call for action.

The challenges posed today to the sustainability of our planet are threatening more specific sectors and industries. The state of healthcare provision around the world is illustrative of such phenomena. Just like the global planetary system, healthcare is thought of as a complex adaptive system (Braithwaite et al., 2017; Braithwaite, Clay-Williams, Nugus, & Plumb, 2013). Its increased complexity is the result of multiple revolutions—medical, social, and organisational—that are fruits of the CL process. Today, the sustainability of health systems is more than ever at stake in the face of the

unprecedented issues characteristic of the Anthropocene. As populations grow and age, and as the demands for healthcare change, current models of healthcare provision are reaching their maximum carrying capacity. To avoid collapse, and faced with increased regulation, changing technological infrastructures and rising costs, hospitals are using new managerial and organisational practices to improve their efficiency. Efficiency is key to harvesting the additional ideas, practices, technologies, and resources necessary for the survival of health systems as government budgets and resources become more strained. Essentially, the planet and the health systems are both at risk, and we are seeking ways to be sustainable.

Against this broad societal and anthropological background, the next two sections of this chapter will focus on healthcare. Drawing on data from France and Australia, Section 2.2 will detail the changes in demographics and health needs that characterise the Anthropocene and that are threatening the sustainability of healthcare delivery systems in the two countries. Section 2.3 will depict the financial and regulatory pressures driving hospitals towards adopting new managerial practices geared towards achieving greater efficiency.

2.2 Challenges of the Anthropocene: the case of the French and Australian health systems

This section focuses on the challenges facing health systems in the Anthropocene. As the research for this thesis was conducted in France and Australia, the data presented pertains to these two countries. However, despite being embedded contextually, the information in this section is relevant to all developed countries. Throughout the section, information on the demographic transformations

taking place in the two countries will be presented. When coupled with medical, technological, and economic advances, these transformations have created unprecedented demands on healthcare. Before proceeding, Figure 2.2 is a snapshot of some key data on the French and Australian Health systems by way of providing a framework for the analysis that follows.

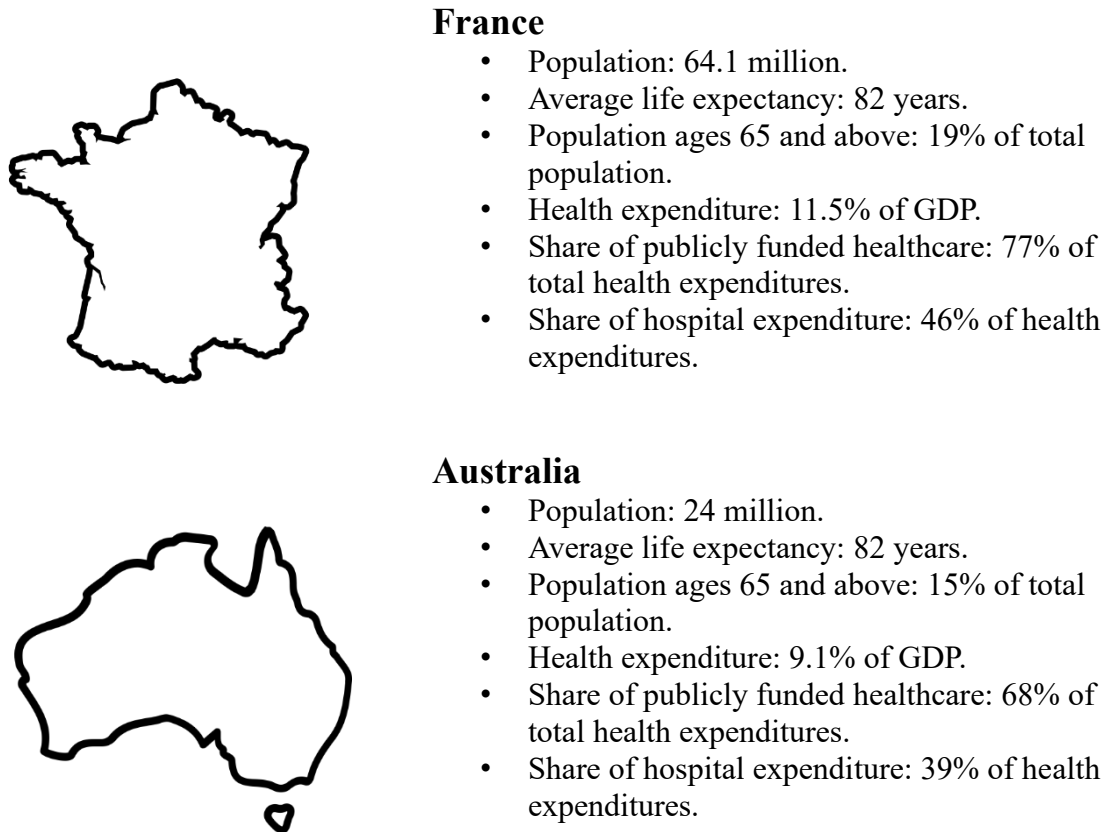


Figure 2.2: Snapshot of French and Australian Health Systems

Source: Australian Institute of Health and Welfare (2018a); DREES (2018a); OECD (2019a, 2019b); United Nations, Department of Economic and Social Affairs, and Population Division (2017), Australia by Anna Hatzisavas from the Noun Project, France by Randomhero from the Noun Project.

2.2.1 Changes in demographics. Growth in the Australian and French populations reflect upward Anthropological trends witnessed around the world. In 1960,

there were 10.3 million people in Australia and 45.7 million in France, but by 2015 these numbers stood at 24 million and 64.1 million, respectively (OECD, 2019b).

Both the French and Australian populations are also characterised by rising life expectancy and decreasing mortality rates. Indeed, a French or Australian person born in 2016 can expect to live for an average of 82 years—a contrast to the average of 70 years for those born in the 1950s (OECD, 2019b). According to United Nations (UN) estimates, life expectancy is projected to rise further in the future, reaching an average of 90 years by the year 2100 (United Nations et al., 2018).

The age distribution is also reflective of these trends in birth, mortality, and life expectancy. The age pyramids of the two countries evolved from being expansive in the 1950s (Figure 2.2 and 2.5), a reflection of high mortality and birth rates, to stationary (Figure 2.3 and 2.6) signalling nearly equal birth and death rates. The pyramids also show that the proportion of elderly population will continue to grow in the future (Figure 2.4 and 2.7). Indeed, the proportion of people aged 65 years and over has grown from 12 per cent to 15.3 per cent in Australia, and from 15 per cent to 18.8 per cent in France, between 1996 and 2016 (United Nations et al., 2017).

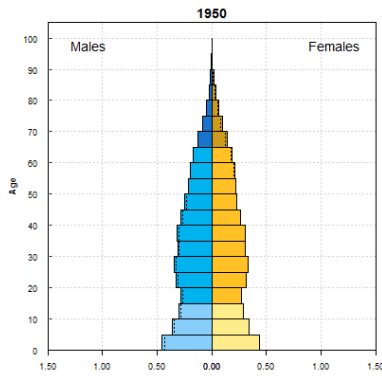


Figure 2.3: Australian population pyramid in 1950

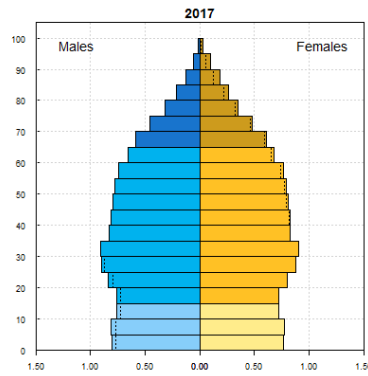


Figure 2.4: Australian population pyramid in 2017

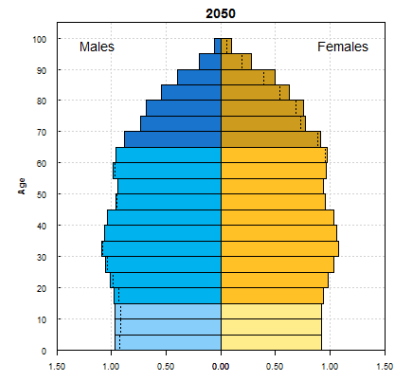


Figure 2.5: Australian population pyramid in 2050

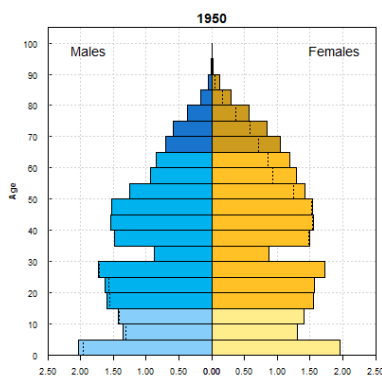


Figure 2.6: French population pyramid in 1950

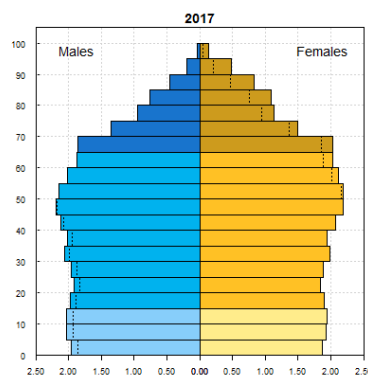


Figure 2.7: French population pyramid in 2017

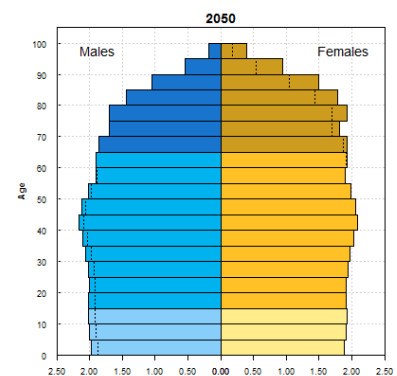


Figure 2.8: French population pyramid in 2050

Source: United Nations

In terms of geographic distribution, the populations of both countries are concentrated in urban areas. In Australia, most of the population resides in capital cities located in the south-east, east and south-west coastal regions (Australian Bureau of Statistics, 2018). In 2016, 90 per cent of the Australian population were living in cities, which is the equivalent of only 0.2 per cent of the country's total land area (Keywood, Hibberd, & Emmerson, 2017). In France, half of the population was concentrated in counties of 10,000 inhabitants or more, and 79 per cent of the population was living in cities of at least 1,000 inhabitants (Santé publique France & Direction de la recherche, 2017). The Ile de France region was by far the most populated, accommodating 1,001

inhabitants per square kilometre. Increasing populations coupled with a higher concentration in smaller areas will continue to put pressure on the natural and artificial systems supporting them—including healthcare. As populations age, grow in number and live longer, their healthcare demands change, and they need more health services.

2.2.2 Changes in demands for healthcare. The theory of epidemiological transition, as described by Omran (2005) goes a considerable way to explaining the evolving healthcare demands of both the French and Australian populations. This theory links the changes in health and disease patterns to the social, demographic, technological and economic evolutions experienced by human societies that have reached their peak levels in the Anthropocene. Both France and Australia are currently undergoing the “third stage” of this transition (Omran, 2005). Associated with significant developments that took place during and after the industrial revolution, this age is marked by decreased mortality rates and the rise of degenerative, or “human-made”, diseases which have displaced infectious pandemics as the primary source of mortality and morbidity.

Age-standardised mortality rates have indeed been steadily declining over the past half-century in both France and Australia. In 2016, there were 6.5 and 8.8 deaths per thousand in Australia and France, respectively (The World Bank, 2019). The reductions in mortality rates in both countries reflect the general trends of developed countries since 1960 and are typical signifiers of their epidemiological transition (Omran, 2005; The World Bank, 2019).

Alongside decreased mortality rates, both France and Australia face an increased burden due to chronic diseases. These diseases have long-lasting effects that, when coupled with their high prevalence in aging populations with increased life

expectancies, add considerable pressure to healthcare institutions responsible for treating and managing them. Data from 2015 revealed that half of the Australian population had at least one of the following chronic conditions: asthma, back pain, cancer, cardiovascular disease, COPD, diabetes, mental health conditions and arthritis (Australian Institute of Health and Welfare, 2018a). These conditions were responsible for more than one-third of the total number of hospitalisations and contributed to 87 per cent of deaths (Australian Institute of Health and Welfare, 2018a). In 2017, more than 10 million French people claimed to have at least one chronic condition—an additional two million since 2008 (L'Assurance Maladie, 2018).

The growing aging population, increased life expectancy and high prevalence of chronic diseases faced by health systems in France and Australia are hard to separate from the broader trends of the Anthropocene and human history. As discussed in Section 2.1, the unprecedented growth of the human population was fuelled by groundbreaking innovations enabled by CL. These human innovations allowed humans to expand and create more complex communities that, in turn, accelerated CL and furthered their development. The current human living conditions, along with the decrease in mortality rates, increased life expectancy and the chronic conditions associated with ageing are intimately connected to, are indeed dependent upon, the human ability to communicate and accumulate knowledge over generations. However, as the human-created complexity has proliferated, the level of energy needed to maintain it has increased. Harvesting enough energy to maintain complexity is the essence of human history (Baker, 2015a) and the same mechanisms are in play within the healthcare sector. As human societies evolved and as the challenges they faced grew, health systems became ever more sophisticated (Braithwaite et al., 2013; Plsek &

Greenhalgh, 2001). Today, a multitude of stakeholders, the institutions that care for us, and various types of organisations across different sectors (e.g., public, private) deliver multiple types of health services to different patients with varying needs. However, just as the resources needed to fuel the overwhelming growth and increasing complexity of modern societies in the Anthropocene are being depleted, healthcare systems are finding themselves in a similar situation as monetary resources become scarcer in the face of unprecedented demands.

This brings us to the state of health spending in France and Australia and to the predominant role played by governments (the main funders) and hospitals (the leading providers of acute care). The interactions between these two actors are analysed on a macro level, outlining the rise of numerous regulations aimed at improving efficiency and controlling costs. It is within that context that hospitals are turning to new MCSs that are geared towards efficiency. This thesis attends to one of these systems, namely those based on the Japanese Lean production philosophy, which will be presented in the next chapter.

2.3 Rising costs and increased regulation: a macro-analysis of health sectors in France and Australia.

The previous section examined the various challenges facing the French and Australian health systems in the Anthropocene. This section will provide a brief examination of the health-related expenditures in France and Australia, as well as the government-led regulatory efforts to contain them. It aims to provide an overview of the context in which hospitals are involved, one that is difficult to dissociate from the managerial practices they adopt.

2.3.1 Rising expenditures. According to data from the Organisation for Economic Co-operation and Development (OECD), healthcare expenditure accounted for 9.1 per cent of Australian and 11.5 per cent of French gross domestic product (GDP) in 2017 (OECD, 2019a). The share of GDP allocated to financing health goods and services has been growing; 10 years ago, these numbers stood at only 7.6 per cent in Australia and 9.5 per cent in France (OECD, 2019a). Compared to other OECD countries, Australia stands amongst those peers who spent the OECD average of nine per cent of GDP on healthcare. France, on the other hand, runs the third most expensive health system after Switzerland (12.3 per cent of GDP) and the U.S. (17.6 per cent).

Both Australia and France maintain large, publicly funded healthcare systems. In 2017, government spending and compulsory social insurance accounted for 77 per cent of total health spending in France and 68 per cent in Australia (Australian Institute of Health and Welfare, 2018a; DREES, 2018a). The public sector proportion of total health expenditure is relatively low in Australia—other OECD countries, including France, averaged 74 per cent in the year 2017 (OECD, 2019a). Public health funding is divided between Federal (41 per cent) and State (26 per cent) governments in Australia

(Australian Institute of Health and Welfare, 2018c). Out of pocket expenses have been hovering around 17 per cent of total expenditures in Australia and 8 per cent in France, both lower than the OECD average of 21 per cent (Australian Institute of Health and Welfare, 2018a; DREES, 2018a; OECD, 2019a). Private health insurance funds contribute about 8 per cent of health expenditure in Australia and 13 per cent in France (OECD, 2019a).

Hospitals and primary healthcare services account for most of the total health expenditures of both France and Australia (Australian Institute of Health and Welfare, 2018a; DREES, 2018a). In 2016, hospitals accounted for 46 per cent of the money spent on health goods and services in France and 39 per cent in Australia, while primary healthcare accounted for 26 per cent and 35 per cent respectively (Australian Institute of Health and Welfare, 2018a; DREES, 2018a). Hospitals in both countries are divided into three main categories; public, private not-for-profit (PNFP) and private for-profit (PFP). In 2016, a total of 3,065 hospitals were servicing the French population, 45 per cent of these hospitals were public entities, 22 per cent were PNFP, and 32 per cent were PFP (DREES, 2018b). By contrast, 1,325 hospitals were operating in Australia, 52 per cent of which were public (Australian Institute of Health and Welfare, 2018b). Capacity wise, 250,104 beds were available in French public hospitals (3.7 per 1,000 people), and 62,000 were available in their Australian counterparts (2.5 beds per 1,000 people) (Australian Institute of Health and Welfare, 2018b; DREES, 2018b). In terms of funding, State or Territory and Federal governments provide most of the funds for public hospitals in Australia, which accounted for AUD\$51 billion in 2016 (Australian Institute of Health and Welfare, 2018d). In France, the national statutory health insurance fund covered 91 per cent of total hospital spending in 2016, which stood at

more than €92 billion (approximately AUD\$149 billion), the majority (€71 billion, approximately AUD\$115) of which was spent at public and PNFP hospitals (DREES, 2018a, 2018b).

2.3.2 Increased regulation. In the context of growing aging populations, high prevalence of chronic diseases, increased demand, and rising health costs, governments in France and Australia have been undertaking many healthcare-related reforms aimed at improving efficiency, containing costs, and ensuring the quality of care. Both countries have been applying principles promoted by the New Public Management (NPM) doctrine (Hood, 1995). NPM has been gradually adopted over the past 50 years in various OECD and developing countries that have confronted significant budgetary crises (Amar & Berthier, 2006). At its core, the NPM doctrine contends that the efficiency of public service organisations can be improved by applying management models used in the private (Amar & Berthier, 2006; Claveranne, Pascal, & Piovesan, 2009) and industrial sectors (de Kervasdoué, 2015; Minvielle, 2003). Initially, NPM reforms were advocated to overcome the inefficiencies of public institutions that were considered too bureaucratic, unresponsive to change, and costly to operate (Amar & Berthier, 2006; Christensen, Newberry, & Potter, 2019).

In the case of healthcare, French and Australian reforms introducing market-like structures (Collyer & White, 1997; Productivity Commission, 2005), yard-stick competition mechanisms (Shleifer, 1985) and activity-based funding (Cases, 2008; Duckett, 2008) are intimately connected with the NPM movement as promoted by the OECD in its regulatory reforms program. At a structural level, these reforms aim to improve efficiency by introducing incentivising mechanisms, promoting public choice and transparency (Angelé-Halgand, 2009; Hood, 1995). At an organisational level, the

reforms materialise in the introduction of new managerial practices focused on measuring outputs, improving performance, developing accountability, and giving senior managers more discretionary power to improve performance (Angelé-Halgand & Garrot, 2015; Hood, 1995).

Within hospitals, the success of these reforms is highly dependent on overcoming the information asymmetry that exists between healthcare professionals, on one hand, and governments and managers, on the other (Lenay, 2001; Lenay & Moisdon, 2003). Hospitals are often characterised as professional bureaucracies in which managers have little to no power over practitioners, who diagnose and make decisions regarding treatment of patients based on the knowledge they hold (Mintzberg, 1989). The capacity of governments or managers to implement effective cost containment and quality assurance measures becomes, therefore, significantly limited by their inability to reliably measure care-related activities (Halgand, 2003; Productivity Commission, 2015). This asymmetry of information makes it challenging to identify whether and where the actions of practitioners may diverge from the best interest of either patients or funding bodies. Deciphering what happens within the walls of hospitals, therefore, is crucial in overcoming this managerial barrier and is the key to more efficient and effective delivery of care (Halgand, 2003).

To overcome this information asymmetry problem, both France and Australia have standardised medical practices, which provides a means of limiting variability, improving efficiency, and controlling quality (Samuel, Dirsmith, & McElroy, 2005). For instance, both countries are currently using a modified version of the American-designed Diagnosis Related Group (DRG) system to inform the level of funding they attribute to hospitals in the framework of their activity-based funding models. DRGs

classify patients into distinct groups based on medical coherence and the level of resources needed to treat them from a financial perspective (Samuel et al., 2005). Beyond their role as a financing mechanism, DRGs were initially developed by industrial engineers to help control variations in medical practices through the standardisation of treatments and diagnosis (Fetter & Brand, 1991; Samuel et al., 2005). DRGs have transformed medical decisions into a measurable product for which costs can be predicted and therefore optimised. Similarly, hospital accreditation programs in both countries set standards that lead to the development of protocols aimed at standardising practices (Fraisie, Robelet, & Vinot, 2003; Lorient, 2004). Standardisation has the dual advantage of enabling both cost and quality control within hospitals by rendering medical practice visible and accessible to managers (Halgand, 2003).

Standardisation also created the conditions necessary for further implementation of new management methods aimed at improving productivity in a product-centred healthcare industry. These methods include restructured divisions of labour coupled with a strict “proceduralization” of tasks (Pascal, 2003), job redefinitions to match compensation and skill levels (Lapointe, Chayer, Malo, & Rivard, 2000), an increased use of information technology, and the use of business engineering and accounting concepts such as “quality control”, “flexibility”, “efficiency”, and “cost-effectiveness” in everyday medical practice (Amar & Berthier, 2006; Fraisse et al., 2003; Samuel et al., 2005). Overall, hospitals are using new managerial models aimed at improving efficiency and cutting costs.

Having established the context for the research, the remainder of the thesis will focus on LM. The following chapter will start by presenting an in-depth examination of Lean and the scientific literature examining its use in healthcare. A discussion of this

literature will then show that, despite being linked to significant performance and efficiency gains, aspects of Lean remain controversial and understudied. Highlighting the existing gaps in the literature will lead to the presentation of the research questions of the thesis and a demonstration of how this work contributes to advancing the existing body of knowledge.

Chapter summary

This chapter aims to place this thesis within the context of the global changes taking place in the Anthropocene. Section 2.1 started by introducing CL as a foundational concept that continues to play a key role in human history. Defined as the capacity to transmit and preserve knowledge across generations, CL is a meta-concept behind multiple innovations that have increased the carrying capacity of our ever-more-complex human societies. The Anthropocene, in a very real sense, provides a framework for reflection on the accelerated changes brought about by human activity. Today, on a pessimistic but realistic note, humanity risks self-destruction as its expansion surpasses the carrying capacity of the environment. The biggest challenge facing humanity in the Anthropocene is surviving its own generated complexity. Section 2.2 revealed how the challenges threatening the sustainability of the planet in the Anthropocene are exerting increased pressure on health systems. Data from France and Australia were used as examples. Health systems in both countries are indeed facing unprecedented challenges as populations grow and age, and as the prevalence of chronic conditions rises. In the face of increasing health expenditures, governments and policymakers have been conducting reforms aimed at improving the efficiency and productivity of hospitals. Section 2.3 outlined these reforms, as they are indeed difficult

to separate from the use of new managerial practices such as LM. Originating in the Japanese car manufacturing industry, Lean holds the promise of operational excellence and cost reduction. How is it being used in healthcare? Furthermore, how is it impacting healthcare professionals? Answering these questions requires a solid understanding of what Lean is and how it works.

Chapter 3

The human impact of LM in healthcare: a review of the literature

The previous chapter explored the pressures driving hospitals to employ new managerial models aimed at improving efficiency and cutting costs. This chapter will present a review of the literature on one of these models, LM, and its use in healthcare (Figure 3.1). Beyond providing a summary of what is known about Lean, this chapter aims to critically reflect on the literature and in so doing identify gaps to be filled. It is through this critical assessment of the existing body of knowledge that the research questions guiding the work in this thesis will be presented.

The chapter has four sections. Section 3.1 discusses the origin and developments of Lean. Section 3.2 includes a systematic review of the literature related to one of Lean's underexamined dimensions: its human impact. Section 3.3 critically appraises the literature presented in Section 3.2 and highlights its gaps. Finally, Section 3.4 outlines the holistic approach adopted in the present research to address the literature gaps. The thesis uses an organisational vantage point conceptualising Lean tools and practices as constitutive parts of an integrated MCS used to eliminate waste and create value in organisations.

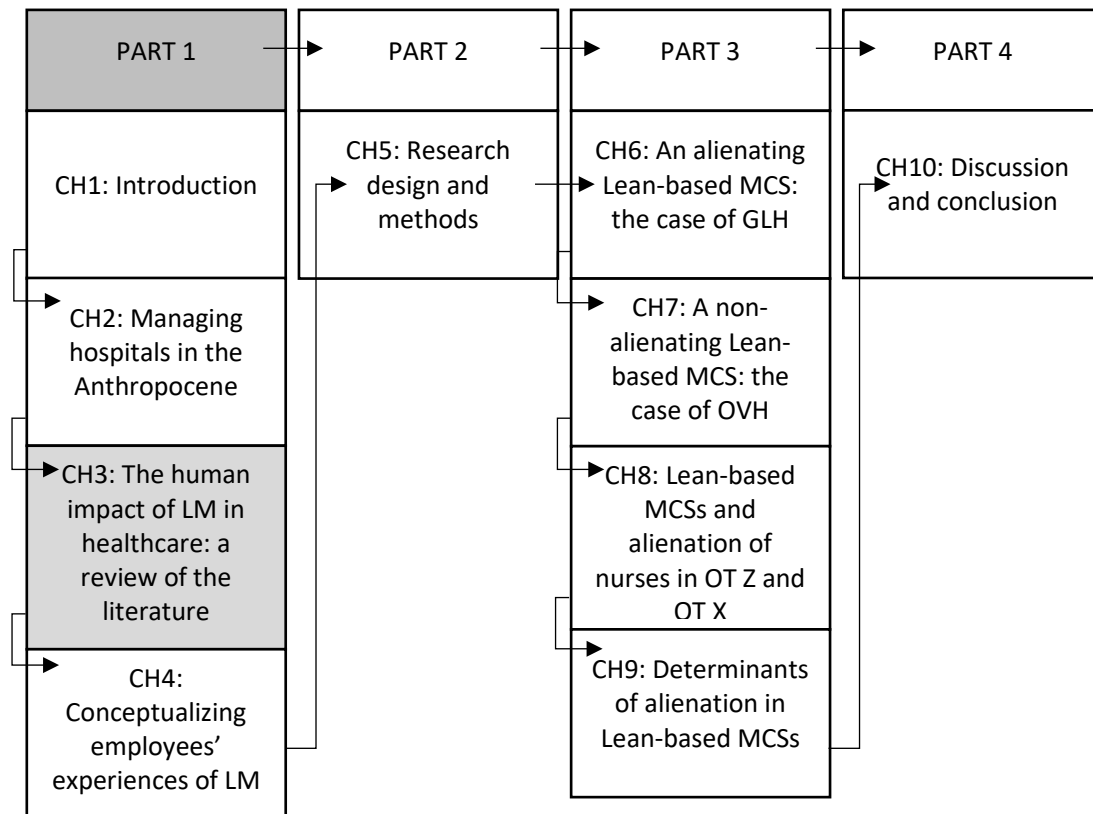


Figure 3.1: Overview of thesis structure - Chapter 3

Source: Author's conceptualisation

3.1 Lean Management: Origin and developments

The basic premise of LM—which has its origins in the automotive industry—is that greater productive efficiency can be achieved through a process of continuous improvement aimed at eliminating waste and maximising value-adding activities (Liker & Convis, 2005; Ohno, 2014; Womack & Jones, 1996; Womack et al., 2007). Also referred to as the Toyota Production System, or TPS, LM constitutes a radical transformation of traditional mass-production methods (Womack & Jones, 1996; Womack et al., 2007). Instead of focusing on producing large volumes of standardised goods, LM emphasises waste elimination as a way of improving the flexibility of

productive resources and addressing variability in customer demands (Liker & Convis, 2005).

It is challenging to retain a singular and straightforward definition of LM and what it encompasses due to the vast discrepancies between the definitions used by various authors writing on the subject (Bhamu & Sangwan, 2014). Generically, LM is considered to be the “antidote” to waste in organisations (Womack & Jones, 1996, p. 15). Waste, defined as tasks and processes that do not contribute to the creation of value but consume organisational resources, is associated with inefficiencies, reduced flexibility and the generation of unnecessary costs (Womack & Jones, 1996). Ohno, the founding father of LM, identified seven sources of waste (summarized in Table 3.1) and pioneered managerial and organisational tools and techniques to help organisations get rid of them (Ohno, 2014).

Table 3.1: Ohno's seven sources of waste in organisations

Type of Waste	Definition	Example
Overproduction (OPN)	Parts are manufactured without any new order or demand from customer. OPN leads to excessive work in process stocks.	Large batch size, unstable schedule, unbalanced cells, inaccurate information on demand
Excess inventory	Storage of products with no order on hand.	Excess inventory, large batch size, long change over time.
Waiting	Idle time for machines or workers due to bottlenecks of ill-planned production flow.	Long changeover, unreliable process, time required to perform re-work.
Motion	Unnecessary motions of workers, which divert them from actual processing work. Motion involves poor ergonomics of production.	Poor layout, poor method design, large batch size, poor workplace organisation.

Type of Waste	Definition	Example
Transportation	Movement of materials that do not add any value to the product.	Poor layout, large batch size, multiple storage locations.
Over-processing	Unintentional conduct of more processing work than warranted by customer requirement.	No standardisation of ideal techniques, unclear specification, or quality acceptance standards.
Defects	Production with incorrect specifications, physical defects leading to increase in cost.	Inadequate training, skill shortage, operator error, excessive stock.

Source: Arunagiri and Gnanavelbabu (2016)

Ohno considered *overproduction* to be the primary source of waste in organisations (Liker & Convis, 2005; Ohno, 2014). He believed that it is a direct result of traditionally run firms driven by productive capacity and not by consumer demands. Excessive production generates inventory that consumes resources and generates unnecessary costs. Under LM, production should be *pulled* by the customers and organisations should strive towards having zero inventory. *Excess inventory* is indeed another source of waste in organisations.

Waste also comes in the form of *over-processing*: i.e., work that is done unnecessary (Liker & Convis, 2005; Ohno, 2014). Examples include repairs, reworks, or duplicated tasks. To rid themselves of *over-processing*, organisations need to understand how value is produced and focus only on conducting value-adding tasks. An analysis of production processes and how they each contribute to the creation of value could be useful to that end. Under LM, this process is called *value stream mapping* (Womack & Jones, 1996; Womack et al., 2007).

Waiting or idle times are also sources of waste in organisations. When productive resources are not fully utilised, costs increase, and the production of value

decreases. To avoid waiting, production should be *levelled* and conducted in a *continuous flow* using a *just-in-time* approach (Liker & Convis, 2005; Ohno, 2014). In Lean organisations, products should flow from one workstation to another until their production is finalised. This contrasts with traditional batch and queue production models that generate an inventory of unfinished goods. Under LM, a *Kanban* system (replenishment cards) ensures effective communication between tightly coupled steps of a production process (Liker & Convis, 2005). When used by a workstation, the *Kanban* indicates a need for replenishment to its predecessors. In a true *customer pull* approach, the first *Kanban* is issued by the customer before cascading back to the first step of production. *Kanban* is fundamental not only to the application of *pull* and *flow* but also to the adoption of the *just-in-time* principle that consists of delivering the required items in the right amount at the right time to the right point of use. When used on their own, *flow*, *Kanban* and *pull* link production to demand and can lead to unwarranted variability in the production process. To avoid this, Lean organisations *level* their production using volume and product-mix, creating a production schedule (Liker & Convis, 2005). *Levelling* ensures that productive resources are fully utilised while remaining flexible. Eliminating, or significantly reducing, the necessary changeover time required to switch from producing one type of product to another is key to enabling *production levelling* (Liker & Convis, 2005).

Unnecessary motion also creates waste in organisations (Ohno, 2014). It is the result of poorly designed workflow and plant layouts. To rid themselves of this type of waste, Lean organisations should adopt a systematic housekeeping technique referred to as 5S (sort, set in order, shine, standardise, and sustain). Housekeeping is used along with *point-of-use storage* (POUS) to reduce unnecessary movements but also to

eliminate the need for *transporting* frequently used materials and equipment, which is another source of waste. POUS means that all workstations are adequately equipped to produce any type of product at any time. Moreover, since Lean organisations use a *just-in-time* production system, there should be no need for workers to transport raw materials as they are delivered directly to them when needed.

Quality defects are the last type of waste in Ohno's taxonomy (Ohno, 1988). Not only do they lead to dissatisfied customers, but they also generate additional costs in the form of reworks and repairs. To eliminate them, Toyota pioneered an integrated quality management approach called *Jidoka*, or automation with a human touch (Liker, 2005; Ohno, 1988). Toyota's *Jidoka* is applied to all processes within the company, with the aim being to always get quality right the first time around. It materialises in the deployment and use of tools, such as *Andon*; a signalling system used by employees on production lines to communicate a need for help or to highlight any production errors or defects. In *Jidoka*, workers are encouraged to signal defects and stop the production line to address them as soon as they emerge. This is crucial in limiting post-production reworks and inspections and their associated costs. *Flow* and *just-in-time* are also part of *Jidoka*, as they make it easy for defects to surface by ensuring processes are tightly linked (Liker & Convis, 2005). Under LM, a defect in one production step will immediately affect the whole production line. Correcting errors is therefore regarded as a collaborative process that involves not only employees but also managers and quality experts. The latter are indeed encouraged to watch the production process before making decisions or implementing quality initiatives.

When defects appear, a root cause analysis should be undertaken to find their originating source, and solutions should be incorporated into work standards to avoid

errors reoccurring. *Standardisation* is indeed core to LM; standards are considered a materialisation of organisational learning and form the basis for continuous quality improvement, also known as *kaizen* (Liker, 2005). In this system, stable, repeatable, and predictable work methods and procedures are not only essential for quality, but they are also necessary prerequisites of *continuous flow* and *customer pull*.

Lean organisations also rely on the use of *visual controls* to continuously monitor the production process and provide employees with immediate feedback on their performance (Liker & Convis, 2005). *Visual controls* highlight deviations from standards, goals or targets and are designed to provide employees with easily understandable information to ensure the fast and adequate execution of tasks.

In sum, *Jidoka* and *just-in-time* production are considered to be the main pillars of LM (Liker & Convis, 2005; Ohno, 2014). As a production philosophy, Lean builds on these two concepts and includes a set of tools and techniques (e.g., pull production, continuous flow, value stream mapping, Kanban, kaizen, 5S, and production levelling) that all organisations can use to eliminate waste and reach operational excellence.

It did not take long for LM to migrate from Toyota and the car manufacturing industry into service-delivery organisations and even public institutions (Bhamu & Sangwan, 2014; Hines, Holwe, & Rich, 2004; Jasti & Kodali, 2015; Kyle B, 2012). LM has indeed been linked to a host of positive organisational outcomes including improved quality, reduced costs and increased productivity (Baines, Lightfoot, Williams, & Greenough, 2006). In healthcare, LM has been associated with reduced waiting times in emergency departments (Dickson, Anguelov, Vetterick, Eller, & Singh, 2009; Ng et al., 2010) fewer medical errors (Raab, Andrew-Jaja, Condel, & Dabbs, 2006) and improved clinical pathways (Collar et al., 2012; Culig et al., 2011). However, despite its

popularity, aspects pertaining to the use of Lean in organisations, and specifically in healthcare, continue to be controversial and poorly evaluated.

Between 2008 and 2018, 21 published literature reviews summarising the increasing body of knowledge on the use of Lean principles in healthcare were identified (Ahmed, Manaf, & Islam, 2013; Amaratunga & Dobranowski, 2016; Andersen, Rovik, & Ingebrigtsen, 2014; Brandao de Souza, 2009; Costa & Godinho, 2016; Crema & Verbano, 2017; D'Andreamatteo et al., 2015; Daultani, Chaudhuri, & Kumar, 2015; Deblois & Lepanto, 2016; W. Ferreira, Da Silva, Tanaka, & Zampini, 2016; Filser, da Silva, & de Oliveira, 2017; Henrique & Godinho Filho, 2018; Holden, 2011; Joosten, Bongers, & Janssen, 2009; Kalong & Yusof, 2013; Lawal et al., 2014; Magalhaes, Erdmann, Silva, & Santos, 2016; Mazzocato et al., 2010; Moraros, Lemstra, & Nwankwo, 2016; Poksinska, 2010). The aim of each of these reviews is presented below in Table 3.2. Despite signalling an increased interest in the application of the Japanese production philosophy to healthcare provision, these reviews highlight the existence of multiple gaps in what is still a relatively recent area of academic study (Brandao de Souza, 2009).

Table 3.2: Identified aims of literature reviews published on the use of Lean in healthcare

Review author/s and date of publication	Review aim
Henrique & Godinho Filho, (2018)	“Present a thorough review of the empirical literature in this field to find their present approach and propose future directions consistent with the needs of professionals and academics.” (p.1)

Review author/s and date of publication	Review aim
Filser et al. (2017)	“The objective of this article is to map the state of research on Lean Healthcare in order to provide a better understanding of the structure of this field of research and the major actors in it as well as to acknowledge and support the course of existing literature. Furthermore, it analyses future research tendencies in Lean Healthcare to inspire further work in this area.” (p.801)
Crema and Verbano (2017)	“The aim is to investigate how LHM and its specific tools and practices can be exploited to pursue CW’s objectives. To achieve the purpose of the paper, a systematic literature review has been accomplished based on the PRISMA guidelines.” (p.890)
Moraros et al. (2016)	“This systematic literature review seeks to independently assess the effect of Lean or Lean interventions on worker and patient satisfaction, health and process outcomes, and financial costs.” (p.150)
Magalhaes et al. (2016)	“The objective was to demonstrate the scientific knowledge about lean thinking in the health area, emphasising the impact and contributions to health care and nursing.” (p.1)
Deblois and Lepanto (2016)	“The purpose of this paper is to present a systematic review of literature reviews, summarising how Lean and Six Sigma management techniques have been implemented in acute care settings to date, and assessing their impact.” (p.192)
W. Ferreira et al. (2016)	“The objective of this paper is to cover the theoretical research gap, conducting a systematic literature review with biometric analysis concerning Lean healthcare application in Brazil.” (p.423)
Costa and Godinho (2016)	“This paper presents a literature review of 107 papers on lean healthcare to evaluate its evolution by updating previous literature reviews and to propose a classification and analysis of the papers reviewed.” (p.824)
Amaratunga and Dobranowski (2016)	“This study aimed to conduct a systematic review to investigate the effectiveness of applying Lean, Six Sigma, or Lean Six Sigma within the field of radiology.” (p.1)
Daultani et al. (2015)	“The present article analyses the published academic literature to understand the potential of applying lean principles in different healthcare settings and to identify areas of future research.” (p.1083)
D'Andreamatteo et al. (2015)	“This work aims to present a comprehensive overview of the main issues highlighted by research on the implementation of Lean in a complex contest such as the healthcare one.” (p.1197)

Review author/s and date of publication	Review aim
Lawal et al. (2014)	“This article aims to catalogue and synthesise the existing literature via a systematic review on the effects of lean implementation, especially the potential effects on professional practice and health care outcomes in various settings.” (p.2)
Andersen et al. (2014)	“This review of reviews sums up the significant findings regarding facilitators for lean interventions in healthcare in the last decade.” (p.1)
Kalong and Yusof (2013)	“This study reviews the relevant literature that discusses the categories of waste in the context of healthcare and information technology.” (p.750)
Ahmed et al. (2013)	“This paper mainly discusses the effects of the LSS approach in different hospitals around the world, according to the literature review. This review also discusses the relationship between LSS as well as their impacts on healthcare services based on literature review.” (p.189)
Holden (2011)	“This study critically reviewed 18 articles describing the implementation of Lean in 15 EDs in the United States, Australia and Canada.” (p.265)
Poksinska (2010)	“The purpose of this article is to discuss the current state of the implementation of Lean production in health care.” (p.319)
Mazzocato et al. (2010)	“To understand how lean thinking has been put into practice in healthcare and how it has worked.” (p.376)
Joosten et al. (2009)	“In this paper, we present an overview of lean thinking and its application to health care.” (p.341)
Brandao de Souza (2009)	“This paper aims to provide a review of the existing literature on lean healthcare. It seeks to describe how this concept has been applied and to assess how trends and methods of approach in lean healthcare have evolved over the years.” (p.121)
Cooper and Mohabeersingh (2008)	“This review article is based on an extensive literature search incorporating aspects of lean thinking in a healthcare setting. The rationale of the problem considered is seeking ways to minimise waste, improve efficiency, and create a harmonious working environment within a health care setting.” (p.1110)

Source: Author’s conceptualisation.

To advance this existing body of literature, the research presented in this thesis will address one of LM's potentially deleterious and underexplored themes: its effects on employees. The interest in this topic is not only driven by the lack of research focusing on this issue but also by a social *malaise* amongst the French healthcare

workers (and by extension, perhaps their Australian counterparts) that was the impetus for this research endeavour.

In the following section, to provide a comprehensive summary of the existing research on the effects of Lean on healthcare professionals, the results of a systematic review of the topic, which concluded in February 2018, will be presented. The third section of this chapter includes a critical reflection on this literature.

3.2 The human impact of LM in healthcare: a systematic review of the literature

This section includes a systematic review conducted with the aim of identifying and reporting all staff related findings published in literature examining the use of LM in healthcare. While some aspects relating to staff outcomes were mentioned, none of the previously identified reviews focused exclusively on this topic. This review is the first to follow a systematic approach to the identification and analysis of the existing evidence on staff related outcomes of LM in healthcare. Beyond compiling and summarising the current literature on the employee outcomes of LM in healthcare, the value of the review resides in its capacity to provide a clear framework that could be used in future examinations of this overlooked topic. This section begins by disclosing the review method (3.2.1), before presenting a descriptive (3.2.2) and then qualitative synthesis (3.2.3) of the results.

3.2.1 Systematic review methods. To gain a deeper understanding of the human impact of Lean in healthcare, the review of the literature was carried out following the Preferred Reporting Items for Systematic Review and Meta-analysis statement (Liberati et al., 2009). A systematic search was conducted in February 2018 on the following databases: Scopus, Emerald, EBSCO business premier and MEDLINE.

The choice of databases allowed the identification of relevant publications in the fields of health science, as well as management. Papers were searched by combining a set of topic-related keywords (Lean approach, Lean process, Lean method, Lean transformation, Lean philosophy, Lean principles, Lean practices, Lean process improvement, Lean management, Lean healthcare, Lean thinking, Lean production, Lean six sigma, Toyota production system) and a group of setting-related keywords (health care, healthcare, hospital, operating theatre*, bloc* opératoire*, operating room, operating ward, surgical theatre, surgical ward, surg*, care). These broad search terms were used to capture a wide array of articles discussing the use of Lean in healthcare that could have been of relevance. In order to avoid constraining the results, especially given the relatively emerging nature of the field, keywords related to staff, employees or human aspects of Lean were not used. News articles, conference proceedings, magazines, trade publications and book chapters were excluded using the exclusion parameters of the online databases during the search phase. No starting date was specified, and articles published up to February 28, 2018 were included. Table 3.3 portrays the use of the search strategy using Scopus database as an example.

Table 3.3 Search strategy used in Scopus database

		Search terms	Results
1	The topic (Lean Management)	“Lean approach” OR “Lean process” OR “Lean method” OR “Lean transformation” OR “Lean philosophy” OR “Lean principles” OR “Lean practices” OR “Lean process improvement” OR “Lean management” OR “Lean healthcare” OR “Lean health care” OR “Lean thinking” OR “Lean production” OR “Lean Six Sigma” OR “Toyota production system”	7,751
2	The setting (Healthcare,	(healthcare OR “health care” hospital OR "operating theatre*" OR "bloc* opératoire*" OR	1,552,420

		Search terms	Results
	Operating Theatres)	"operating room*" OR "operating ward" OR "surgical theatre*" OR "surgical ward*" OR surg* OR Care)	
3	Topic & Setting	1 AND 2	494

Source: Author's conceptualisation.

Search results from each of the databases were aggregated and imported into an Endnote library, and duplicate entries were removed. Abstracts had to satisfy the following inclusion criteria to be considered in the review: published in English or French, peer-reviewed, empirical, and studied the use of LM in healthcare and its impacts on staff.

Full-text analysis was conducted on the retained articles using a data summarising sheet. Essential information recorded included the country of study, time frame of data collection, study type, study setting (e.g., academic hospital or emergency department), aims, methodology, data collection methods, theoretical framework, reported Lean tools or principles, general findings and staff related findings.

3.2.2 Descriptive results. Out of 1,000 identified publications, only 310 presented empirical evidence related to the use of Lean in hospitals, and only 14 met our inclusion criteria with a main focus on investigating the effects of Lean on staff. Figure 3.2 is a graphic representation of the steps followed in conducting this review.

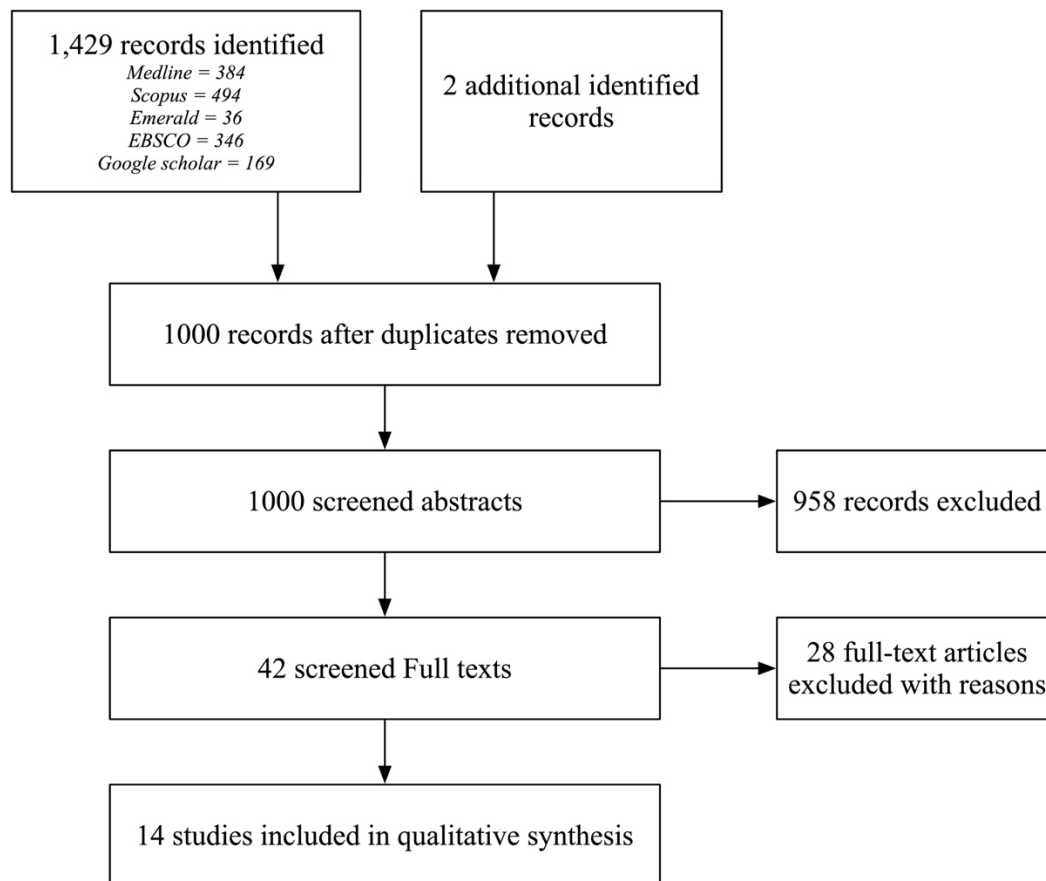


Figure 3.2: Flowchart of the systematic review.

Source: Author's conceptualisation.

The articles included in the review (n=14) were published between 1995 and 2018, with half being published in 2014 and 2015 (n=7, 50 per cent). All the publications were in English, and the largest proportion of the studies (n=6, 43 per cent) were conducted in Sweden. Half of the publications were published in health services journals (n=7, 50 per cent). Five studies (36 per cent) were published in nursing, surgical and quality in healthcare journals. Only two studies (14 per cent) were published in a management or social science journal. The full list of journals is presented in Table 3.4.

Table 3.4: List of journals included in the review

Journal name	Research field	Number of publications
BMC Health Services Research	Health services research	3
American Journal for Health-System Pharmacy	Health services research	1
Global Health Action	Health services research	1
Health Services Management Research	Health services research	1
Journal of Hospital Administration	Health services research	1
Journal of the American College of Surgeons	Surgery	1
Journal of Nursing Administration	Nursing	2
Quality Management in Healthcare	Quality management	2
The International Journal of Human Resource Management	Management/social science	1
Labour & Industry: a journal of the social and economic relations of work	Management/social science	1
Total		14

Source: Author's conceptualisation.

Eighty-five per cent of the studies used either quantitative (n=6, 43 per cent) or qualitative research methods (n=6, 43 per cent), with two studies using a mixed methods approach. Evaluation studies were the most common research design (n=7, 50 per cent), followed by single case studies (n=4, 29 per cent) and multiple case studies (n=3, 21 per cent). Only 5 (36 per cent) used a theoretical framework to provide a conceptual foundation for their findings (Lindskog, Hemphälä, Eklund, & Eriksson, 2016; Mazzocato et al., 2012; Nelson-Peterson & Leppa, 2007; Ulhassan et al., 2013; Ulhassan, von Thiele Schwarz, Thor, & Westerlund, 2014).

Regarding the research settings, most of the studies were conducted in acute-care settings (emergency departments (n=6, 43 per cent), operating rooms (n=1, 7 per cent), intensive care units (n=1, 7 per cent). Most of the studies (n=11, 79 per cent) reported simultaneously on the use of multiple Lean techniques. Only one of the studies

(Rees, 2014), although focused on efficiency and Lean approaches, did not make any mention of the Lean techniques used. *Value stream mapping* was the most reported technique (n=5), followed by 5S and visual management. Descriptive information on the studies and a summary of their findings is presented in Table 3.5.

Table 3.5: Studies included in the review

Author and year	Aim	Country	Setting	Lean tools/principles	Data collection method(s)	Staff-related findings	THF	Study design
Benfield et al., (2015)	Apply Lean principles to optimise the administration of Continuous Renal Replacement Therapy (CRRT).	US	Academic hospital-intensive care unit (ICU) and pharmacy	A3 Value Stream Mapping (VSM)	Mixed methods-quantitative performance data, qualitative survey	ICU nurses and pharmacy technicians reported increased overall satisfaction with the new CRRT process after the implementation of Lean. ICU Nurses reported a decrease in workload and pharmacy staff reported enhanced production planning.	N	Pre/Post-test
Collar et al. (2012)	Examine the impact of Lean thinking on efficiency, profitability, team morale and educational activities.	US	Academic hospital – otolaryngology operating room	5 whys Root cause analysis Swim lane diagram Task standardisation	Quantitative-survey	Overall teamwork and morale improvements. No impact on intraoperative learning opportunities because of the Lean intervention.	N	Pre/Post-test
Hung, Harrison, Truong, and Du (2018)	Explore physician and staff experiences after implementing a series of Lean-inspired workflow changes.	US	Not-for-profit ambulatory care facility – primary care departments	5S Work setting redesign Process redesign Job redesign	Quantitative-survey	Higher levels of engagement, participation in decision making and teamwork were reported. Higher levels of burnout and increased perception of the workplace as stressful were also reported.	N	Pre/Post-test

Author and year	Aim	Country	Setting	Lean tools/principles	Data collection method(s)	Staff-related findings	THF	Study design
Kanamori et al. (2015)	Assess the impact of Lean tools on care-delivery processes and outcomes as well as their applicability in resource-poor settings.	SEN	Regional health centre – multidisciplinary outpatient clinic, pharmacy, and inpatient wards	5S	Qualitative-interviews	Increased willingness to come to work. Increased motivation. Peer-to-peer learning.	N	Case study
Lindskog et al. (2016)	Identify to what degree lean tools impact working conditions for employees and managers in healthcare organisations while considering contextual aspects of the implementation process.	SWE	Two academic hospitals and one health municipality.	Visual follow-up boards Standardisation 5S Value Stream Mapping (VSM)	Quantitative-survey	Standardised work promoted engagement in development and job satisfaction and was not associated with exhaustion. Participation in decision making increased over time 5S and standardisation positively affected job satisfaction. VSM is most effective in promoting participation, engagement, and job satisfaction. A deterioration in working conditions over time in a context of job resources not being balanced with job demands. Visual follow up boards negatively affected job satisfaction due to insufficient resources.	Job demands - resources model	Longitudinal case study

Author and year	Aim	Country	Setting	Lean tools/principles	Data collection method(s)	Staff-related findings	THF	Study design
Mazzocato et al. (2012)	Examine a Lean inspired intervention in a paediatric accident and emergency department.	SWE	Academic hospital – paediatric accident and emergency department	Work setting redesign Visual management Takt time management Standardisation Continual improvement First-Time quality Continuous flow	Mixed methods – quantitative performance data, interviews, non- participant Observation, document analysis	Reduced ambiguity and variation around roles and responsibilities. Reports of work being narrowly regulated and monotonous. Improvements in teamwork and coordination between professionals attributed to a physical redesign of workspaces. The interprofessional collaboration did not improve. Staff reported a feeling of being monitored by flow managers (using visual progress monitoring boards). Reports of fewer misunderstandings and work duplication.	Spear and Bowen (1999)	Case study
Nelson-Peterson and Leppa (2007)	Discuss the application of the Virginia mason production system and how it has resulted in increased time for nurses to care for their patients.	US	Private medical centre – telemetry unit	Rapid process improvement Workshop Visual management Just in time Kanban Standardisation One-piece flow cycle time U-shaped cell	Quantitative-performance metrics	85% reduction in walking distance (job-related fatigue). Staff have routine breaks and lunches. Decrease in overtime. Increase in staff satisfaction. More time to care.	Swanson theory of caring	Pre/Post-test

Author and year	Aim	Country	Setting	Lean tools/principles	Data collection method(s)	Staff-related findings	THF	Study design
O'Donnell (2013)	Critically assesses the impact of Lean-inspired workplace reforms upon hotel service worker from a non-English-speaking background in public hospitals.	AUS	Two public hospitals – hotel services	Just in time job redesign Multiskilling Teamwork	Qualitative-interviews	Increased job satisfaction and morale due to greater task variety, new professional status, access to career paths, greater recognition by peers. Reports of increased workload, intensification of labour and increased work-related stress. Reports of increased peer pressure, a conflict between team-members.	N	Case study
Rees (2014)	Describe and contrast the implementation of Lean in three hospitals.	NZL	Three hospitals – emergency departments	Not reported	Qualitative-interviews	Morale improvements were reported across the sites. Improved teamwork Work intensification was reported and dealt with differently (absorbed or ignored). Workplace resistance was reported in the form of disengagement and de-prioritisation of Lean work.	N	Case study
Stanton et al. (2014)	Investigate the implementation of a Lean six sigma project and its impact on critical medical and nursing staff.	AUS	Tertiary hospital – emergency department	Visual management DMAIC Process redesign Physical workplace redesign.	Qualitative document analysis, semi-structured interviews.	Reports of work intensification attributed to an increased rate of patient turnover (similar amount of work must be done in shorter time) also linked to global context of external pressure on hospitals.	N	Case study

Author and year	Aim	Country	Setting	Lean tools/principles	Data collection method(s)	Staff-related findings	THF	Study design
Ulhassan et al. (2013)	Understand why organisations adopt Lean and how it affects employees' work.	SWE	Acute care hospital – cardiology department and emergency department	5S Value Stream Mapping (VSM) Physical workplace redesign Job redesign Visual management Problem-solving Work process redesign Education/training	Qualitative – Non-participant observations, document analysis, semi-structured interviews	Improvements in communication and coordination among staff attributed to physical work redesign. Improved perception of work atmosphere reported by managers and staff. High ownership and engagement attributed to problem-solving workshops.	Holden conceptualisation of Lean (Holden, 2011)	Pre/Post-test
Ulhassan, von Thiele Schwarz, Westerlund, Sandahl, and Thor (2015)	Examine how Visual Management affect staff in healthcare settings.	SWE	Acute care hospital – cardiology wards	Visual management in the form of suggestion whiteboard	Qualitative data - semi	The use of VM helped staff express their ideas freely and anonymously. VM allowed for smoother interactions and better communication between various teams. Staff reported a sense of empowerment and greater control over their work. The use of VM was also considered burdensome overwork by staff and was abandoned.	N	Case study

Author and year	Aim	Country	Setting	Lean tools/principles	Data collection method(s)	Staff-related findings	THF	Study design
Ulhassan et al. (2014)	Examine the impact of Lean on the psychosocial work environment.	SWE	Acute care hospital – emergency department and two inpatient cardiac wards	5S Value Stream Mapping (VSM) Continuous improvement and visual management Job/work process redesign Teamwork Education/training	Quantitative questionnaire	In wards 1 and 2, improvements were reported in the domains of “work organisation and job content” and “interpersonal relations and leadership” - attributed to active employee participation, supportive leadership, and regular meetings. In the ED, deterioration was reported in the domains of “work organisation and job content” and “interpersonal relations and leadership” – attributed to the less frequent staff meeting and decreased participation. In ward 2, deterioration was reported in the domains of “role conflict” and “social support” – attributed to the failure of problem-solving activities and lack of social support amongst employees.	The demand control model	Pre/Post-Test
Vose, Reichard, Pool, Snyder, and Burmeister (2014)	Examine how Lean was used to improve performance in an overcrowded emergency department.	UK	Community hospital – emergency department	A3 Gemba Walking	Quantitative performance data – pull times,	Improved sense of control over workload was reported due to process changes after the intervention. Reports of improved relationships and teamwork between managers and staff members attributed to Gemba walks.	N	Pre/Post-test

Key: THF: Theoretical Framework, US: United States, UK: United Kingdom, SEN: Senegal, SWE: Sweden, AUS: Australia, NZL: New Zealand.

Source: Author’s conceptualisation

3.2.3 Qualitative synthesis. When identified, staff-related outcomes were analysed and synthesised following a three-stage thematic analysis approach (Thomas & Harden, 2008). In the first stage, 48 different codes emerged from the findings of the included studies. They were consequently grouped into four different themes presented below. Analytical themes emerged throughout the data collection and analysis process and are presented in the critical appraisal of the results in section 3.3.

3.2.3.1 *Morale, motivation, and job satisfaction.* Eight articles (57 per cent) examined aspects relating to the use of Lean and staff's morale, motivation, and job satisfaction. In a recent study, Lean was associated with improved morale and job satisfaction amongst primary care physicians and medical assistants in a US not-for-profit clinic (Hung et al., 2018). Survey data collected in the clinic suggested higher levels of work-satisfaction and personal motivation at work amongst participants after the Lean intervention. The transformation included a physical workplace redesign as well as Lean-inspired workflow improvements that were associated with improvements in employee engagement and participation in decision making.

Similar results were also reported in a U.S. teaching hospital and were associated with Lean's philosophical foundations of giving employees ownership of their work and valuing their perspective (Collar et al., 2012). Employee participation, supportive leadership and regular staff meetings were also correlated with improvements in job content in another study conducted in two Swedish cardiac wards (Ul Hassan et al., 2014). The bottom-up problem-solving approach at the heart of Lean and the use of collaborative tools such as *value stream mapping* were shown to be very useful in promoting employee participation and were considered as catalysts for

improved wellbeing when they were supported by other resources and used by all professional groups (Lindskog et al., 2016).

Nurses in a private medical centre also indicated increased levels of job satisfaction after Lean principles were applied in their telemetry unit (Nelson-Peterson & Leppa, 2007). Amongst the reported benefits of this intervention was an 85 per cent reduction in the distances walked by staff members during their shifts. The Lean-inspired reform also contributed to a reduction in overtime, allowed nurses to routinely take their breaks and created conditions that enabled them to follow their professional values.

A study conducted in two Swedish hospitals and one health municipality showed that work standardisation and the use of 5S were positively correlated with improved job satisfaction among staff (Lindskog et al., 2016). Similar findings were reported in a Senegalese hospital that used 5S to declutter and to improve the hygiene and the overall cleanliness of the workplace (S. Kanamori et al., 2015).

In Australia, job satisfaction was also reported to have improved after the implementation of Lean in two public hospitals as it enabled service workers to benefit from new professional status, greater task variety and access to new career paths (O'Donnell, 1995). Job reconfigurations undertaken as part of the same intervention also allowed individual staff members to gain greater peer recognition which further contributed to improved job satisfaction.

Increased satisfaction of intensive care nurses and pharmacy technicians was reported after Lean tools were used to reconfigure the Continuous Renal Replacement Therapy workflow at a major academic hospital in the US (Benfield et al., 2015). In this case, the rise in satisfaction scores was attributed to a decrease in the nurses' workload

(measured by the number of phone calls to the pharmacy), as well as enhanced production planning by the pharmacy staff.

3.2.3.2 *Work intensification, job strain, anxiety, and stress.* Four of the reviewed studies suggested that Lean led to work intensification, job strain, anxiety, and work-related stress. In a Swedish study, the adoption of Lean led to a significant imbalance between the job resources at the disposal of staff and their job demands, leading to a deterioration of work conditions over time (Lindskog et al., 2016).

Similarly, O'Donnell (1995) critically assessed the impact of a Lean-inspired reform on the services staff at two Australian hospitals. His research showed that Lean led to considerable work stress and intensification due to the elimination of slack and the amalgamation of professional functions. Higher levels of peer-surveillance were also reported as staff increasingly monitored each other's performance. Furthermore, multiskilling was criticised for being a façade behind which pressure was put on staff to execute labour-intensive tasks. Finally, the author noted that in one of the studied hospitals, the adoption of Lean was accompanied by forms of managerial coercion, forcing employees to adhere to the new proposed work organisation by, for example, threats of closure and intensification of work conditions for resisting staff.

Evidence of work intensification was also found in a study examining Lean in an Australian emergency department (Stanton et al., 2014). Even though the increase in workloads was attributed to macro-level issues of budgetary pressures being exercised on public healthcare institutions, the authors indicated that Lean could lead to work intensification merely by allowing organisations to increase their service capacity while maintaining the same levels of resources.

More recently, wide-scale survey data collected by Hung and colleagues (2018) showed a significant increase in levels of workplace stress, burnout and emotional exhaustion amongst physicians and non-physicians following the implementation of Lean at a large ambulatory care facility. Decreased levels of personal accomplishment were mainly reported among the clinical population indicating a negative self-evaluation of the care-related activities they conducted following the Lean intervention. Despite the report of positive effects on engagement, teamwork and participation in decision making, the authors' results indicate that in the studied context, Lean did not seem to improve efficiency without negatively impacting hospital staff.

3.2.3.3 *Teamwork, communication, and coordination.* Three of the articles (21 per cent) included in the review indicated that LM was positively associated with improvements in teamwork, communication, and coordination amongst staff members. In one case, these improvements were attributed to a physical workplace redesign which involved combining workstations of physicians and nurses (Ulhassan et al., 2013). The new stations allowed nurses to spend less time locating physicians while acting as a convenient platform for sharing patient information.

Similar results were reported by primary care physicians and medical assistants after a Lean-inspired system-wide transformation was implemented in a U.S. ambulatory care facility (Hung et al., 2018). In this case, the improved sense of teamwork was attributed to the physical relocation of assistants and physicians in the same workspace which led to enhanced communication and collaboration.

Improvements in teamwork were also self-reported by staff after Lean was applied to the perioperative otolaryngologic workflow in an American university hospital (Collar et al., 2012). Participants in this study reported improvements in the six

dimensions of the validated Safety Attitudes Questionnaire (SAQ), which was administered before and after the Lean intervention. One of the dimensions assessed by the SAQ is teamwork, and it includes questions related to conflict resolution, interprofessional collaboration, the attention given to nurses' input, peer support, as well as the staff's ability to speak up and ask questions (Sexton et al., 2006).

3.2.3.4 *Learning and personal development.* Two of the reviewed studies (14%) examined the impact of LM on the learning and personal development opportunities available to staff. Survey data collected in an academic operating theatre showed that the implementation of Lean had no impact on the intraoperative teaching activities (Collar et al., 2012). The authors of this study argued that Lean could provide additional high-value training opportunities by increasing the capacity of the operating theatres and reducing low-value time-consuming activities such as unnecessary or redundant administrative work. However, the authors did not provide any data in support of this hypothesis.

Finally, in a Senegalese hospital, the adoption of Lean was shown to have helped foster a mutual learning environment in which employees engaged in peer-education activities. These participants highlighted the ways that Lean helped them enhance their physical work-conditions (Kanamori et al., 2015).

3.3 The human impact of LM in healthcare: a critical appraisal of the literature

Overall, the articles reviewed alternately described the relationship between LM and employee outcomes as positive, negative, or mixed. On the one hand, LM was found to have helped improve teamwork, communication and coordination between staff (Collar et al., 2012; Hung et al., 2018; Ulhassan et al., 2013). It was shown to

potentially provide staff with increased learning and personal development opportunities (Collar et al., 2012; Kanamori et al., 2016) and was linked to improved morale, motivation and job satisfaction (Collar et al., 2012; Hung et al., 2018; Kanamori et al., 2015; Lindskog et al., 2016; Nelson-Peterson & Leppa, 2007; O'Donnell, 2013; Rees, 2014). Lean was also associated with higher levels of engagement and participation in decision making amongst healthcare professional (Hung et al., 2018; Lindskog et al., 2016; Ulhassan et al., 2014).

On the other hand, Lean has been correlated with higher levels of stress, job strain, anxiety and work intensification (Hung et al., 2018; Lindskog et al., 2016; O'Donnell, 2013; Stanton et al., 2014). The inconsistent outcomes of Lean are exemplified by studies that simultaneously found an association between LM interventions and both positive and negative employee outcomes (Hung et al., 2018; Lindskog et al., 2016; O'Donnell, 2013). Table 3.6 provides an overview of the review results classifying them according to the studies' overall assessment of the human outcome of LM.

Table 3.6: Overview of the review results

	Staff-related outcomes	Articles
Positive human outcomes	Teamwork, communication, coordination	(Collar et al., 2012; Hung et al., 2018; Ulhassan et al., 2013)
	Learning and personal development	(Collar et al., 2012; Kanamori et al., 2015)
	Morale, motivation, and job satisfaction	(Collar et al., 2012; Hung et al., 2018; Kanamori et al., 2015; Lindskog et al., 2016; Nelson-Peterson & Leppa, 2007; O'Donnell, 2013; Rees, 2014)
	Engagement and participation in decision making	(Hung et al., 2018; Lindskog et al., 2016; Ulhassan et al., 2014)

	Staff-related outcomes	Articles
Negative human outcomes	Work intensification, job strain, anxiety, and stress	(Hung et al., 2018; Lindskog et al., 2016; O'Donnell, 2013; Stanton et al., 2014)

Source: Author's conceptualisation

Beyond the limited range of research conducted on the human outcomes of LM in healthcare, the review also reveals the lack of methodological diversity and rigour that characterise the existing literature. Most of the included studies (n=9, 64 per cent) lacked a theoretical conceptualisation of the social outcomes of LM and were limited to reporting descriptive results.

Furthermore, despite examining the use of multiple Lean tools and techniques, none of the studies considered Lean holistically, as an organisational, system-wide approach designed to target waste and improve the production of value. Instead, the principal focus was on assessing the outcome of using specific Lean-related tools or techniques. Accordingly, most of the studies adopted an evaluation design that, while useful, also dramatically limits the generalisability of the results and the conclusions that can be drawn about the impact of Lean on staff. Generalisability is also greatly hindered by the adoption of single case study designs, often conducted in one country, and the absence of theoretical reasoning.

Most of the articles reviewed exclusively reported positive employee related outcomes of Lean (n=10, 71 per cent). In contrast, only one study disclosed only adverse employee outcomes (Stanton et al., 2014). According to the authors of that study, the adverse staff outcomes could be attributed to broader system-wide constraints

and not linked to the use of Lean tool or techniques. The authors highlighted the importance of conducting contextualised research that considers not only the use of LM, but the context in which it is implemented.

More broadly, this review reveals an absence of any critical assessment of the staff outcomes associated with the adoption of LM in healthcare. Such assessment would involve identifying the reasons why Lean is associated with positive outcomes in some instances, negative ones in others and even mixed outcomes, simultaneously, within the one setting. It is impossible to identify the reasons for these inconsistent outcomes, given the absence of information in the reviewed articles on the context surrounding the implementation of Lean. This review highlights the need for more robustly designed comparative studies that would allow for such critical analysis to be conducted.

The findings of this review confirm and elaborate on those revealed in the multiple literature reviews conducted on the use of Lean in healthcare (Costa & Godinho, 2016; D'Andreamatteo et al., 2015; Filser et al., 2017; Henrique & Godinho Filho, 2018; Holden, 2011). They highlight the limited number of studies examining the human impact of Lean in healthcare institutions and call for more empirical investigations in this area. The mostly positive conception of the human impact of Lean also echoes existing patterns in the broader literature covering its different outcomes. In their reviews, Holden (2011) and D'Andreamatteo et al. (2015) pointed to an existing publication bias displayed in the significant number of published success stories associated with the implementation of Lean.

The results of this review are also reflective of the broader literature on Lean and its impact on staff working in other industries. In a recent review, Magnani, Carbone, and Moatti (2019) pointed to the restricted number of studies addressing the impact of Lean on employees. They distinguished between three streams of research in that area. In the first, researchers were preoccupied with examining how lean has transformed job characteristics and social outcomes. In the second, articles focused on the role human resource management practices play in the successful implementation and acceptance of LM. Publications in the third stream examined employee behaviours and their link with the implementation of LM. The review conducted for this thesis fits in the first of these three streams, and the results provide additional evidence of its inconsistent nature, as described by Magnani et al. (2019).

3.4 Conceptualising Lean-based MCSs

The review of the literature presented above revealed that there is a need for more research to understand how employees experience Lean in organisations in general and particularly in healthcare. There is a lack of research that thoroughly examines the context in which LM is implemented and then interprets its impact on the workers who must take on its principles and practices. Additionally, there is a lack of consensus in regard to the nature of LM's social outcomes. While most of the existing research depicts these outcomes as being positive, several studies have reported adverse outcomes, and others are inconclusive. Thus, the aim of the research presented in this thesis is to address this gap by examining the link between LM and employees' work experiences.

Achieving that aim requires going beyond the hegemonic process-oriented approach adopted in most of the existing research to a new conceptualisation of Lean, which has implications for how it is studied. Proponents and scholars argue that, beyond being a set of distinct tools, for Lean to be successful, its core principles need to be integrated and supported by organisational MCSs (Fullerton, Kennedy, & Widener, 2013; Kennedy & Widener, 2008). In short, these are systems designed to ensure that employees' behaviour is in line with the Lean principles of improving efficiency and creating more value.

Strauß and Zecher (2012) provided a systematic review of the various conceptualisation of MCSs in the management accounting and control literature. Overall, their analysis revealed that most MCSs encompass elements pertaining to planning, performance management, rewards and exchange of information (Strauß & Zecher, 2012). MCSs have been conceptualised *cybernetically* (i.e., as formalised information-conveying tools used to support managerial decisions) or *holistically* (i.e., encompassing all variables that could be used by managers whether formalised or not) (Strauß & Zecher, 2012). The cybernetic conception of MCSs has been criticised for its narrow focus on accounting and financial forms of control and for ignoring the influence of less formalised ones—such as cultural or personnel controls—on employees' behaviour (Emmanuel, Otley, & Merchant, 1990; Merchant & Otley, 2007; Otley, Broadbent, & Berry, 1995). Accordingly, MCSs are increasingly considered in a holistic fashion that looks beyond the measurement-oriented perspective of reporting and accounting devices. Referring to them as performance management systems (PMSs), A. Ferreira and Otley (2009, p. 264) defined MCSs as:

The evolving formal and informal mechanisms, processes, systems and networks used by organisations for conveying the key objectives and goals elicited by management, for assisting the strategic process and ongoing management through analysis, planning, measurement, control, rewarding, and broadly managing performance and for supporting and facilitating organisational learning and change.

Beyond encompassing both formal and informal types of control, Ferreira and Otley's (2009) definition provides a conceptualisation of MCSs as a package encompassing a multitude of mechanisms and practices that must be thought of and understood as interconnected elements. This conceptualisation of MCSs as packages finds its roots in work conducted by Fisher (1998), and more recently Chenhall (2003), who warned against the risk of conceptualising elements of MCSs as isolated and distinct tools. For his part, Otley presented an earlier conceptualisation of MCSs as encompassing five central dimensions of management control: key objectives, strategy and plans, performance targets, incentives and reward systems, and information flows (Otley, 1999). Additional dimensions relative to the design and use of MCSs were subsequently added in the extended framework later developed with Ferreira (A. Ferreira & Otley, 2009). Broadbent and Laughlin further developed the framework, emphasising the role played by the internal and external organisational contexts and the underlying rationalities driving the use of MCSs (Broadbent & Laughlin, 2009).

In line with Ferreira and Otley's holistic conception of MCSs (A. Ferreira & Otley, 2009, p. 264), and to the extent that they are considered necessary to ensure organisational success, for the purpose of this thesis, Lean tools are conceptualised as a package of formal and informal mechanisms, processes, systems and networks used to achieve greater efficiency, eliminate waste in production processes and create more value for customers. Lean practices (such as value stream mapping, production

levelling, 5S, standardisation and continuous quality improvement) are used to assist with the strategic and operational running of organisations, providing a framework for analysis, planning, measurement, control, rewards and broadly managing performance while facilitating organisational learning and change. Together, these Lean tools form a Lean-based MCS designed to improve flexibility, reduce waste, and support the creation of value in organisations.

Considering the existing literature and using this management control vantage point, the research presented in this thesis aims to examine the link between Lean-based MCSs employees' work experiences, both negative and positive. This builds on the assumption that Lean-based MCSs could be associated with either positive or negative experiences as shown in the literature presented above.

Chapter summary

The aim of this third chapter was to provide a comprehensive examination of the existing literature on the use of LM in healthcare. Section 3.1 discussed the origins, developments, and premise of Lean. Originating in the Japanese auto manufacturing industry, the goal of this production philosophy is to increase efficiency and flexibility, to reduce cost and provide customers with greater value by systematically eliminating waste in organisations. Renowned for its benefits, Lean quickly moved out of manufacturing to become one of the most influential of management philosophies. In healthcare and other industries, some studies have linked LM to a host of positive organisational outcomes, including improved quality, reduced costs, and increased

productivity. In other studies, its benefits are not so well supported. Despite its popularity, employees' experiences of Lean remain an understudied topic.

Section 3.2 presented a systematic review examining the literature on the impact of LM on healthcare professionals. The articles included in the review alternately described the relationship between Lean and employees as positive, negative, or mixed. On the one hand, it was linked to improved teamwork, communication, coordination, learning, personal development, morale, and job satisfaction. On the other hand, in some studies, Lean was associated with higher levels of stress, job strain, anxiety and work intensification. The literature presented a significant number of gaps, synthesised in Section 3.3, including small numbers of studies, lack of theorisation, a narrow analytical view that depicts Lean as a set of isolated tools, a prevalent use of single case and evaluative study designs with limited generalisability, and an absence of critical and theoretical investigation. These gaps are consistent with those identified in previous literature reviews conducted on the use of Lean in healthcare and other industries.

In the final section of this chapter, Section 3.4, using a management control vantage point, Lean practices were conceptualised as an interconnected set of tools designed to improve flexibility, reduce waste, and create value. Together, Lean practices form a Lean-based MCS.

The aim of the research presented in this thesis, to explore the link between Lean-based MCSs and employees' work experience, was then presented. This is further conceptualised in the next chapter.

Chapter 4

Using alienation to conceptualise how employees experience Lean-based MCSs

This chapter presents the concept of alienation used in this research to theoretically examine employees' experience of Lean-based MCSs. It concludes part 1 of the thesis, as illustrated in Figure 4.1.

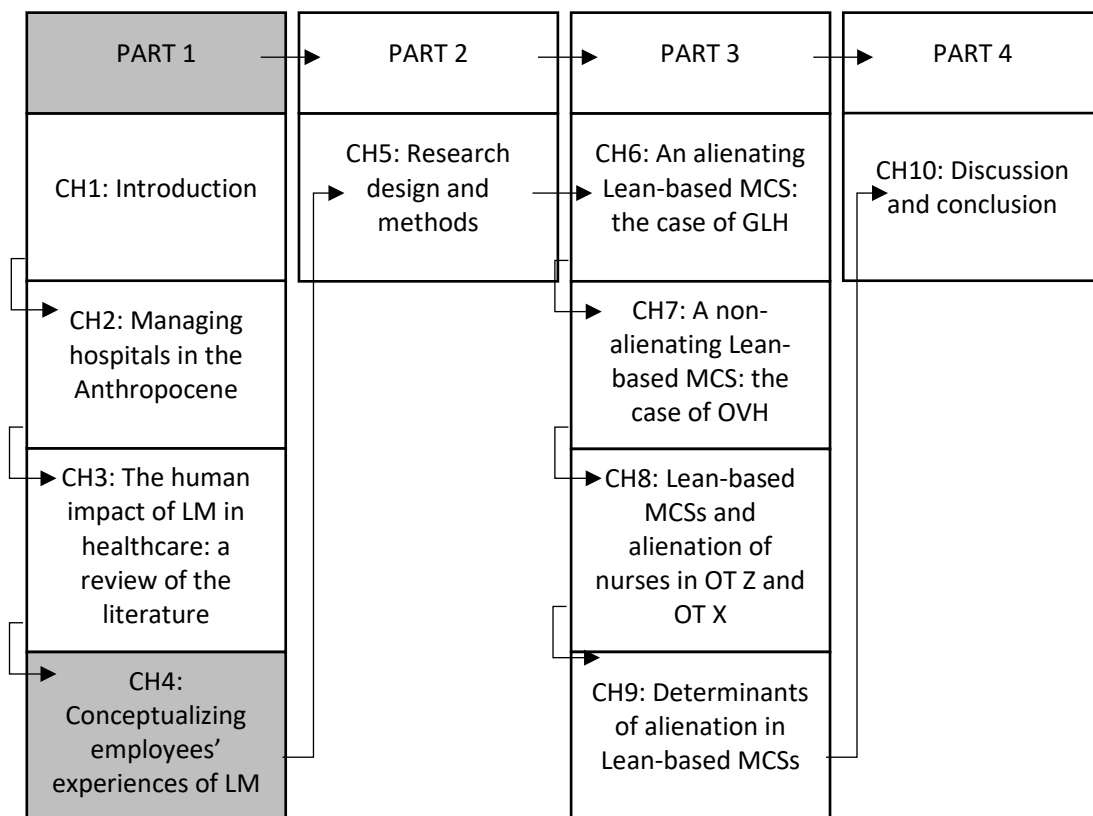


Figure 4.1: Thesis structure overview - Chapter 4

Source: Author's conceptualisation

The chapter has three sections. Section 4.1 presents the context in which this research was instigated, a context that has guided the research towards choosing dehumanisation as a lens through which the employees' experience of Lean-based MCSs could be conceptualised. Section 4.2 briefly reviews previous studies on dehumanisation, before providing justification that the thesis will focus on alienation, as one form of dehumanisation in organisations. In Section 4.3, after a brief review of the literature on alienation, the theoretical hypothesis of this research will be revealed.

4.1 A society in crisis

We have been in government for two years now, and there is still urgency. Maybe more than ever. Economic urgency, as shouted by the employees of the factories in Belfort, Amiens and elsewhere. Social urgency, as our citizens cry out in isolated territories and as expressed by our hospital staff. Ecological urgency, as the youth of France cry out against governments and companies that do not do enough. Our country, which has everything, and that the world envies, has lost confidence. In any case, millions of its citizens have lost confidence. We want to rebuild this confidence ... by putting humans at the heart of our concerns.

Edouard-Phillipe, French Prime Minister, (Gouvernement, 2019)ⁱ

Economic, social, and ecological urgencies. These are the three main challenges facing France as highlighted in a speech by the French prime minister, Edward Phillipe, on the 12th June 2019 in the French parliament. In the wake of more than seven months of civil protests, the prime minister outlined what he described to be a more human-centred political agenda of his government. This address came two months after the French president Emmanuel Macron unveiled the main pillars of the “second act” of his presidential mandate. To address the public fear of the numerous significant changes the country is facing (climate change, immigration, digitalization and automation, social

decommissioning and the aging of the population), the French president's ambition was to transform a society in which public policies had mainly been developed in the aftermath of the Second World War (Élysée, 2019).

Although one might be sceptical of the politically driven agenda behind the “human-centred” project described by the French president and his prime minister, the spontaneous, self-organized and quite sustained movement of the *gilets jaunes* (yellow vests) protesters (Algan, Beasley, Cohen, Foucault, & Péron, 2019; Ruzickova, 2019) undeniably revealed a deep social malaise, one that cannot be disconnected from the global challenges of the Anthropocene discussed in the first chapter of this thesis. The list of demands made by the French protestors covered almost all aspects of the current economic, political and social systems: housing, taxation, environment, employment, salaries, retirement, (im)migration, healthcare, transportation, political structure, education and public finance (Gilets, 2019). What began as a spontaneous protest against a fuel tax quickly turned into a full-scale uprising against the capitalist and market-led structures. Whereas economic growth at any cost was the main driver of post-war Western societies—protagonists of the *great acceleration*—a more balanced socio-economic-ecological system seems to be inevitable as we confront the challenges of the Anthropocene. In that sense, the human-centred approach, underpinning the second act of the French presidential mandate, is worthy of academic interest, if only because it highlights the shortcomings of the current political, social and economic models and points to what these models might look like in the future: less dehumanizing and more human centred.

The research presented in this thesis cannot be severed from the broader socio-political context of France. Since this research began in 2017, healthcare workers across

the country have been protesting the deplorable work conditions that are responsible for high levels of stress and burnout (Béguin, 2018; SNPI, 2017). In September 2017, a documentary investigating a wave of suicides amongst nurses in one public hospital was aired in primetime on France 2, one of the largest public TV channels in France (Pichot & Laigle, 2018). The documentary exposed the results of an independent inquiry which found that managerial practices in the hospital where the suicides took place were “deleterious, deficient, too authoritarian and dehumanising.” The unpublished report denounced an ever-increasing pressure on staff to do more with fewer resources and an apparent attempt at industrialising healthcare using production models borrowed from the manufacturing sector, specifically LM.

Healthcare professionals interviewed for the documentary described how they felt dehumanised in the face of ever more technical and efficient Lean-based managerial practices. They depicted an organisation in which, in the name of efficiency, their actions became ever more fragmented and constrained by predefined delivery times. An organisation in which they felt modular, cogs in a big machine tuned to the rhythm of ever more demanding financial constraints. A system where patients were only considered in terms of the revenue they generated, and the “human” side of care was relegated to the background. They recounted how their hospital became a “factory” and how their work no longer held up against their own professional standards. They discussed how, to cope with their dehumanisation, they became detached and lost their emotional investment in their work.

What these professionals described was an organisation in crisis. One in which the obsession with productivity, outputs and efficiency had rendered work dehumanising. One that needed a transformation, a change of focus, a realignment with

more human-centred values. The situation of this hospital is far from singular, as reflected in multiple interviews conducted with healthcare professionals around the country (Michot et al., 2019). Just as the *gilets jaunes* protestors were contesting the dehumanising market-driven political and social system, healthcare workers were protesting and continue to protest (Béguin, 2018, 2019) against organisational systems and managerial practices that are increasingly focused on efficiency and financial profitability to the detriment of the human-centred values that should underpin this service (Juven, Pierru, & Vincent, 2019). The research within this thesis was conducted while reflecting on what was described by healthcare professionals as a dehumanising experience when working in hospitals using Lean-based MCSs. Beyond accounting for that experience, the goal of this thesis, from a managerial perspective, is to identify the factors linking Lean-based MCSs to experiences of dehumanisation and develop strategies to mitigate their effects.

4.2 Studying dehumanisation

Broadly, the term dehumanisation is used to describe the absence of human characteristics in organisations or in society. In his analysis of how managerial practices contribute to dehumanisation, Al-Amoudi (2018) provided an insightful reflection on the complexity of defining humanity or the absence thereof. He cautioned that, despite making them powerful resources for social and organisational critique, the “polysemic” and “value-laden” nature of concepts like humanity and dehumanisation also renders them potentially dangerous. They are indeed open to contestation and political manipulation. Nonetheless, he stressed the importance of their use to provide a

normative foundation upon which contestation can take place, especially in the face of the current efficiency-focused outlook that is unconcerned with human value.

In his essay, Al-Amoudi (2018) outlined a three-dimensional definition of dehumanisation. First, it may be used in reference to oppressive environments where humans cannot exercise their distinctive powers, such as “the capacity for instrumental, moral, and aesthetic reasoning but also [...] to feel and express refined emotions and [...] to act out of love and solidarity” (p. 1). Secondly, dehumanisation is the denial of human rights to those perceived as subalterns who lack human-like features. Thirdly, dehumanisation is embodied in the hegemony of processes that operate differently to human reflexivity and sense-making abilities. Through various theoretical and empirical examples, Al-Amoudi then goes on to demonstrate how these dimensions often manifest concomitantly and that they remain nonetheless insufficient when attempting to account for all aspects of dehumanisation. The concept, as he demonstrates, has a multifaceted nature.

In social psychology, dehumanisation is thought of as the denial of the human characteristics of others (Haslam, 2006; Haslam & Loughnan, 2014). When pertaining to the absence of features distinguishing humans from animals, dehumanisation has been qualified as animalistic *as* opposed to mechanistic (Haslam, 2006). The latter form is used to describe dehumanisation as the association of individuals with non-human objects (Haslam, 2006). Despite their negative impact on individuals, such forms of dehumanisation were shown to be prominent in various aspects of everyday life (Bastian & Haslam, 2011; Lammers & Stapel, 2011).

The roots of the study of dehumanisation can be found in Marx’s theory of alienation and the Weberian analysis of bureaucracies (Al-Amoudi, 2018) Although the

concept has been extensively used in the analysis of total and extreme organisations whose members are isolated from wider society, e.g., prisons (Clegg, 2008; Goffman, 1961), it has not been widely developed in the organisational and managerial literature. This can be explained by the increasing efforts deployed to obscure modern managerial practices and their dehumanising effects, which are increasingly hidden or even accepted in some situations (Väyrynen & Laari-Salmela, 2018).

Ghoshal (2005) argued that dehumanising practices in work settings are the result of management theories that are based on mathematised models that ignore the complexity of human practices and explicitly forego the moral and ethical implications of managerial practices. They are grounded in the narrow and pessimistic assumption that human beings are solely driven by their desire to maximise their self-interest. For Ghosal, the focus on maximising shareholder value, and its resulting practices, has led to dehumanising organisations in which managers have no moral responsibility and where the existence of human emotions, such as love and altruism, is ignored. Although Ghoshal's analysis is insightful in drawing parallels between dehumanisation in practice and the recent trends in managerial research, it is of limited use in identifying how dehumanisation is perceived by workers or the mechanisms and processes whereby it is enacted.

In organisations, dehumanisation has been linked to the interplay between processes of *intimacy* and *distancing* that result in the objectification and maltreatment of employees (Nisim & Benjamin, 2010). It has been analysed as an outcome of an increased preoccupation with costs and financial profitability that ultimately leads to equating workers with numbers (McCabe, 2016). Dehumanisation has also been associated with work procedures and job descriptions that limit the capacity of workers

to engage in unscripted positive interactions (Ritzer, 2000). Dehumanising work environments have been perceived as being more hostile (Wiener, Gervais, Brnjic, & Nuss, 2014) and dehumanising policies have been shown to be detrimental not only to individuals but to the overall effectiveness of organisations (Christoff, 2014). Broadly, dehumanisation is often seen as one of the consequences of a capitalistic outlook that leads to alienation and totalitarianism (Stein, 2001).

4.3 Alienation in organisations

The concept of alienation has been subject to criticism in the philosophical sphere due to its essentialist foundation that characterizes human nature in terms of a single, distinctive aspiration (Fischer, 1976; Jaeggi, 2014). As a result, several divisions have emerged between researchers preoccupied with the ontological and philosophical nature of the concept and those concerned with its operationalisation (Fischer, 1976). Although the approach of this thesis is not philosophical, it will become clear that the analysis is only relevant within a broader outlook in which work that furthers the development and wellbeing of individuals is dignified.

In this section, a brief overview of the concept of alienation and its historical development will be presented. The section starts with a review of the Marxian analysis of the concept and its evolution before examining how alienation has been operationalised in organisational studies.

Alienation is often associated with the Marxian analysis of capitalism; however, its origins can be traced back to Rousseau's work on inequality (Jaeggi, 2014). Rousseau (1755) described a society in which conformity and individuation led to subjugated and socially disfigured individuals. Although he never named the condition

he was describing, Rousseau's work referred precisely to what would later be known as alienation (Baczko, 1970; Jaeggi, 2014). Building on Rousseau's thoughts, Hegel later developed the concept of self-realisation and conceptualised alienation as a dissociated relationship between the individual and society leading to the loss of an ethically satisfying social life (Jaeggi, 2014).

Marx subsequently redefined the concept as the opposite state of an unalienated existence, which was characterised by the productive appropriation of the world and oneself (Marx, 1988). For Marx, alienation refers to one's lack of identification with oneself, the objective world and others (Jaeggi, 2014). It is an inherent characteristic of the capitalist mode of production in which workers are not only separated from the products of their labour but also the means of production and their fellow humans. The lack of productive appropriation reduces labour to a simple means to an end and subjugates individuals to alien domination (Marx, 1988). In a society predominated by commodity fetishism, the perception of social relations as economic ones (Rubin, 1990), individuals lose their autonomy and self-determination because of ever more fragmented, impoverished, and meaningless products and labour processes. In the capitalist mode of production, workers are mere accessories to ever more sophisticated machines with which they compete and which eventually dominate them (Marx, 1988). Alienation is the hallmark of a system that produces an "inverted understanding" of the relations between humans and objects (Adler, 2009, pp. 68-69).

In the twentieth century, Lukács (1971) extended Marx's analysis linking alienation to the objectification and quantification of social relationships in capitalist economies. Whereas Marx focused on examining how capitalist relations of production lead to the subjugation of workers, Lukács' analysis attended carefully to these

relations. He presented the concept of reification to describe a relationship between individuals that have taken on the characters of a thing (Lukács, 1971). Reified relationships are ones that subject human qualities and capacities to the laws of utility and rationality. For Lukács, reification is linked to capitalist forms of life and results in the disengagement of individuals from their surrounding environment. Lukács' work paved the way for a sociology of work in which the concept of reification has been used to refer to "the quantitative appraisal of objects, the instrumental treatment of other persons, and the perception of one's bundle of talents and needs from the perspective of profitability" (Honneth, 2005, p. 97). Honneth (2005) further developed the concept of reification, presenting it as a process by which individuals lose the consciousness of the degree to which they owe their knowledge and cognition to an antecedent stance of empathetic engagement and recognition of others. Unlike Lukács, Honneth considers that reification is not merely the result of an ontological error but is instead a social pathology that finds its roots in the forgetfulness, repression or denial of a pre-cognitive affirmation of an individual's autonomy and agentic capacity (Honneth, 2008).

Although unrelated to modes of production, the notion of instrumentalisation of individuals has been further developed by Nussbaum (1995) who suggested seven dimensions to the concept of objectification: instrumentality, denial of autonomy, inertness, fungibility, violability, ownership and denial of subjectivity.

Although the centrality of commodity fetishism as a source of alienation remains relevant when studying capitalist forms of organisations, the analytical power of the concept is quite limited when inquiring about forms of alienation in non-profit driven institutions, such as—in the case of this thesis—hospitals. To that end, Weber's analysis of the concept provides an interesting perspective.

Linking it to a broader trend of bureaucratisation and rationalisation, Weber explained why alienation can be found in other areas of human activity (Kalekin-Fishman & Langman, 2015). Whereas Marx believed that the separation between workers and the means of production was a distinctive characteristic of capitalism, Weber considered it to be an essential feature of modern bureaucratic organisations (Mommsen, 1977). Preoccupied with efficiency, predictability, control and calculability, modern bureaucracies alienate individuals through oppressive routines, mechanisation and depersonalisation (Gerth & Mills, 1946; Kalekin-Fishman & Langman, 2015). According to Weber, such dehumanising processes are thus seen as virtues of bureaucracies from a capitalistic standpoint (Al-Amoudi, 2018); these processes are even considered as necessary and desirable for modern production, administration and politics (Prottas, 1979). For workers, implicit in their alienation is a process of socialisation or re-socialisation into what Marx called a “collective worker” (Adler, 2009, p. 67). The reification of their social relations leads them to adopt a continuously detached and contemplative stance (Lukács, 1971). For bureaucrats, a “spirit of formalistic impersonality” (Weber, 1978, p. 225) should preside and the ideal public servant is one who is “devoted to impersonal and functional purposes” (Weber, 1978, p. 959).

Further exposing the link between alienation and processes of rationalisation, Seeman (1959) introduced five interpretations of alienation, highlighting their social-psychological consequences for individuals. In his view, alienation is used in reference to states of *powerlessness* (lack of control), *meaninglessness* (lack of intelligibility), *social isolation* (absence of belonging to a social group), *normlessness* (broken down or ineffective social norms) and *self-estrangement* (inability to connect with one’s true

interests). In Seeman's analysis, alienation seems to be no longer understood as a distinguishing feature of capitalism but is instead linked to the logic of rationalisation characterising the different spheres of modern life.

Additional research in organisational studies and sociology of work has attended to the link between work settings, organisational contexts and alienation. Blauner (1964) highlighted the relationship between alienation and variations in workplace characteristics (technology, division of labour, economic structure, and social organisation). Building on Seeman's work (1959), he defined alienation as encompassing four dimensions; *powerlessness, meaninglessness, isolation and self-estrangement* (Blauner, 1964).

Blauner's analysis (1964) highlighted the critical role played by technical structures in shaping work experience. He made a strong case for the central role played by workplace technology as a determinant of alienation. By technology, he referred to the "complex of physical objects and technical operations regularly employed in turning goods and services produced by an industry [...]. Technology signifies primarily the machine system [...] but it includes also the technical "know-how" and mechanical skills involved in production" (Blauner, 1964, p. 6).

Using a case study approach, Blauner respectively explored the link between alienation and four different factory technologies: *craft, machine tending, assembly line* and *automation*. The sociologist's analysis focused on how the technological profiles for each of these technologies determined the forms and intensity of alienation. Blauner found alienation to be at its lowest level amongst craft workers. He drew on the example of the print industry where employees worked according to artisanal, craft techniques based on skill and professional experience. Their interesting and creative

work was perceived as a means of personal expression and their strong professional culture guaranteed their integration (Blauner, 1964, pp. 35-51).

In machine tending and assembly line production models, alienation was at its highest. The advanced mechanisation and the extreme rationalisation of work that characterised these technologies destroyed the freedom and pride exhibited by workers in craft industries. For instance, in the machine-dominated textile industry, workers' roles were reduced to the mere supervision of machines (Blauner, 1964, pp. 58-86). In the automotive industry, dominated by assembly line technology, work was highly streamlined, and workers had very little control over their work environment. Incorporated into mechanical processes, workers in car factories were asked to do highly standardised and repetitive tasks and they experienced very high levels of alienation (Blauner, 1964, pp. 89-115).

Finally, Blauner explored the chemical industry and its automated technology which exhibited, according to him, the lowest levels of alienation amongst the workforce. In automated plants, workers benefited from a vast range of responsibilities and freedoms, which translated into positive occupational identities. In automated environments, workers had broad perspectives that covered large series of operations and were better integrated into their companies, contributing to low levels of alienation (Blauner, 1964, pp. 124-164).

At the end of his book, Blauner reflected on his four studies, offering what he claimed was an "historical perspective on alienation" (Blauner, 1964, pp. 166-186); he considered his analysis to be a representation of the evolution of alienation in work settings. The weak alienation in the craft industry reached its highest level in assembly lines before the rise of automated technologies allowed workers to regain more

freedom. According to him, “Alienation has travelled a course that could be charted on a graph by means of an inverted U curve” (Blauner, 1964, p. 182).

The centrality of workplace technology as a determinant for the worker’s experience of alienation has been pursued by multiple researchers since the original publication of Blauner’s work. Shepard (1977) provides a comprehensive review of studies that built on Blauner’s framework to highlight the relationship between workplace technology, alienation and job satisfaction. Hull, Friedman, and Rogers (1982), further supported Blauner’s inverted U-curve hypothesis using an organisational level approach. Other researchers have provided critiques of Blauner’s technological determinism (Goldthorpe, 1966; Goldthorpe, Lockwood, Bechhofer, & Platt, 1968; Susman, 1972, 1973), as well as the inverted U-curve hypothesis (Berg, 1979; Braverman, 1998).

More recently, alienation has been linked to the design of organisational technologies rather than technology type. In a seminal article published in *Administrative Science Quarterly*, Paul Adler and Bryan Borys (Adler & Borys, 1996) first revealed their conceptual framework of *enabling bureaucracies*. At the heart of their approach is the idea that organisational procedures should be “designed for usability” (Adler, 1999) – i.e., for leveraging employees’ ability to master their tasks. According to the authors, this usability approach paves the way for improvements in efficiency, creativity and overall performance while avoiding the alienating tendencies of bureaucratic organisations (Adler, 1999).

The framework finds its roots in Adler’s previous research on the design and adoption of technology in work settings (Adler, 1992; Adler & Winograd, 1992). The authors drew on that literature to define four characteristics of what they considered to

be enabling formalisation: *repair*, *internal transparency*, *global transparency*, and *flexibility*. Each of these features play a determinant role in the overall capacity of organisations to support their employees in the completion of their tasks. Where these features are present, aspects such as bureaucratisation and formalisation are perceived by employees as “motivating features of their work environment. [...]” because they are considered “the most effective way of doing the job.”(Adler, 1993, p. 57). When these features are absent, bureaucratic forms of organisation are likely to be experienced as alienating. Table 4.1 provides a summary of Adler and Bory’s (1996) definition of each of the four features of enabling formalisation.

For Adler and Borys (1996), coercive formalisation is designed to reinforce compliance and subordination. Coercive rules and procedures tend to constrain employees instead of promoting flexibility in the face of unpredictable situations. They are often opaque (i.e. not understood by the workers) and are reinforced by asymmetrical access to information between managers and employees. By contrast, enabling procedures are flexible and designed to provide employees with the necessary support in the face of the unforeseen events in their environment. They promote learning, autonomy, and innovation. In an enabling logic, not only do employees understand the rationale behind the rules and procedures governing them, but they are also provided with intelligible information on the broader environment in which they execute their tasks. This global transparency is critical as it provides employees with an opportunity to leverage system-wide resources to improve their performance and identify areas in need of potential improvements.

The design principles of enabling formalisation have been used in the literature on MCSs (Ahrens & Chapman, 2004; Benoit, 2016). In a seminal article published in

2004, Ahrens and Chapman (2004) outlined the merits of the concept of enabling systems and its powerful potential in overcoming “the traditional dichotomy between mechanistic controls aimed at efficiency and organic controls aimed at flexibility” (Ahrens & Chapman, 2004; p. 298). Enabling MCSs are less likely to be experienced as alienating as they provide employees with the required flexibility to face the complex evolution of their environment.

Table 4.1: Features of enabling formalisation

Feature	Definition
Repair	In an enabling logic, procedures should facilitate responses to real-world contingencies. Deviations from standards are indications of shortcomings and opportunities for improvement. Employees are not only trusted but encouraged to contribute to the development and improvement of processes.
	In a coercive logic, process development is separate from process execution. Procedures are used to monitor performance and compliance. Employees do not contribute to the development or improvement of work processes.
Internal transparency	In an enabling logic, organisational processes are transparent. Employees understand the rationale and theory behind rules and procedures. They have access to intelligible metrics that allow them to assess their performance. Visibility of the internal functioning of the organisation allows employees to deal with unforeseen events.
	In a coercive logic, employees have no understanding of the rationale and theory behind the rules and procedures. They are presented with metrics solely if they are underperforming. Procedures are not designed to help but to sanction.

Feature	Definition
Global transparency	<p>In an enabling logic, employees understand their broader work environment. They have a vision of the different organisational processes and how they contribute to them. Interactions between employees executing different tasks are encouraged. Employees are not only responsible for improving their performance in executing their tasks but contribute to identifying system-wide improvement opportunities.</p> <p>In a coercive logic, employees understanding of their broader work environment is not seen as necessary. Tasks are divided and employees are expected to remain within their specific jobs. It is difficult for them to understand how they contribute to the overall organisation.</p>
Flexibility	<p>In an enabling logic, employees are free to perform their tasks according to how they see fit. Deviations from procedures are allowed and are seen as learning opportunities. Employees are in control of their work processes.</p> <p>In a coercive logic, reliance on employees' skills and discretion is minimised. Manuals define the exact step-by-step instructions for the execution of various tasks. Deviations from such instructions are not tolerated.</p>

Source : Adler and Borys (1996).

This focus on design and usage of organisational technologies has been further pursued by Broadbent and Laughlin (2009) who explored the rationalities governing MCSs. Conceptualised as opposite ends of a continuum, Broadbent and Laughlin discussed how instrumental and communicative rationalities play a key role in shaping the nature of MCSs and can influence how they are experienced by employees. Alienation is likely to occur when organisations use transactional MCSs that are driven by an instrumental rationality. In such systems, goals and objectives are defined based on rational calculations and mathematical models. They are evaluated using performance indicators designed to satisfy accounting needs, which are not necessarily reflective of the values and concerns of all organisational stakeholders. Implementation

of such systems is supported by a command and control authoritative structure, and they are most likely to be rejected by employees and regarded as unsustainable.

In contrast, alienation and other negative employee outcomes are much less likely to appear where relational MCSs driven by a communicative rationality are used. In these systems, strategy formulation is the result of a systematic discourse between different stakeholders seeking a consensus on the desired ends and means. As such, performance indicators are likely to reflect the values and concerns of these stakeholders who develop a sense of ownership vis-a-vis their organisation and are much less likely to experience alienation.

In summary, the concept of alienation is used in a variety of ways in the extant literature. For Marxian theorists, alienation is objective and structural. It is rooted in the capitalist organisation of production and is perceived as the subjugation of individuals to objects. It involves a re-socialisation of the worker in service to a system dominated by commodity fetishism. Marx's principle of alienation was further extended by the concepts of reification (Honneth, 2008; Lukács, 1971) and objectification (Nussbaum, 1995), which both describe the instrumental use of individuals as mere objects in the service of profit realisation.

Disagreeing with the Marxian conception of capitalism as the root cause of alienation, Weber came to present alienation as the result of an increasingly expanding logic of rationalisation in modern societies. According to his view, individuals are trapped in "iron cages," alienated and reduced to small powerless cogs in ever more rationalised machines. In social and organisational studies, alienation has been operationalised into objective or perceived characteristic of specific environments.

Although making it less suitable for social critique, such approaches have rendered the concept particularly useful to the study of organisational contexts.

Organisational researchers and sociologists such as Blauner (1964) have highlighted the relationship between alienation and variations in workplace characteristics such as the type of productive technology or the extent to which labour processes are rationalised. The determinant role of workplace technology in workers' experience of alienation has been pursued by multiple researchers. Rather than focusing on technology type, Adler and Borys (1996) looked at the role played by the design principles behind the technology. They distinguished between enabling technologies that provide support for employees and coercive ones which are most likely to be experienced as alienating. Similarly, Broadbent and Laughlin (2009) revealed how, when governed by an instrumental rationality, MCSs can conceivably lead to alienation to the extent that they are not reflective of employees' values and aspirations.

This organisational conception of alienation is of analytical utility for the current research purpose of examining the impact of Lean on healthcare professionals. Not only is it relevant from an empirical viewpoint when trying to understand the contemporary phenomena of dehumanisation linked to Lean, it also provides a heuristic framework through which the underlying factors leading to such dehumanisation can be identified. Thus, building on this existing literature, the aim of this thesis is to examine the link between MCSs and experiences of alienation amongst healthcare professionals.

Chapter summary

The aim of this chapter was to present the concept of alienation as a useful framework for conceptualising how employees experience Lean-based MCSs. The chapter was divided into three parts. Section 4.1 provided a brief overview of the context in which this research was instigated. A discussion of the French socio-economic context revealed why the research was oriented towards examining the dehumanising effects of Lean-based MCSs. Section 4.2 consisted of a brief overview of the academic literature on dehumanisation. Conceptualised as multifaceted, value-laden, and potentially subject to political manipulation, origins to the study of dehumanisation can be found in Marx's theory of alienation and Weber's research on bureaucratic forms of organisation. Section 4.3 focused on alienation as a form of dehumanisation. The section included a brief historical analysis of how the concept has been used in the literature before emphasising its recent operationalisation in the field of organisational studies. Alienating experiences of work settings have been linked to the type, design logic or rationalities governing the use of organisational technologies and devices such as, in the case of this thesis, Lean-based MCSs.

Beyond its empirical relevance, using alienation to theoretically conceptualise how employees experience Lean-based MCSs has the benefit of rendering the findings of this research applicable to other settings. While the current focus will be on healthcare, the results are relevant to other sectors and industries in which Lean-based MCSs, or other types of MCSs, are being used.

Given the variety of theoretical options available in a qualitative enquiry, the evaluation of this research often relies on the appropriateness of the overall research

design; i.e., the demonstrated coherence and compatibility of the different theoretical and methodological components and their capacity to address the overall research question. The following chapter elaborates on the research design, outlining its epistemological and methodological foundations.

Part 2: Research strategy

Chapter 5

Research design and methods

This chapter explains the research design and the methods by which the objective of this thesis was empirically investigated. The chapter has four sections. Section 5.1 presents the epistemological and ontological views underpinning the thesis. Section 5.2 outlines the research design, presents the research questions, and discusses the choice of research methodology. Section 5.3 focuses on the data collection methods. Section 5.4 deals with the analysis strategy adopted for the research. This chapter makes up Part 2 of the thesis and paves the way for its empirical contribution (Figure 5.1).

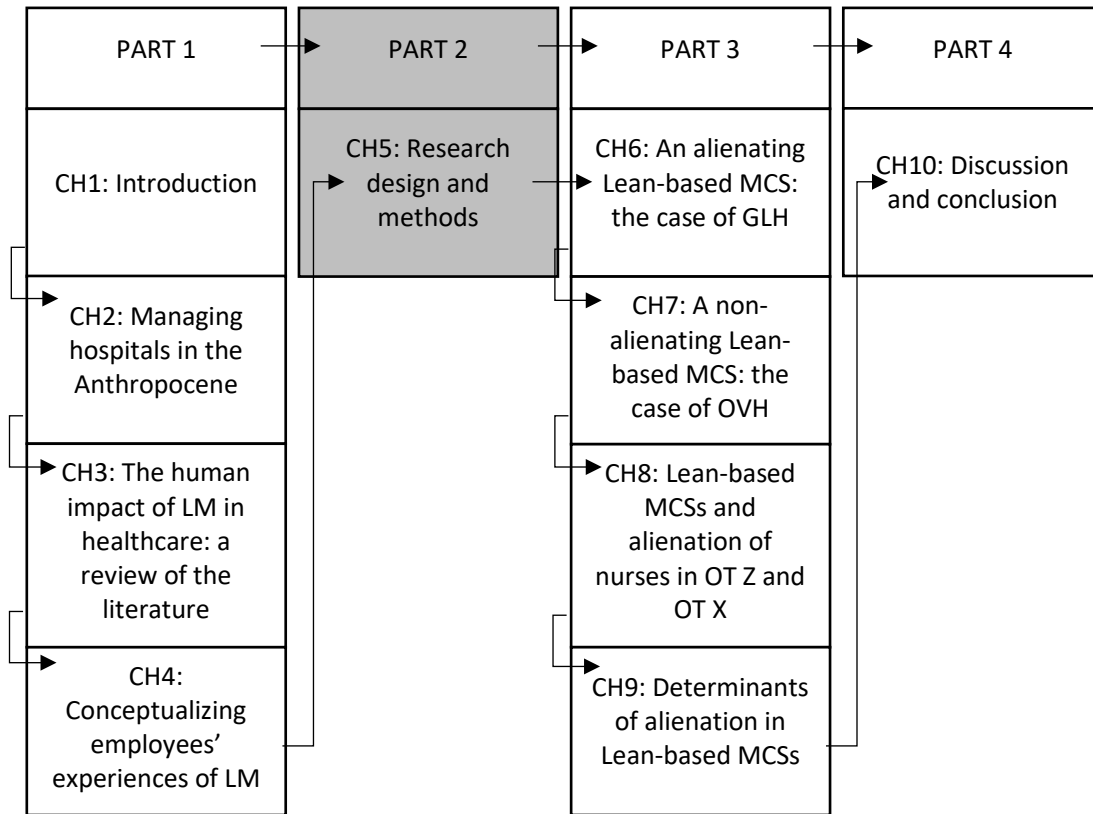


Figure 5.1: Thesis structure overview - Chapter 5

Source: Author's conceptualisation

5.1 A critical realist ontology and a relativist epistemology

The research presented in this thesis, an investigation of alienation and Lean-based MCSs in OTs, is underpinned by a critical realist philosophical stance. Critical realism (CR) is an alternative to positivism and constructivism in that it overcomes the subjective/objective dualism of scientific practices (Vincent & O'Mahoney, 2018). From an ontological perspective, CR stipulates the existence of an objective reality that is independent of human perception (Bhaskar, 2008). This reality is multilayered and forms three domains: the empirical, the actual and the real (Easton, 2010; Fletcher, 2017; Vincent & O'Mahoney, 2018). In the empirical domain, experiences and events

occur and are observable. They are measurable and accessible to human interpretation. In the actual domain, events occur but are uncensored by the human experience: i.e., they could be salient, observable, and measurable or inconspicuous, unnoticeable, and imperceptible. Finally, in the real domain, mechanisms embedded in objects or social entities provide an explanation for the events witnessed in the empirical domain. Figure 5.2 depicts these three overlapping domains.

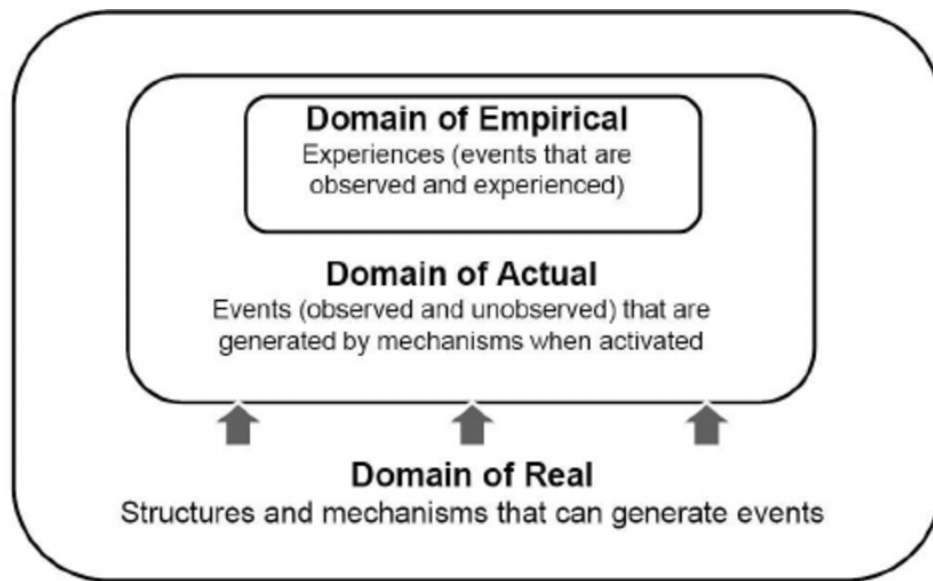


Figure 5.2: Overlapping domains of reality in critical realism

Source: Mingers, 2004.

One of the main goals of a critical realist enquiry is to unravel the generative processes and mechanisms (found in the domain of the real) to explain witnessed events (the domain of the empirical). A CR ontology is ideally suited to the knowledge creation endeavour of this thesis as it provides the necessary ontological depth required to identify factors influencing the feeling of alienation experienced by staff in hospitals using Lean-based MCSs. In contrast to a positivist approach, in which the aim would be to measure the intensity and forms of alienation, and a constructivist approach aiming to

describe how alienation is experienced, the goal of this thesis is to explain what makes alienation present or absent when Lean-based MCSs are used.

Although CR stipulates the existence of an objective reality, it also accepts that our knowledge of the world is socially constructed and thus favours a relativist epistemology (Easton, 2010; Fletcher, 2017; Vincent & O'Mahoney, 2018). This combination of a realist ontology and a relativist epistemology makes CR compatible with a wide range of research methodologies (Fleetwood & Ackroyd, 2004). The choice of research design is thus dependent on the nature of the research object and the aims of the researcher. Whereas quantitative designs are useful when mechanisms are already known, qualitative designs are more adequate in relatively unexplored fields in which generative mechanisms are yet to be identified (Vincent & O'Mahoney, 2018). The research conducted for this thesis was carried out using a qualitative research methodology. This choice is coherent with the overall aim of identifying the generative processes that render Lean-based MCSs alienating to staff, particularly given the emerging nature of the research in this area.

5.2 Research methodology and design

Critical Grounded Theory methodology (CGT) as described by Belfrage and Hauf (2016) is the methodological approach underpinning the work conducted for this thesis. CGT was developed as an intermediate to the radically empiricist approach of Glaser and Strauss (1967) and its orthodox constructivist iteration developed by Charmaz (2006). Driven by moral and social concerns, the aim of the research conducted using CGT is to “enable social emancipation” (Belfrage & Hauf, 2016, p. 259). Built upon the principle of *retroduction*—a mode of inference aimed at

identifying the generative mechanisms in a critical realist inquiry by asking the question of “what must be true for this event to happen” (Easton, 2010)—knowledge acquired through CGT can either lead to a deepening, broadening or refining of existing theories, or to the creation of new ones (Belfrage & Hauf, 2016). Using both deductive and inductive reasoning methods, CGT is particularly useful in that it provides a contextualised explanation of social problems through an iterative research process (Belfrage & Hauf, 2016).

According to Belfrage and Hauf (2016), CGT is a three-phased approach instigated by the identification of a moral or a societal problem. In the first phase, the researcher aims to develop a preliminary understanding and an initial conceptualisation of the problem with the help of “proto-theories” or guiding theoretical frameworks (Belfrage & Hauf, 2016,p.259). These initial conceptualisations then direct the researcher through the second phase of CGT, consisting of an immersive period of fieldwork and data collection. While providing a structure for the fieldwork being conducted, proto-theories and initial conceptualisations are merely signposts and should not constrain or hinder the emergence of new concepts, explanations, or theories from the field. The research design and data collection process should retain a space for the researcher to be “surprised” (Belfrage & Hauf, 2016, p.259). Once the data collection is finalised, the researcher engages in the third and final phase of CGT: analysing the collected material, refining, revising, or re-constructing his initial conceptualisation and developing a critically grounded theory. Figure 5.3 depicts the research process of a CGT methodology as described by (Belfrage & Hauf, 2016).

Although the managers at the French hospital investigated in the study did not specifically mention that they were using Lean during any of the meetings preceding the data collection, they were quick to admit that they were doing so when they were explicitly asked later on if that was the case. A discussion with a key informant suggested that, at least in France, Lean suffers from a bad reputation in the healthcare sector and hospitals are often hesitant to admit its use unless they are highlighting the benefits of using it. This was a plausible explanation given the multiple media reports blaming Lean for the malaise amongst health professionals (SNPI, 2016).

Once the hospital's use of Lean principles was established and the literature on its associated human consequences was examined, this research was conducted to pinpoint those factors that influence the extent to which Lean-based MCSs are alienating to staff. Identifying these factors was a key step towards modifying them and offering a solution to the crisis mentioned above. This aim is reflected in the following research questions, to which the thesis will provide an answer:

1. What are the characteristics of Lean-based MCSs?
2. To what extent and in what way are Lean-based MCSs experienced as alienating or non-alienating?
3. What factors influence the extent to which Lean-based MCSs are experienced as alienating or non-alienating?

5.2.1 Research design. To answer the research questions, two qualitative case studies were conducted: one in France and the other in Australia. Case studies are a form of *“empirical research designed to examine a contemporary phenomenon in a real context, especially when the boundaries between the phenomenon and the context*

do not appear clearly” (Yin, 2014, p. 13). They are particularly useful when examining complex events that are hard to understand using traditional experimental methods. Case studies are more suited when trying to answer questions of ‘how’ and ‘why’ to reveal the causal links at play in real-world interventions. The topic of this thesis is central to hospitals, which, given the challenges of the Anthropocene, are increasingly looking for new ways to streamline their operations and reduce their costs. The research object is thus inseparable from its context; it is precisely because of the context that Lean-based MCSs are being used and that this research is relevant.

Drawing on multiple case studies or fields is considered a more robust and compelling design of case study research (Herriott & Firestone, 1983). In fact, comparing findings from different sites adds to the analytical power of the case study by revealing exceptions that may challenge emerging concepts or hypothesis (Ragin, 1994). A comparative approach is also beneficial when trying to distinguish between site-specific phenomena and more generic ones that could be easily transferable to other sites. To be rigorous, a comparative methodology requires that the selected sites exhibit not only differences but also similarities (Giroux, 2003).

5.2.2 Research setting. The case studies included in this thesis were conducted in OTs. As hospitals come under increased pressure to reduce costs and improve profitability, they are indeed turning their attention to OTs as one of their most significant cost and revenue centres (Macario, Vitez, Dunn, & McDonald, 1995). The predominant financial weight of these structures makes them one of the most conspicuous in terms of potential cost reduction as they are most likely to yield significant cost gains. In addition to the hospitals themselves, optimising the use of resources in OTs is increasingly becoming a priority for regulators faced with a rise in

demand for surgical reimbursements (Agence Technique de l'Information sur l'Hospitalisation, 2017; Australian Institute of Health and Welfare, 2018b; Guzzanti et al., 1996). Performance benchmarks and guidelines have consequently been developed by French and Australian regulatory bodies such as the Agency For Clinical Innovation (NSW Agency for Clinical Innovation, 2014) and l'Agence Nationale d'Appui à la Performance des établissements de santé et médicaux sociaux (ANAP, 2016) as a way to provide OT managers with nationally standardised indicators to measure efficiency and performance. These metrics are pushing providers towards becoming more competitive by cutting down costs and optimising processes. They play a pivotal role within the broader regulatory reforms undertaken by the two countries.

On the operational level, the pressure of financial profitability translates into an expanding need for increasing outputs (volume of surgery) while using the same level of inputs (NSW Agency for Clinical Innovation, 2014). In OTs, efficiency is achieved by maximising the use of time and eliminating wasteful activities (NSW Agency for Clinical Innovation, 2014). The sequential and technical nature of activities (Aronsson et al., 2011) and their high potential for standardisation (Nicolay et al., 2012) makes a compelling argument for the use of industrial process engineering methodologies, such as Lean, to improve productivity in OTs. Existing research has indeed associated the adoption of Lean with productivity gains in surgical settings (Collar et al., 2012; Nicolay et al., 2012). Patient flow, operating room throughput, efficiency and turnaround time have been amongst the main areas of reported improvements in OTs (DelliFraine, Langabeer, & Nembhard, 2010; Mason, Nicolay, & Darzi, 2015). Overall, the nature of the work conducted in OTs and their predominant financial weight within hospitals makes them a perfect candidate for the implementation of Lean-based MCSs.

The first of our case studies was conducted in a large academic public hospital in France, Grand Lac Hospital (GLH). Recognised as a centre of excellence both regionally and nationally, GLH provides routine as well as highly specialised medical and surgical care. Founded in the 16th century, the current structure of the hospital is the result of the gradual consolidation of seven former institutions that were operating on a total of 17 sites in western France. The hospital's multiple locations have enabled the provision of many medical specialties and a strategically diverse range of surgical services.

From its inception the hospital's Operating Rooms (ORs) were scattered both within and across the multiple sites run by the hospital. This situation was long considered a source of dysfunction and waste and the hospital actively worked towards remedying this by creating a single site hospital. The consolidation process of the ORs was achieved gradually, over 30 years, and reached its penultimate stage in 2008 with the creation of a centralised Operating Theatres Resource Management Centre (OTRMC). As a clinically independent entity, the goal of the OTRMC is to optimise the use of all material and human resources needed to deliver surgical care to patients. It ensures the management of all ORs located in the hospital, handles the logistics required to undertake surgeries and oversees all nursing, paramedical and non-clinical staff working within the OTs.

The OTRMC's first mission was to create three centralised OTs, bringing an end to the cross-site and within-site dispersion of ORs. Its second mission was to work on optimising the processes and organisation of surgical delivery to support the consolidation of these three OTs into one single structure by 2026. The research

presented in this thesis was carried out in one of the three OTs that we will refer to as OT Z.

OT Z was the biggest of the three consolidated structures. A total of 24,000 elective procedures were undertaken in it during the year 2016 (60% of the total procedures conducted in the hospital). The OT was housed in a newly constructed facility that required an upfront investment of 65 million euros to build. It was regarded as a pilot structure in which the OTRMC could experiment with new managerial approaches—later disclosed as being based on Lean—before applying them to the other two. OT Z is home to 22 ORs, 19 of which are dedicated exclusively to elective surgery and the remaining three are used for emergency procedures.

In Australia, the second research site was identified with the help of colleagues at the Australian Institute of Health Innovation (AIHI) at Macquarie University, Sydney, Australia. To strengthen the validity of the research, sites that were structurally similar to GLH and OT Z were prioritized, i.e., public hospitals using Lean to manage an OT comprising of at least 10 ORs. During a consultation with the Australian Healthcare & Hospital Association (AHHA), a key informant confirmed that hospitals in Australia may not specifically advertise their use of Lean except when they are depicting it as a useful approach to improve care delivery or financial performance. This information was consistent with what was reported by managers of GLH in France. Instead of looking at Lean specifically, the search thus focused on structurally similar OTs using efficiency-focused quality improvement strategies, leading to the identification of Ocean View Hospital (OVH) as a suitable candidate. After discussing the project with the hospital's executives, they agreed to participate in the study.

OVH is a major tertiary teaching hospital located in a metropolitan area on the eastern coast of Australia within the state of New South Wales (NSW). Built in the 19th century, the hospital currently has a 600 bed capacity and is recognised as a major trauma centre providing general and specialised care in most medical and surgical specialties. In 2011, the hospital undertook a significant redevelopment project that cost over AUD\$ 1.1 billion Australian dollars and included the construction of a new-state-of-the-art OT that we will refer to as OT X. OT X is home to 18 ORs where both emergency and elective surgeries are conducted.

Both OT Z and OT X exhibited similar structural characteristics; they both delivered elective and emergency procedures and they were both centralised structures comprising at least 18 ORs. Further examination of the internal structure of OT X revealed multiple similarities with OT Z. Both OTs were under considerable pressure to improve performance and reduce costs, and both were engaged in a systematic approach to waste elimination and process optimisation.

5.3 Research methods, data collection and analysis

This section will discuss the data collection methods used in this thesis. Both nonparticipant observations and semi-structured interviews were used to gain insight into how Lean-based MCS were implemented in the OTs and to capture how they were experienced by staff. The research was also complemented with an in-depth analysis of policy documents relating to the performance of OTs in both France and Australia.

The fieldwork was conducted in France between October 2016 and January 2017 and in Australia between November 2018 and January 2019. In France, a total of 90 hours of observations and 22.5 hours of interviews were conducted. In Australia, a

total of 140 hours of observations and 33.5 hours of interviews were undertaken. In total, the empirical data collected for this thesis encompassed 230 hours of observation and 47 interviews culminating in 56 hours of audio recorded data.

5.3.1 Nonparticipant observations. Observation is a qualitative research technique that allows an independent observer to document events in their natural settings (Mays & Pope, 1995). It is useful in qualitative research because it allows for examination of what individuals do, rather than just what they say (Groleau, 2003). For this thesis, observations were used to gain insight into the way Lean was implemented in the OTs by studying it in its real-world context. Instead of resorting only to an analysis of the policies and procedures that formalise the use of Lean, which is “work-as-imagined”, an observational approach was used because it also captures work-as-done (Braithwaite, 2018)

5.3.1.1 Sampling strategy. Initially, the data collection focused on gaining an understanding of the rules and procedures constituting the Lean-based MCSs in the two OTs; for this purpose, the managers who enacted them daily in the OTs were observed. A total population sampling strategy (Etikan, Musa, & Alkassim, 2016) was used for this first phase of the study. In France, one nurse unit manager, a material manager, a reception nurse who played a coordination role, and three scheduling nurses with managerial authority were observed. For the second case study conducted in Australia, two nurse unit managers, a material manager, and two floor coordinators were observed.

In both hospitals, one day of fixed observation at the OT reception area was conducted to develop a sense of familiarity in this new environment. Fifty-eight hours at GLH and 90 hours at OVH were spent conducting fixed observations at the scheduling nurses and floor managers’ offices.

The OT managers in both sites played a crucial role in helping recruit and identify other participants to include in the observations. They presented the research at multiple meetings in which staff were present and encouraged them to participate. Managers were also individually approached and handed a participant information sheet that included all the information regarding the study. The time of data collection was determined by the participants according to their availability and work schedule. Table 5.1 provides an overview of the observational apparatus used for the research.

Table 5.1: Details of observations at GLH and OVH

Case Study	Number of hours	Details
Case study 1 – GLH- France	90 Hours	Shadowing NUM 8 hours
		Shadowing Materials Manager 8 hours
		Shadowing Reception Nurse 8 hours
		Fixed observation at the reception desk 8 hours
		Fixed observation at Scheduling Nurse office (morning and afternoon shifts + shadowing in case of movement) 58 hours
Case study 2 – OVH- Australia	140 Hours	Shadowing Module NUM 9 hours
		Shadowing NUM of Anaesthetic 9 hours
		Shadowing Material Manager 9 hours
		Shadowing PACU NUM 9 hours
		Fixed observation at the reception desk 14 hours
		Fixed observation at Floor Manager office (morning and afternoon shifts + shadowing in case of movement) 90 hours

Source: Author's conceptualisation

5.3.1.2 **Preparing observations.** Although the use of nonparticipant observations has the benefit of providing the researcher with rich and contextualised data, it does come with certain biases that need to be addressed by the researcher. Most of the existing methodological publications on the use of observations point to the delicate

relationship between the observer and the observed as a potentially significant source of bias (Wacheux, 1996). In carrying out observations, the researcher becomes a data collection tool, the instrument of their own research, and risks replacing their own understanding of events with that of the observed participants. As such, the non-objective nature of observational research is often highlighted.

To overcome this subjectivity bias, an observation grid was constructed before the start of the data collection phase. The grid aimed to objectify and systematise how observations were carried out, thereby endowing them with greater rigour and scientific value (Journé, 2005). Given the nature of our research, and in-line with the CGT methodology, the grid needed to be designed to grasp a wide range of observed phenomena without overly constraining them. It was organised into three distinct columns following the method recommended by Groleau (2003).

The first column was used to keep track of elements describing events as they unfolded during the observation sessions. Information such as location, time of the day and the roles of observed participants were all grouped in that column. The second column of the grid was designed to help keep track of questions or elements that needed further clarifications with the participants. Labelled *methodological notes*, contents of this column highlighted the singularity of certain events. Finally, the third column of the grid was devoted to *analytical notes*. It was used to group theoretical elements that certain events may have evoked and thus constituted the first attempt at theorising and analysing the data.

5.3.1.3 ***Entering the field.*** In both France and Australia, multiple meetings with the managers of the OTs took place before the start of data collection. In those meetings, aspects relative to the research methods, aims and strategy for recruiting

participants were discussed. Both hospitals formally supported the research to obtain the required Human Research Ethics approvals in each of the institutions. The OT managers played a key role as they informed their teams that the research project was being carried out and helped identify key participants. To ensure the reliability of the collected data, great attention was paid to the way the researcher introduced himself and explained the project to potential participants. During these introductory phases, it was made clear that the research was being conducted to complete a thesis and that the researcher did not hold any medical qualifications. Acknowledging the lack of medical knowledge placed the researcher in a learning position, as opposed to an expert one, and was deliberately mentioned to reassure any potential participants who might be wary of external observers given the importance of independent quality audits in the medical sector. Staff were also explicitly assured that none of the information disclosed during the research would be communicated in an identifiable way to their managers.

When discussing the research question, simple non-technical vocabulary was used to avoid overwhelming any potential participants. The research was presented as an exploratory study of the OT organisation that included a comparative study of French and Australian OTs. The international angle helped foster interest in the project. In addition to being clear and easy to understand, this presentation had the advantage of being neutral so far as it did not evoke Lean, efficiency improvement, cost-cutting, budgetary pressures or how the staff were experiencing them. It was also quite generic in that it did not single out specific participants but was inclusive of all staff working in the OT.

When possible, research methods were also explained to potential participants, often distinguishing two phases of the study, the first comprised of a series of

observations and the second consisting of interviews. Methods were discussed to distinguish the work carried out for this research from the regular audits or personal evaluations to which hospital staff are often accustomed. It was also a way of informing the staff of the duration and requirements of the study, which involved the prolonged presence of the researcher in the OT. The aim of disclosing such information was to allow staff to consider participating in the study without feeling the pressure associated with making an immediate decision due to time constraints.

5.3.1.4 ***Overcoming biases and limitations.*** Other than the subjectivity bias addressed through the construction and use of the observation grid, the impact the researcher has on the observed reality is often pointed out as a potential bias of observational studies (Fournier, Hatzfeld, Lomba, & Muller, 2008). Establishing a trusting relationship with the participant was, therefore, a crucial aspect of limiting the risk of them altering their behaviour when being observed (Arborio et al., 2008). During the observation sessions, both in OT Z and OT X, the observation notes, which intrigued participants, were often a source of interrogation. “What are you always writing in that book?” some asked. “You take a lot of notes” others commented. Some even expressed their mistrust: “Watch out. He is going to report you in his notebook.” Evidence of the impact of the observations became visible in OT Z after witnessing a brief altercation between a surgeon and a scheduling nurse who later commented, “He was calm because he saw you were there.” Other situations in which participants wanted to clarify that “this is off the record” or asked for some privacy, all testify to the difficulty of doing observational research and the impact the researcher has on the observed setting.

As the observations progressed, the need to reassure participants that the information they disclosed was not going to be traced back to them became evident. In that regard, a code for each of the participants was used when referring to them in the observational notes. This codified note-taking system was beneficial in that it rendered the note-taking process very transparent by allowing the participants to check the notes if they wished to do so. Hiding the notebook or the observation notes would be rather suspicious behaviour and could increase mistrust.

In both hospitals, the observations took place over long periods of immersion within the OTs. Deep immersion allowed participants to familiarise themselves with the presence of the researcher and facilitated trust-building. Benefits of this technique became evident as some of the participants started sharing lessons learnt from their professional experiences, some talked in confidence about their career aspirations or their secret plans to resign from the hospital, others talked about instances where they experienced workplace bullying, and some shared personal anecdotes or stories about their families. The increasing frequency of such exchanges are signals of a successful acceptance of the observing researcher (Groleau, 2003).

5.3.1.5 *Exiting the field.* The time-consuming nature of case study research is frequently highlighted as one of the challenges faced by the qualitative researcher (Yin, 2014). The process of collecting data is often time-consuming and requires considerable mental and physical commitment. The analysis is also laborious, and complex, given the large amount of data collected. For this thesis, the data saturation point was reached after 90 hours of observations in France, which were conducted intermittently over one month. The observations adapted to the work schedule of participants and often took place four times a week. In Australia, saturation was reached after 140 hours of

observations, conducted in just under two months. Observations also followed the work schedule of participants and took place four times a week. The remainder of the time was used reflect on the data and identify aspects that required further investigation, ensuring that observation time was utilised optimally.

5.3.2 Semi-structured interviews. Following observations at each site, semi-structured interviews were used to collect data on the implementation of the Lean-based MCSs by interviewing managers and executives. Interviews were also used to collect data on the employees' experience of such systems. The following section will review the sampling strategy, the interview schedule, and how the interviews were conducted.

5.3.2.1 Sampling strategy. Recruitment of OT nurses for the interviews was conducted following a purposive sampling approach. Although participation in the study was voluntary, a representation of all type of nurses working within the OTs was pursued. In France, that included scrub/scout nurses (known as IBODE and IBO in French), anaesthetic nurses (IADE), and auxiliary nurses (aide-soignant). In Australia, that included scrub/scout nurses and anaesthetic nurses. Surgeons, anaesthetists, and other OT personnel were excluded due to recruitment difficulties related to the schedules and time constraints of these professional groups. Additionally, the number of nurses in the OTs was significantly higher than that of surgeons or anaesthetists. Moreover, nurses were present in the OTs for more extended periods when compared to surgeons or anaesthetists whose presence alternated between the OTs and the wards.

Recruitment of OT nurses was challenged by the nature of the participants' work and their busy schedules. In fact, most of the nurses were in ORs and involved in procedures from the start to the end of their shifts. It was difficult for them to dedicate an hour of their time to participate in the research simply because they did not have

control over their schedules and were needed for surgery. To overcome this challenge, participants in France either voluntarily stayed after their work hours or asked for the interviews to be conducted before their shifts. In Australia, a decrease in the number of surgeries over the Christmas holiday period meant that some nurses had additional time in their day to participate in interviews. Help was also sought from nurse unit managers who shared the OT nursing roster to help identify times during which nurses would potentially be available.

Interviews were also conducted with all managers working in the OTs along with senior managers involved in the running of services across the whole hospitals. These interviews aimed to gain insight into the strategic orientations of the OTs, the challenges they faced and the overall context of their activity. Although managers had more control over their schedules than nurses, organising the interviews was still quite challenging, given the busy and often emerging nature of their work. Table 5.2 provides an overview of the interviews conducted for the research.

Table 5.2: Overview of interviews conducted at GLH and OVH

Case study	Professional body	Number of participants
Case study 1 – GLH - France	Scrub scout nurses	4
	Anaesthetic nurses	4
	Operating theatre Nurse unit managers	3
	Nurse aides	4
	Operating theatre Manager	1
	Financial officer	1
	Quality insurance Manager	1
	Divisional Manager	1
Case study 2 – OVH - Australia	Scrub scout nurses	8
	Anaesthetic nurses	4
	Nurse Unit Managers	5
	Operating theatre Manager	1
	Floor Managers	2
	Data Manager	1
	Divisional Managers	3
	Material Manager	1
	Educators	3
Total		47

Source: Author's conceptualisation

5.3.2.2 Interview schedule. OT nurses were interviewed after the saturation point, where no new relevant issues were being uncovered during observations. This allowed for the integration of some of the outstanding questions from the observations into the interview schedules. A semi-structured design was used to let participants express themselves as freely as possible about their work and what seemed important to them (Demers, 2003).

The interview guide was organised around four open questions that allowed for interviews to be dynamic, with the researcher adapting to the answers of the interviewee (Beaud, 1996). First, participants were asked to introduce themselves, their professional background and experiences. This question aimed to put the participants at ease by

asking them to talk about a familiar topic. They were then asked to describe a typical day at work, highlighting what they do and how they do it. The third question was more focused on the organisation of the OT, asking participants to identify some of its positive and challenging aspects. Participants were encouraged to highlight any mechanisms they resorted to for resolving or overcoming the challenges they mentioned, and any key performance indicators used to measure their performance or that of their teams. Finally, at the end of the interview, participants were systematically asked whether they wished to change any aspect of the organisation of the OTs and how they thought changes could be implemented. The goal of this question was to provide them with an opportunity to express their subjective point of view on the organisation and verbalise three sources of their satisfaction or discomfort. In line with the CGT methodology, the interviews conducted for this thesis had an emancipatory goal in that they allowed participants to freely discuss any of their concerns (Belfrage & Hauf, 2016).

Before asking questions, time was taken to systematically go over the ethical implications of the research, ensuring the participants knew that all their information would remain confidential and would be used anonymously. There was no risk that the participants would be harmed because of their participation in the interview. However, the existing support networks at their disposal in the respective hospitals were mentioned before the interview. Beyond being aware of the ethical implications of the research, this part of the interview was crucial in building trust with the participants. All participants also had an opportunity to ask questions about the research, and then provide their full and informed consent to take part before being asked any questions. The interviews lasted approximately an hour on average, although some lasted between

two and three hours. All interviews were audio-recorded with the consent of the participants.

Interview content and style did vary a little depending on the role of the person being interviewed. In particular, the interviews conducted with managers included the four questions asked of the nurses and some more specific questions based on issues documented during observations. While space was given to the managers to express themselves freely by privileging follow-up questions on the aspects they discussed, the interviews were also used to test the nascent hypothesis of this research. This was also the case with some of the nurses. For instance, at OT X, additional questions were included at the end of the interviews with the nurses, such as, “Do you feel like the current structure is dehumanising?” Or, “Do you feel like there is a resemblance between the OT and a factory?” Not only did this exercise play an ethical function by giving the participants a chance to comment on the emerging conceptualisations (Creswell & Miller, 2000), but it was also a determinant in avoiding the risk of overgeneralising from the data.

5.3.3 Document analysis. To complement the data collection protocol, a content analysis of macro-level documents was conducted. The iterative analysis approach consisted of identifying, making sense of, and synthesising relevant information. In Australia, documents such as “The Operating Theatre Efficiency Guidelines” published by the NSW Agency for Clinical Innovation (2014) and the NSW Auditor-General’s report entitled “Managing operating theatre efficiency for elective surgery” (2013) were analysed. In France, documents published by regulatory agencies and governing bodies were also examined including the national courts of audit report titled “Les activités chirurgicales : restructurer l’offre de soins pour mieux

assurer la qualité des prises en charge” (Cours des comptes, 2017) and the “Performance benchmark report” published by the National Agency for Performance Support of Health and Social Health Institutions (ANAP, 2016). These documents offered essential insights into what was expected from the OTs in their respective countries in terms of organisation, performance, training, and staffing. They were an integral part of the overall context of the OTs and were thus valuable in informing the data analysis.

5.4 Data Analysis

5.4.1 Observation data. The presentation of explicit findings in this thesis is primarily drawn from interview data rather than observational data. That is not to underestimate the role observations played or their importance in the research approach. In fact, much of the time spent in the field was spent observing, analysing and assessing—prerequisites to understanding. The use of observations allowed a complete immersion in the field and helped develop a better appreciation for the contextual aspects specific to each of the studied sites. This was extremely important given the highly specialised environments of OTs, which were initially unfamiliar to the researcher. Observations provided crucial insights into the required contextual and cognitive patterns without which it would have been challenging to target interview questions, follow up prompts and interpret data. The observations were conducted with great care, systematically, while being aware of the biases and difficulties inherent to an observational stance as discussed in the previous section of this chapter. This methodological rigour was a crucial safeguard against hasty assumptions or over

generalisations. Data from observation was also a source of triangulation/confirmation on the data later collected through interviews.

5.4.2 Interview data. All the interview recordings were transcribed and analysed using a theory-informed thematic analysis (TA) approach (Braun & Clarke, 2006). The choice to use TA was driven by its flexibility and coherence with the critical realist stance. In being epistemologically and ontologically neutral, TA is suitable for a range of research paradigms (Terry, Hayfield, Clarke, & Braun, 2017). TA encompasses six steps: data familiarisation, initial coding, theme identification, review of themes, definition of themes and reporting results (Braun & Clarke, 2006; Clarke & Braun, 2018; Terry et al., 2017). To ensure the quality of the analysis, and loyal to a Big Q approach, the broader research team contributed to frequent discussions ensuring that the coding process was rigorous, thorough, and founded on an in-depth engagement with the empirical material (Terry et al., 2017).

The first phase of the analysis process started with the transcription of the audio recorded interviews. All the interviews conducted in France were transcribed by the researcher using Microsoft word. For the Australian interviews, due to time constraints, the interviews were transcribed with the help of an online transcription platform (NVIVO Transcription). However, the resulting transcripts were reviewed by the researcher while listening to the original interviews to verify their accuracy and completeness. Hence, both approaches resulted in high levels of familiarity with the data. Around 235 hours were spent on transcription and data familiarisation.

Once all the interviews were transcribed, an initial phase of coding was undertaken. At this stage, given the considerable amount of data, a selective rather than line coding strategy was adopted. Only data that was meaningful to the research

questions were coded (Terry et al., 2017). References to the OTs' structure, goals, performance management indicators and targets, incentives, reward system, information flows and to how the nurses experienced their work environment were systematically coded. Data collected in France was coded before the data collected in Australia. This helped refine the selective coding strategy.

The third, fourth and fifth phases of the TA process relate to the construction of analytical themes. In France, efficiency was a significant theme that emerged from the interviews with staff at GLH. This was to be expected as the hospital was under pressure due to stringent performance metrics determined by the French Ministry of Health. Additionally, given the upfront investments undertaken to build OT Z, the structure had to be profitable. Space, time, utilisation, and quality were the four main fronts on which the hospital was pursuing greater efficiency.

Upon analysing the interviews, and after examining the literature, the preoccupation with greater efficiency in OT Z appeared to be taking the form of the systematic elimination of the seven wastes identified by Ohno (Ohno, 2014): transportation, inventory, motion, delays, overproduction, over-processing and defects. Lean was thus used as a theme, and the seven wastes constituted its individual sub-categories. The result of this approach was a taxonomy of wastes and the strategies used to eliminate them in an OT context. The strategies forming this taxonomy constituted the Lean-based MCS used in the OT.

To account for the form and intensity of alienation experienced by the nurses, coding was informed by Blauner's taxonomy of alienation (Blauner, 1964). In keeping with a critical realist epistemology and the CGT methodology, the use of theory was meant to be a facilitator of more in-depth analysis, and room was left for the data to

either support, contradict or modify any of the emerging theoretical conceptions (Belfrage & Hauf, 2016; Fletcher, 2017). The generation, identification and naming of the themes was the result of an iterative back and forth *abductive* process that tested the plausibility of different theories and their capacity for explaining the empirical material (Bergene, 2007). Blauner's framework was chosen for its ability to account for not only alienation but also for its opposite state. This was aligned with the assumption that Lean-based MCSs could be experienced either positively or negatively by employees.

Upon coding the data collected in Australia, two major themes were identified and were initially referred to as "accessibility" and "empowerment". The accessibility theme was used in reference to the desire of the hospital to meet the Ministry-imposed KPIs related to the waiting list. To improve access to OT X, the Australian hospital was engaged in an operational strategy consisting of the systematic elimination of wastes and continuous process improvement. To account for that strategy, the coding framework developed to capture the Lean-based MCS identified in the French OT was used. The use of the same framework helped highlight the similarities between the two Lean-based MCSs. In fact, both hospitals were using the same Lean principles and targeting the same sources of waste despite doing it for different reasons: cost-cutting in France, increasing capacity in Australia.

Empowerment was the initial term used to describe the second major theme that emerged from the data collected in the Australian OT. This theme was later refined, using the term "freedom" in reference to the work of Blauner (1964) on alienation. The initial conception of empowerment corresponded to the non-alienating state described by Blauner (1964), which was used this time to account for how the nurses experienced the Lean-based MCS implemented in OVH. The use of theory in the coding process was

not deductive or confirmatory but rather informative; in that sense, opportunity was given to the data to contradict or not fit into the framework.

5.4.3 Conducting the comparison. A two-dimensional theory-oriented case-comparison similar to that described by Bergene (2007) was conducted. First, the findings of the case studies were compared in light of Blauner's alienation framework. The comparison revealed variances in the degree and forms of alienation between the nurses in the two settings. The variance in the nurses' experience thus informed the second level of comparison, this time building on the explanatory power of Blauner's framework and the recent development in the literature on the determinants of alienation.

Chapter summary

This chapter started by disclosing the CR epistemological and ontological views underpinning the research presented in this thesis. As an alternative to the dominant positivist and constructivist approaches, CR offers the ontological depth coherent with this thesis' aim of identifying the factors influencing the extent to which Lean-based MCSs are experienced as alienating by OT nurses.

Section 5.2 discussed the CGT methodology used to answer the research questions posed by this thesis:

1. What are the characteristics of Lean-based MCSs?
2. To what extent and in what way are Lean-based MCSs experienced as alienating or non-alienating?

3. What factors influence the extent to which Lean-based MCSs are experienced as alienating or non-alienating?

In Section 5.3, the research design, site selection and data collection strategy were presented. The empirical fieldwork conducted in the framework of this thesis took place at the OTs of two public hospitals in France and Australia. In total, the empirical data encompassed 230 hours of observation and 47 interviews and were complemented by an in-depth document analysis.

In Section 5.4, the data analysis strategy was discussed. It involved the use of a theory-informed TA. Some of the codes and themes were previewed, demonstrating how they have been developed with theory in mind, such as Ohno's (1988) classification of wastes and Blauner's taxonomy of alienation (Blauner, 1964). The two-dimensional and theory-oriented approach used to conduct the cross-case comparison was also presented in this section. This approach was considered as it helped reveal not only differences in how the nurses experienced Lean-based MCSs but also the distinguishing features of each of the two systems that could be associated with the different experiences.

Part 3: Empirical work

Chapter 6

An alienating Lean-based MCS: the case of Grand Lac Hospital

In the following two chapters, the case studies conducted for this thesis will be presented with the aim of looking at how the Lean-based MCSs were implemented in the OTs and how they were experienced by nurses. To the extent that MCSs are used to achieve goal congruence and support the strategic orientation of the hospitals in which they were used, each case study will start by briefly presenting the overall strategy of the hospital in which it was conducted. The case studies will then focus on the different aspects of the Lean-based MCSs before describing how the nurses experienced them using Blauner's taxonomy of alienation (Blauner, 1964). The case studies are followed by two analytical chapters. The first compares the way in which the Lean-based MCSs were implemented in the two hospitals and how they were experienced by participants. In the second, the factors influencing the nurses' experience of alienation will be revealed.

This chapter presents the findings from the case study conducted at GLH. It provides a characterisation of the Lean-based MCS in use at OT Z and attends to how it was experienced by the participants. This chapter is the first one in Part 3 of this thesis, comprising of the empirical fieldwork (Figure 6.1).

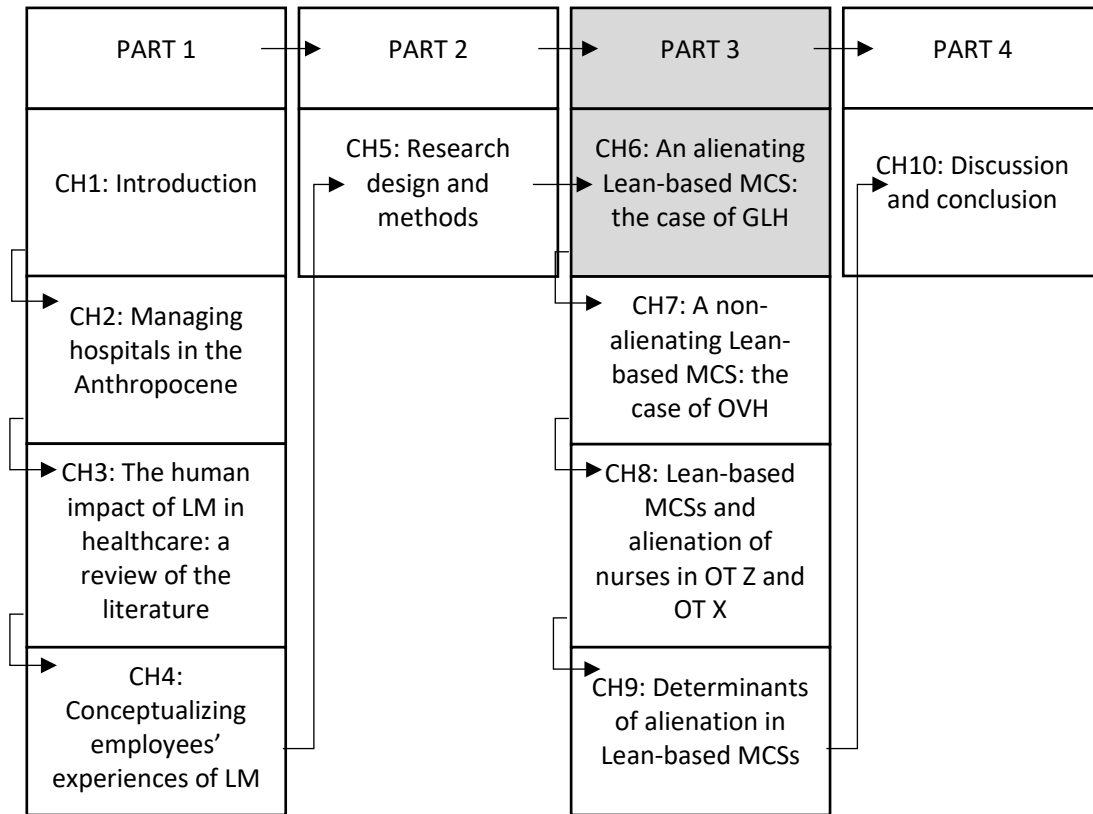


Figure 6.1: Thesis structure overview - Chapter 6

Source: Author's conceptualisation

Housed in a newly built facility, OT Z required an upfront 65 million euros investment from GLH to build. The strategy of its managing body, the OTRMC, was to ensure the profitability of the structure and generate the initial invested capital by a maximum duration of 10 years. In addition to this financial constraint, the OTRMC was also bound to meet a set of efficiency indicators defined by the French Ministry of Health—being in a country where healthcare costs had been spiralling for more than a decade (ANAP, 2016).

After conducting multiple interviews with the managers of the OTRMC, two Key Performance Indicators (KPIs) of efficiency specifically stood out: utilisation and

overflow rates. Utilisation was used to evaluate the productive use of OT time (ANAP, 2016). It was measured by comparing the time used to conduct surgeries to the overall time for which an OR was available. OT Z was required to meet a utilisation target of at least 85 per cent. The overflow rate was defined as the time ORs were used beyond their scheduled availabilities; the target for overflow was below five per cent. In this way, utilisation was intended to ensure money was not wasted due to the under-utilisation of available resources, and the overflow KPI was designed to control the costs associated with the over-utilisation of resources.

The following case study is structured into two sections. Section 6.1 presents the Lean practices forming the MCS used by the OTRMC to support the execution of its strategy—meeting the ministry-set KPIs and generating the required return on investment. Section 6.2 reveals how and why the nurses described the Lean-based MCS as alienating. The empirical data constituting this case study was originally collected in French before being translated to English by the author. The cited verbatims can be found in their original language at the endnotes section of this thesis (p. 275). Figure 6.2 is a schematic of the OT layout to help illustrate the descriptions made throughout this chapter.

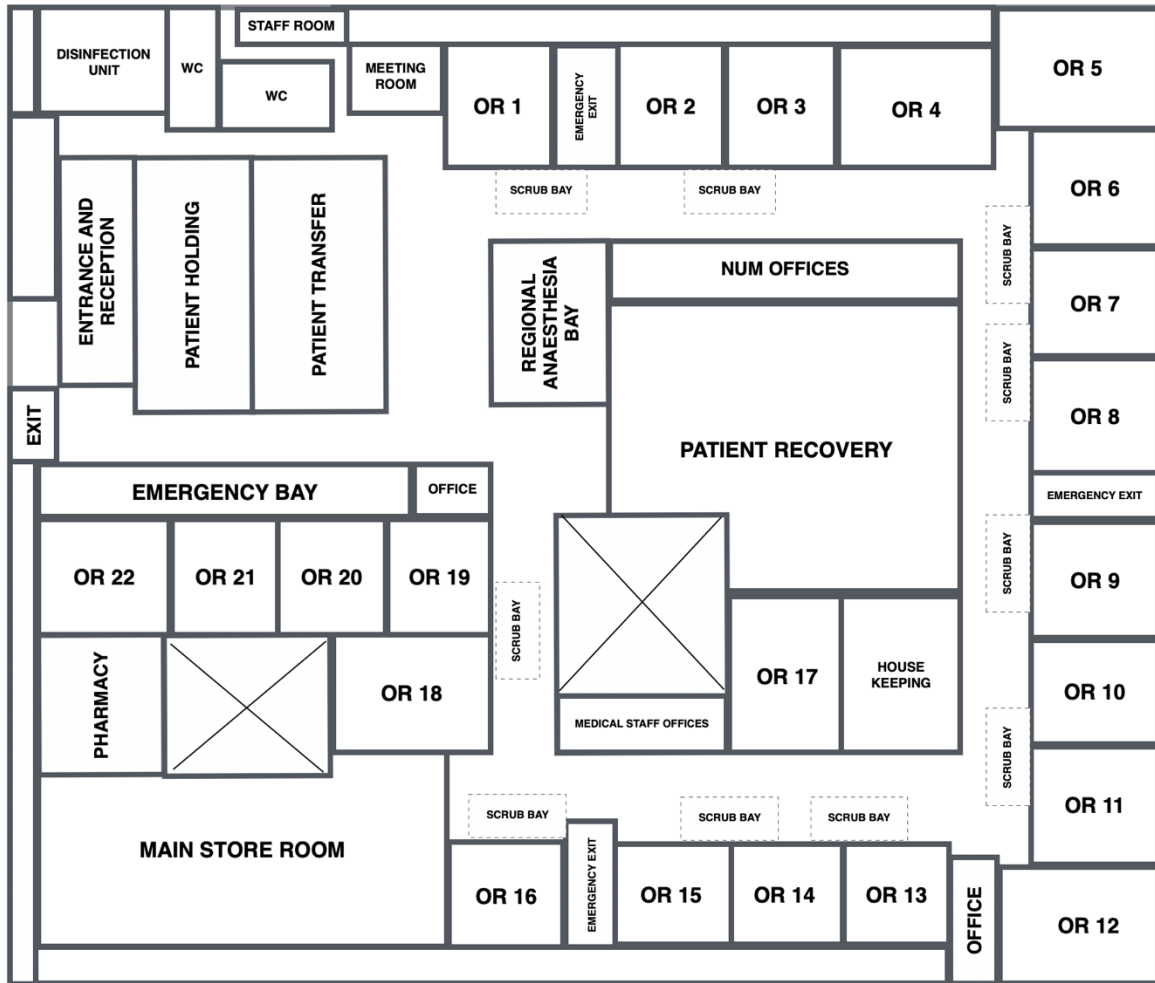


Figure 6.2: Schematic of OT Z

Source: Author's conceptualisation

6.1 Eliminating waste and optimising processes: using Lean in OT Z

Ohno's (1988) classification of organisational wastes is used to describe the Lean-based MCS of OT Z. In this section, each of these wastes will be defined in the context of the OT and the practices and measures used by the OTRMC to eliminate them will be highlighted. These Lean-based practices and measures together formed the

MCS in OT Z to the extent that they were used to ensure goal congruence and the execution of the OTRMC strategy.

6.1.1.1 **Overproduction.** To understand the concept of overproduction, it is crucial to figure out what the product of an OT is first. Although one may think that surgeries are the products and patients are the customers, this was not the case in OT Z. Since the OTRMC was a clinically independent entity, its customers were not patients, and its products were not surgeries. The centre's mission was to manage the assets and resources of the hospital and make sure they were used in the best way. Its products were fully staffed ORs and a wide range of logistical services associated with the delivery of surgery. Its customers were clinical departments looking to book the ORs to perform surgeries. Overproduction in OT Z was defined as a situation in which ORs were available and staffed but not being used for surgeries. A non-utilised OR is the equivalent of a produced item that is not ordered by a customer: it costs money, wastes productive resources, and does not generate any revenue. However, unlike a physical item that might be stocked and eventually sold, OR time cannot be stocked and is therefore utterly wasted if not used. To avoid waste, the OTRMC was using the Lean principles of *pull* and *production levelling* to reconcile the demand for ORs with their availability. Overproduction was checked monthly by measuring the OR utilisation rates. The OTRMC goal was to meet the ministry-set target of 85 per cent utilisation.

Avoiding overproduction and keeping high utilisation rates was the primary role of the OT regulator. They made sure that demand—expressed in operating hours—was aligned with the availability of the ORs. To make this possible, an extensive analysis of the surgical activity undertaken in the hospital was conducted and resulted in the creation of a Master Surgical Schedule (MSS). Using the MSS, the regulator pre-

allocated OR times to the different clinical departments. These allocations were indicative as opposed to being fixed and were subject to change based on fluctuations in demand. If a surgeon or a department were not fully utilising their time, their unused hours were transferred to any other department with more demand. If none of the departments needed the hours, the regulator was responsible for closing one or multiple ORs to avoid wasting resources. Fluctuations in demand and changes in allocations were closely monitored and tracked. A yearly analysis was conducted to update the MSS. In OT Z, ORs were only available if they were going to be used.

The MSS was also used to avoid fluctuations in production: i.e., production levelling. Getting rid of unevenness in the production process was crucial to avoiding the waste created when resources were used in an unbalanced way. Levelling in OT Z was possible thanks to increased predictability of cycle times: the time spent by one patient in an OR. In OT Z, a cycle time was broken into four different phases: 1. anaesthetic induction, 2. patient installation, 3. incision, 4. stitching and room cleaning. When submitting requests to book ORs, clinical departments were required to submit an expected duration for each of these phases. These theoretical estimates allowed the regulator to distribute the workload evenly across the different ORs. To make sure that the estimates were accurate, the OTRMC used a database to keep a record of all the surgical procedures conducted by every surgeon in the hospital. The database generated an average completion time based on the type of surgery and the name of the surgeon. During the booking process, estimates below this average went through a different approval process that required the departments to justify why the surgery was expected to be completed more quickly than usual. The database was also used to keep track of the activities taking place in the OT on an ongoing basis. The continuous use of the

database was crucial to keeping it up to date. Overflow rates were used to measure the efficiency of this levelling process.

Unlike manufacturing firms that produce standardised goods, the OTRMC had to provide a wide range of different services to clinical departments. Levelling production would not have been possible without reducing the setup and changeover times required when switching from one type of surgery to another. To reduce these times, three main product categories, referred to as “modules” were created in OT Z. Each module encompassed a variety of surgical procedures from different clinical specialties that were believed to require the use of similar resources (in terms of anaesthetic skills). Module 1 covered all head and neck surgeries; Module 2 covered urology, digestive and endoscopic procedures; and Module 3 covered all plastics, orthopaedics and neurotrauma surgeries. In OT Z, each of these modules was assigned six ORs, and the remaining four rooms were assigned to burn surgeries (1 room), emergencies (3 rooms). Surgeries were levelled within each of these modules by the OT regulator when booking requests were received from the clinical departments. When needed, and in the case of strong fluctuations in demand, surgeries were also levelled across the modules: a list of surgical procedures that could be conducted in any module was created and used by the regulator to that end. These surgeries were often benign and straightforward procedures that did not require specialised skills.

To support the creation of the modules, staff in OT Z needed to acquire a broad set of varied skills and work on a variety of surgeries. Historically, before the creation of OT Z, the nurses were under clinical leadership and were specialised according to their clinical affiliations. This specialisation was not considered problematic since OTs were small, run independently by the clinical departments and rarely covered more than

one speciality. Although this specialisation resulted in highly competent and skilled nurses, it was regarded as a significant obstacle to production levelling in OT Z. Developing versatility within and across modules, therefore, became an operational requirement as nurses who once belonged to a single specialty were being assigned to the different modules.

Overall, the creation of modules and the multiskilling of staff were crucial factors that enabled the OTRMC to effectively apply the Lean principles of *pull* and *production levelling* and successfully eliminate the wastes associated with overproduction and overflow.

6.1.1.2 **Waiting.** To eliminate the waste created when staff are idle or superfluous, the OTRMC implemented the Lean principle of *flow* to bring organisational problems to the surface and ensure the optimal use of resources. In OT Z, *flow* meant that once patients arrived in the OT, they triggered a set of three tightly coupled processes: anaesthetic, surgery, and recovery. Ideally, a patient would move seamlessly from one process to the other without delays or interruptions. Accurate scheduling was vital to ensuring this patient flow. In OT Z, scheduling was considered the operational nerve centre and was conducted daily by three full-time scheduling nurses (SNs). They were responsible for articulating, in the most efficient way, the flow of patients through the pre, intra and post-operative phases of their journey in the OT.

The scheduling process started one week before patients arrived. The SNs examined the list of patients provided by the regulator and made changes to either level the workload across the different ORs or to ensure an interruption-free journey for the patients. The SNs were considered a second safeguard and had the responsibility of ironing out any problems that might have been overlooked by the regulator. For

instance, they made sure that the correct surgery start times were communicated to patients and made a note of any patient requiring additional anaesthetic time or who presented a high risk of complications given their medical history. Identifying these patients was key to avoiding any last-minute delays or interruptions on the day of surgeries. In short, a major part of the SNs role was to pre-empt problems and delays by anticipating any potential issues and taking the necessary measures to neutralise their impact.

Beyond anticipation, monitoring was the other big task of the SNs. Most of their time was spent monitoring the progress of surgeries in the ORs and making sure that the predefined schedules were followed. As pace and time-keepers, the SNs made sure that the duration of surgeries provided by the clinical departments were respected. This was crucial to the overall performance of the OT; if surgeries were completed more quickly than expected the theatre would be overproducing, which meant that resources were underutilised and that bottlenecks were likely to occur due to the unexpected transfer of a high volume of patients to recovery. If procedures went beyond the expected time, the risk of overflow increased—generating additional costs, creating an additional burden for staff, and often leading to cancellations. To avoid both these scenarios, the SNs had to make sure that there was little to no divergence between the scheduled and actual durations of surgeries. When problems appeared, the SNs took the measures they believed were necessary to neutralise any negative impact.

In OT Z, visual controls were also used to improve and monitor the flow of patients. Both stationary and mobile computer units equipped with barcode scanners were placed throughout the OT and allowed the nurses to record in real-time the different stages of the patients' journey. This tracking information was consolidated

through a production tracking software that was used by the SNs to monitor the progress of the ORs and make on-the-spot informed decisions to avoid delays or interruptions. The progress of every OR was also displayed on large digital screens located throughout the OT. The screens allowed staff to know at a glance the state of the work being conducted in the OT.

This tracking software was crucial in managing flow in the OT as it incorporated a digital *Kanban* system. Used in manufacturing to signal the need for replenishment, *Kanban* was used to trigger the transport of patients to and from OT Z. As the SNs monitored the progress of the ORs, they sent out electronic transport requests to the patient transport unit. This system helped eliminate any idle times between surgeries that could result from waiting for patients to arrive at the OT. It was also helpful in regulating the outgoing and incoming flow of patients and eliminated the need for a large waiting area inside the OT.

6.1.1.3 ***Excess inventory.*** In OT Z, booking a patient triggered a series of logistical operations aimed at ensuring the availability of the equipment needed for the surgery. To avoid the unnecessary costs and waste associated with bulk purchasing equipment and the need for storing them on-site, medical devices nurses (MDNs) looked after booking requests to identify the necessary equipment and materials and ordered them on a case-by-case basis. MDNs were also responsible for tracking inventory movements of consumable items, ordering re-usable equipment and ensuring that they were delivered and internally processed in time for surgeries to take place. They were additionally responsible for maintaining strict traceability by linking the used equipment to the corresponding patients for quality assurance purposes.

This just-in-time approach was also extended beyond the procurement of single-use items in OT Z and covered the sterilisation procedures. Historically, equipment was disinfected and sterilised inside the OTs. However, given space and time requirements associated with maintaining these activities in-house, the OTRMC decided to base these processes at an off-site facility. A small, semi-mechanised, pre-disinfection area was maintained on-site where a specialised sterilisation nurse prepared and packed equipment before sending it to the external facility.

6.1.1.4 *Transportation and motion.* In its architecture, OT Z incorporated elements to optimise staff circulation, notably by reducing any unnecessary movements. Access to frequently used equipment was facilitated by storage areas, located in proximity to the ORs, that were easily identifiable due to a bright orange floor colour. These areas were reserved for the storage of mobile equipment that was frequently used by staff but did not need to be permanently stored inside the ORs (e.g., amplification devices, laparoscopic stations, scanners, or electric scalpels). Equipment used in every surgery—such as ophthalmic microscopes, surgical lights, and cameras—was often directly mounted to the ceiling or walls of the ORs. These architectural modifications were designed to reduce the time that would otherwise be wasted if nurses had to search for and transport this equipment.

To further reduce unnecessary movements, jobs in OT Z were simplified to enable standardisation and continuous improvement. Whereas in the past nurses conducted organisational or logistical tasks such as replenishing storerooms, managing patient flow or ordering equipment, these tasks were handed over to specialist staff in OT Z: MDNs handled all the logistical tasks related to ordering equipment, STNs disinfected instruments, SNs managed the flow of patients, and finally auxiliary nurses

took on the tasks of organising and replenishing the storeroom as well as cleaning ORs. Redefining the scope of the different jobs in OT Z was crucial as it facilitated their standardisation.

To standardise the different tasks, the OTRMC predetermined the duration required to execute them, the order in which they were conducted and the level of inventory available to staff when carrying them out. In OT Z, completion times for the different tasks executed by the nurses were pre-defined during the scheduling and booking stages and were provided by the clinical departments for each surgery. If these times were not specified, a default value was attributed to them by the OTRMC in accordance with national guidelines: 10 minutes for installing the patient and anywhere between 5 to 20 minutes to clean an OR. Nurses also did not control when their actions would start and finish. Given the sequential nature of the work carried out in the OT, task start-times were dependent on the completion of their preceding ones. As for inventory, it was controlled and monitored by the MDNs.

Standardisation in OT Z stabilised processes and allowed the nurses to focus on delivering value-added tasks. This helped them to more fully utilise their core competencies and skills.

6.1.1.5 ***Over-processing and defects.*** Safety and quality were monitored in OT Z using a national patient safety checklist. Compliance with quality standards was evaluated every five years by an external, ministry-affiliated audit agency through a certification process. From the OTRMC's perspective, standardisation and job simplification were key to avoiding over-processing and defects while striving towards operational excellence. By clearly defining the roles of each nurse, the OTRMC was able to eliminate any over-processing that would otherwise result from overlapping

roles and responsibilities. Tightly linking all processes together made it easier to identify errors and defects as their impact on performance was emphasised and rendered immediately visible. Defects and quality problems often brought the entire OT activity to a halt, which created a sense of urgency amongst the teams to address them.

When problems surfaced, an in-depth investigation by a dedicated quality assurance manager was systematically conducted with the aim of refining and optimising the existing processes. The manager used a four-stage approach based on the Deming PDCA (Plan, Do, Check and Act) approach (Dudin, Frolova, Gryzunova, & Shuvalova, 2015) to solve the problem and implement new solutions.

The OTRMC also implemented a new electronic error-declaration system that enabled staff to report any errors, dysfunctions, or defects to the quality assurance manager. The software allowed them to make suggestions as to how the problems could be solved and/or avoided in the future. Every report triggered an investigation process that began with a root-cause analysis and ultimately led to the implementation of a standardised solution.

6.2 The nurses' experience of the Lean-based MCS in OT Z

Having presented the Lean-based MCS used in OT Z, this section will draw on Blauner's taxonomy of alienation to account for how the nurses experienced it. Building on the Marxian premise that modern organisations exhibit dominant alienating tendencies, Blauner aimed to identify both the conditions under which workers' alienation is intensified and to characterise its various forms and impacts. Through a series of four case studies, he argued that different work environments lead to variations

in the forms and intensity of alienation. According to Blauner, alienation is a multidimensional concept that manifests when:

Workers are unable to control their immediate work processes, to develop a sense of purpose and function which connects their jobs to the overall organisation of production, to belong to integrated industrial communities, and when they fail to become involved in the activity of work as a mode of personal self-expression (1964, p. 15).

Loosely following Seeman's (1959) classification of alienation, Blauner identified four subtypes of alienation: *powerlessness*, *meaninglessness*, *social alienation* and *self-estrangement*. For each of those dimensions, Blauner also described their opposite non-alienating states of *control*, *purpose*, *social integration*, and *self-actualisation*, respectively. Blauner's analysis of alienation gravitates around four central dichotomies; the subject and the object, the part and the whole, the individual and the social, and the present and the future. Each of the alienating states increases the likelihood of workers being objectified—used as a means to an end. In this section, each of the four dimensions of alienation identified by Blauner (1964) will be defined and used to account for how the nurses experienced the Lean-based MCS used in OT Z.

6.2.1 Powerlessness. As opposed to artisans who have considerable control over their work rhythm and movements, Blauner highlights the state of powerlessness as a dimension of the alienation of modern workers faced with machine systems that control their pace of work and restrict their movements. In his views, this powerlessness stems from four characteristics of modern industrial relations: the worker's lack of ownership of the means of production, their inability to influence managerial decisions, their lack of control over the conditions of their employment, and their lack of capacity to control their immediate work processes. This subsection will reveal how the nurses interviewed

in OT Z described a state of powerlessness in the face of a machine-paced system in which they had no control over the quality of their work and restricted freedom of movement

6.2.1.1 ***Lack of control over the pace of work.*** An upgraded information system was at the heart of the Lean transformation of OT Z. Beyond its crucial role in scheduling and booking patients, the software dominated the daily running of the OT and was an essential tool of visual management. It was described as the most used piece of technology by the SNs on any given day. It allowed them to easily visualise the state of production within each OR. The following paragraphs describe the software, its functions and account for its impact on the nurses in OT Z. Due to ethical and privacy concerns related to the disclosure of patient information, photographs of the software were not collected.

On the main software page, every OR appeared on a separate row in which boxes containing the names of patients were displayed chronologically according to the time of their procedures. At the top of the screen was a 24-hour timeline that allowed SNs to navigate to any hour on any given day. A white background extended from 8 a.m. to 6 p.m. to highlight the opening hours of each OR. Outside this timeframe, each row was greyed out to signal that surgeries were not authorised to take place. Beyond this simple visualisation function, a live tracking feature was also incorporated in the software. A vertical red line, overlapping the 22 rows, slowly slid across the screen indicating the exact time of the day. As time went by, completed surgeries were passed by the line and were greyed out as they disappeared from the screen, while the remaining scheduled surgeries became visible. Merely looking at any row and finding the red line helped identify how many surgeries were completed in a specific OR and

how many remained to be done. To make it easier to visualise progress, each of the four intra-operative times was represented by a different colour code: anaesthetic induction in blue, patient installation in orange, surgical incision in red and stitching and cleaning in pink. During every surgery, scout nurses recorded the start of each of these phases using the computers located in the ORs. When a new phase started, the colour of the box containing the name of the patient changed accordingly. This change was visible immediately to all users of the software in real-time. By looking at one screen, the SNs were able to quickly identify the stage of each surgery and follow their progress as it unfolded.

In addition to all these visualisations and tracking features, the software also systematically compared the planned and actual start/end times for each of the four intra-operative phases. The result of these calculations was also visible in real-time to all users of the software. In fact, the size of each box (containing the patients' names) was determined by the planned start and end times of the surgeries they represented. If the actual times matched the scheduled ones, the size of the boxes remained the same. When there was a divergence, the size of the boxes changed accordingly: if a surgery finished earlier than expected, the boxes became smaller, and if a surgery started earlier than expected they moved forward on the timeline. When surgeries did not start on time, the sliding red line pushed the boxes across the screen instead of overlapping them. Each box—as well as the boxes corresponding to the subsequent time-slots—would keep moving until the start time of the surgery was recorded. Beyond the simple visualisation of delays, this real-time tracking feature was at the core of the software as it transformed it into a fully-fledged decision support tool for the SNs.

When a box was displaced or changed its size, the software automatically recalculated the start and end time for all the subsequent surgeries and repositioned them along the timeline. Users of the software were thus not only seeing the delays but visualising their consequences instantaneously. Interviewees described this software as placing the OT activity on a virtual conveyer belt. The variation between actual and scheduled times determined the pace of that belt and the job of the SNs was to make sure that staff were keeping up. The production line and conveyer belt metaphors were frequently used by the nurses during the interviews when describing the work environment in OT Z. The lack of control over their work rhythms and the constant pressure to maintain the pace was perceived by many staff as a source of frustration – and signalled their powerlessness.

Since the OTRMC used the Lean principle of *pull production* to maximise the utilisation of ORs, schedules were often full, and there was little room for variability. Any slight unpredicted delay, therefore, became a significant source of anxiety for the nurses who had to work faster to get through the scheduled surgeries and avoid overflow. The constant sense of urgency and the need to work quickly did not seem to be the main source of irritation for nurses, though. Rather, it was the fact that this pressure was constant—even when they lacked familiarity with some of the surgeries allocated to them there were no concessions. The inability to vary efforts in line with alteration in their mood, energy and skill levels made it difficult for the nurses to regulate the degree of pressure in their work situations. When operating at high speed, the pressure became unrelenting, and there was no time for them to relax. This was particularly problematic when there were significant rates of unplanned sick leave amongst the nurses and the teams subsequently became thinly stretched. In such

situations, lunch, tea, and bathroom breaks were significantly delayed. This lack of control over the pace of work, when coupled with the absence of slack, insufficient training, and the unpredictable nature of events in OTs was a significant source of strain for the nurses who felt the constant pressure of having to do more and do it faster.

We always have to go fast. Installing the patients, putting them to sleep. We do not even see them because you quickly have to do this and that (Scrub/Scout Nurse, OT Z, author's translation)ⁱⁱ

The time pressure and lack of control over the pace of work mentioned by the nurses highlights the performative dimension (Strum, Callon, Latour, & Akrich, 2013) of the software adopted by the OTRMC in support of its Lean-based MCS. The visual management tools used in OT Z influenced the behaviour of staff, and thus these tools did not only represent, but contributed to, the creation of the reality they described. The screens mounted on the walls and the computers located within the ORs always displayed the live progress of each OR. The visualisation of delays and their consequences prompted nurses to work faster to keep up the pace. The performative qualities of visual management brought to life this digital version of the conveyer belt, along with its inexorable control over the pace and rhythm of work within OT Z. The performative role of the screens and the software was highlighted by one of the managers who was asked about the different durations allocated to the four phases of each surgery. Using the example of the OR cleaning time, the manager explained how the pressure to go faster becomes formalised by the mere fact of its visibility on the timeline broadcasted on the screens around the OT:

They [auxiliary nurses] are urged to perform tasks very fast. There is real pressure to maintain the high turn-around of the rooms by making sure surgeries are done quickly one after the other. This pressure is partly informal because surgeons are often waiting for them to finish cleaning and everyone knows they [surgeons] do not want to be kept waiting.

However, it is also formal, because from the moment it shows on the screen that you only have 20 minutes to do stitching, dressing, and cleaning, the pressure is exerted from the outset, it becomes formalised. (OT Manager, OT Z, author's translation)ⁱⁱⁱ

6.2.1.2 ***Partial control over quality.*** Along with the lack of control over the pace of work, nurses in OT Z described how they had only partial control over the quality of their work. The constant pressure to get through patients quickly worked against their desire to perform according to their standards of professional excellence. The inability to determine the quantity and the rhythm of production made it hard for them to sustain the levels of quality judged to be satisfying from their perspective. To most participants, this was a negative aspect of the new organisation in which quantity and quality seemed to be located at the opposite poles of a paradoxical injunction.

The difficulty of producing quality work was reported as being exacerbated by the anonymous and impersonal atmosphere of the OT and the lack of recognition of high-quality performance. Although the new error-declaration system allowed the nurses to voice their concerns and suggest new ways of working, the process was often described as lengthy and requiring considerable time and effort, which made it relevant for major or life-threatening issues but not so much for minor day-to-day changes. In this context, the acceptance of occasional suboptimal performance instead of continually striving to achieve uniform standards seemed, paradoxically, to give the nurses a sense of control over their performance. The partial control over the quality of work, and the frustration it generated was best explained in the words of an anaesthetic nurse who tried to describe why the OT felt like a factory:

It [the operating theatre] feels like a factory because I get the impression that we are working on an assembly line and not really delivering optimal care to the patients. This is simply because we do not have time to do so. I am not saying the work is not well done, we all have a professional

conscience and we do our best for the patients but there are days when things could be done a little bit better. But that does not depend solely on us though, the structure is now so huge that we have become dependent on a lot of people. The structure is so big and that makes everything a little bit more impersonal; no one is responsible for anything and people generally feel less concerned If you want to do a good job, you need to be able to take your time, but that is no longer possible in this type of structure. We need to be profitable. We need to bring money in. (Anaesthetic nurse, OT Z, author's translation)^{iv}

6.2.1.3 ***Lack of free movement.*** In OT Z, the rationalisation of work associated with the standardisation of tasks and the implementation of Lean also significantly reduced the nurses' freedom of movement. Nurses were allocated to an OR, and they spent most of their shift within the rooms. Their movements were limited to the necessary motions that directly contributed to the surgeries they helped conduct. If a nurse needed an additional instrument or a piece of equipment that was not stored in close proximity, they were instructed to contact an auxiliary nurse using the phone located in the OR. If they needed to go to the bathroom or have a break, they were required to contact their managers or the SNs to find someone who could replace them during their absence.

Standardising the work of the nurses in OT Z required the removal of all tasks they previously conducted outside of the ORs, and that limited their physical freedom by restricting them to a single workstation. The lack of free movement was often mentioned by the nurses when referring to the non-visual aspects of the OT; since they were always behind the doors of the ORs, the nurses were unable to see what was happening around them and mentioned being simply unaware of their surroundings. The only way for them to know what was happening outside the walls of the ORs was to look on the computer screens displaying the progress of the rest of the team. This was explained by one of the scrub/scout nurses during an interview:

When you are in the operating room, you cannot know what is happening outside unless you specifically go looking for the information in the software. You are locked inside, and you are told through a phone call when you can go have lunch, take a break, or if you are needed elsewhere. [...] The theatre is not visual; you cannot tell whether there are still people working around or whether everybody else has left. I mean, you assume they are working but you do not really know unless you check the computer. You are kind of in your task, you do your thing, and you don't know what else is happening around. (Scrub/Scout, OT Z, author's translation)^v

6.2.2 Meaninglessness. Blauner identified meaninglessness as the second dimension of alienation in work settings. To him, it results from an increased tension between the functional rationalisation that characterises modern industries and the substantial rationality of employees. In the context of ever more fragmented and rationalised work processes, jobs became simple and the workers' level of responsibilities was diminished. He described how, in the name of efficiency, jobs were broken down and subdivided to the point that individual employees were robbed of any sense of purpose in their actions. As organisations become more complex and divided, the workers' understanding of their workplace becomes reduced and their capacity to act based on their insight into the inter-relations of events declines. Meaninglessness, according to Blauner, is inherently related to workers' inability to develop a sense of function and see the relationship of their contribution to the overall organisation. Meaninglessness was a salient theme in the empirical examination of how the nurses experienced the Lean-based MCS in OT Z. This subsection will discuss how, in an ever more fragmented organisational system, the nurses in OT Z were under increased

pressure to be versatile and became unable to identify with the tasks they conducted as their scope of responsibilities became increasingly restricted.

6.2.2.1 *Increased functional rationalisation.* The increased fragmentation of tasks and the reliance on specialist staff to carry out the logistical and support activities in OT Z meant that the nurses were left with only a limited set of tasks to complete. This extreme rationing of activities along with their standardisation was often criticised by interviewees as it made it difficult for the nurses to derive any sense of purpose from the work they were doing. This was further amplified by the cyclic nature of the work and the time pressure to which they were subjected. These two aspects engaged the nurses in a task-oriented dynamic where the focus was placed on the timely execution of a set of tasks before patients moved onward in their OT journey and were removed from their responsibility. The lack of meaning was clearly expressed by the interviewed nurses who often used the term “*intervenant*” (operator) or “*techniciens*” (technician), when describing what they did in the OT. The choice of this term emphasised the technical and task-oriented nature of the job as opposed to what our participants considered to be a more involved, meaningful, and compassionate work of a “nurse”:

I am not looking after people anymore; I am only doing interventions, because we have to be fast. I did this job because I like the technical aspect but also the human dimension of it. I lost that human dimension and all I have left is the technical aspect. (scrub/scout nurses, OT Z, author’s translation)^{vi}

6.2.2.2 *The injunction of versatility and the lack of identification with the tasks at hand.* A sense of alienation brought about by the meaninglessness of work was further intensified by the nurses’ lack of clear identification with a surgical specialty or a group of specialities. Although in the OT, the nurses were allocated to a specific module, they were expected to work across the other two. Within modules, the nurses

were not able to choose a specific surgical specialty in order to maintain a level of flexibility in the face of varying surgical demands. The necessity to be versatile and multiskilled made it difficult for the nurses to derive a clear sense of their function from their assignments. This was accentuated when they were asked constantly, and with very little notice, to change ORs, or when scheduled patients were cancelled or assigned to someone else at the last minute. In OT Z, to minimise organisational dysfunctions and limit the impact of delays and absences, the SNs often switched patients from one OR to another to maximise the use of any idle times. This practice was supported by the OT managers and was deemed necessary to avoid the nurses working after hours, as one of the SNs explained during an interview:

We change patients from one room to the other, sometimes at the last minute, to try to make sure all the rooms are full and save some time...when we see that we are short on time, we proceed to change patients to make sure that they all get the surgery and that we finish on time Changing the room means that a nurse could be very well preparing for plastic surgery (a belly or a breast) and end up finding herself with an orthopaedic surgery instead (a hip or an ankle fracture). They have the skills, but I understand that it is frustrating because they saw their lists in the morning and prepared for them and then it changes last minute. It creates stress, understandably. They can also be asked to leave the room and go to a completely different room if their skills are needed somewhere else. So yes, we make changes because otherwise, we will never finish on time. We are also in pursuit of optimisation; we are asked to make sure all the rooms are adequately utilised and that means that I cannot have a room with a big idle time while in the meantime another room is running behind and will eventually overrun. It does not look very nice; it is better to have all the rooms filled and all the patients operated on and everybody finishing on time. That is how you do optimisation. (SN, OT Z, author's translation)^{vii}

The negative impact of these constant changes and the inability to relate to the jobs allocated to them was expressed by the nurses who described how they were engaged in a utilitarian relationship with the hospital. They often used the term “pions” (pawns) in reference to how they were instrumentalised to achieve organisational ends.

The pawn can be seen as a metaphor for their powerlessness, but also shows how tasks can become meaningless when the reasons for instructions are not understood. One of the interviewed scrub/scout nurses explained this well:

I find it extremely tiring to have to palliate organisational dysfunctions. For example, I am trained to work on the three modules and the same day, I will find myself working on all three. You become like a gap filler. I am no longer that person who will be in this room with these patients, I am the person who will be running around trying to palliate for dysfunctions. I fill the gaps. You are just a name on a paper, and they tell you where to go without really thinking about your overall well-being, and I find that to be the most negative aspect. (scrub/scout nurse, OT Z, author's translation)^{viii}

6.2.2.3 *Limited responsibilities and lack of purpose.* In OT Z, meaninglessness also seemed to be related to the fact that staff were not required or expected to have any skills that extended beyond those needed for the completion of the immediate tasks allocated to them. Their contribution was limited only to the manual and technical execution of their jobs and their knowledge and experience was not used to help improve the overall performance of the OT. The absence of meetings and formal exchanges between the managers and the nurses exacerbated the nurses' sense that they were not expected to contribute anything other than their small tasks. As one nurse explained during an interview, the nurses did think about organisational issues and ways to improve performance, but their ideas were rarely taken into consideration or even listened to:

At our level, we are always talking about organisational problems and ways to improve and solve them. We talk about these things between us, but it stays at that level. (scrub/scout nurse, OT Z, author's translation)^{ix}

6.2.3 Social alienation. Social alienation in the form of isolation is the third dimension of alienation identified by Blauner (1964). To him, isolation implies the absence of a sense of membership of an industrial community. Workers thus feel no

sense of belonging in their work setting and are unable to identify with the goals of their organisation. Isolation for Blauner is closely tied to the breakup of integrated communities in modern society and the wider processes of industrialisation that destroys traditional normative structures. The absence of normative integration and feelings of anonymity and isolation are reflective of this dimension of alienation. As well as powerlessness and meaninglessness, signs of social alienation were identified in OT Z. This subsection will describe how the lack of normative integration and the atrophied group structure in the OT contributed to what the nurses described as a state of social alienation.

6.2.3.1 ***Breaking up traditions and the absence of normative integration.*** OTs are closed environments by nature; staff are sheltered in a controlled space that isolates them from the rest of their surroundings. With regulated access, mapped circuits, distinctive uniforms, and strict hygiene rules, OTs are unique environments even to their closest neighbours in the hospital. This idea of a world apart is further reinforced by the physical and temporal confinement of staff which often leads to the development of an indigenous OT community characterised by a substantial cultural heritage, a collective autonomous capacity and strong levels of involvement and investment from staff. The importance of this cultural heritage was often mentioned by nurses during the interviews when they highlighted the familiar and traditional cultural aspects of the OTs they had previously worked in:

When I first started in operating theatres, I was 30 years old, some people were my parents' age. They taught me everything. One of the old nurse unit managers just retired, she was like my mom. We really had a strong connection with everyone, we were like a family, people were big brothers, sisters, and mothers. Now there are people within your module that you will not even see the whole day because you are stuck in your

room. The next day they come and ask you “Were you on break?” – “No, I was just in the room.” (scrub/scout nurse, OT Z, author’s translation)^x

The family analogy used by the nurse was reflective of a feeling of loyalty and belonging to a group in which there was a robust normative integration. The participants described a world where tradition and respect for more senior staff were crucial and where the older generations passed on knowledge to the younger. After the consolidation and the creation of OT Z, the size of the teams was multiplied, which profoundly altered the nature of the relationships between staff. During interviews, all the nurses mentioned the impersonal and anonymous feel of the OT:

When I walk in the operating theatre, I get the impression of being drowned in a mass where I do not know who is who, and who does what with who? It is very anonymous and very impersonal. (scrub/scout nurse, OT Z, author’s translation)^{xi}

That feeling of depersonalisation and the sense of anonymity within the general masses was described by Blauner (1964) as the result of the lack of differentiation between staff in industrial settings. Where differentiation is present, internal levels of status and reward are reflections of the degree to which an employee contributes to the goals of the organisations (Blauner, 1964). Those holding the highest positions are often custodians of the norms and values of their firm and tend to encourage those in lower positions to identify with the same norms to achieve greater rewards.

In OT Z, the nursing hierarchy was flat. Becoming a nurse manager was the only opportunity nurses had if they were looking to further their career. However, a manager’s role was considered by the nurses to be dissociated from direct patient care and was only thought of as an opportunity for those who were no longer interested in practising and were looking to change their profession. In OT Z, nurses stayed at one level until they no longer wished to practice or were considering becoming managers.

This lack of stratification contributed to the social alienation of nurses in two ways: first, they were not required to demonstrate any skills, take any initiative, or show their resourcefulness, qualities that are usually required and encouraged when considering someone for a promotion. This created a comprehensively cynical attitude amongst nurses who reported that the quality of their work and their investment in the organisation were no longer rewarded or recognised:

In here, you just do your hours, you go have lunch, do some more hours and then you go home. It is every man for himself, it is very individualistic. (scrub/scout nurse, OT Z, author's translation)^{xii}

Second, the senior and more experienced nurses no longer played their roles of norm custodians and were not recognised as such. Due to the increased need for versatility, there was a sense that more experienced nurses were unproductive and inefficient due to their narrow scope of expertise. They were no longer “fathers” and “mothers” who transferred their knowledge and know-how to the younger generation, ensuring their normative integration in the process, instead they were considered “obsolete” and “obstacles to change”. One of the senior nurses we interviewed expressed this pressure to be versatile and the subsequent loss of expert status:

Today, they are asking us to do everything. First, we resisted but it eventually happened. It was not easy. Especially when you were an expert before. (scrub/scout nurse, OT Z, author's translation)^{xiii}

6.2.3.2 Atrophied group structure. In OT Z, most jobs were done individually rather than by teams of employees. This was in part related to the nature of work in that field but also due to the extreme rationing of the work processes and the creation of support roles to cover all the tasks previously done in groups by the nurses. Although they were able to communicate in the ORs, the lack of physical mobility limited the nurses' interactions to their colleagues working on the same operations. Additionally,

the high level of cognitive engagement and focus required to carry out their tasks prevented them from developing any meaningful connections and limited their interactions to a superficial level. The superficial and limited social interactions made it difficult for the nurses to derive any sense of social satisfaction from their jobs and impacted the overall team spirit and cohesion. As one nurse pointed out:

Before, we used to get together and talk. Talk about organisational problems, talk about personal problems, patient's problems ... but now it is no longer possible. We do not have the space to do it, and indeed not the time to do it. It is not good. Relationships within teams are fostered and created when people meet at their workplace and talk about something other than work. However, now we can no longer do that. People talk, certainly they do, but you talk with one or two people and that is it The consequence? People care less about others. (scrub/scut nurses, OT Z, author's translation)^{xiv}

With social alienation intensified and group structure atrophied, nurses appeared to have turned to their occupational communities as they searched for a sense of membership and belonging. When asked to comment on the relationship with their colleagues in OT Z, nurses pointed out the existence of distinct and separate functional groups. Although members of these groups naturally worked together during surgeries as they each made a different contribution, the nurses did not feel as if they belonged to a truly welded multidisciplinary work collective. This could be attributed to the task-oriented organisation and the extreme rationing of work processes, as well as to the lack of social connections. Occupational communities seemed to provide the nurses in OT Z with the sense of membership and belonging they lacked due to their social alienation.

In the break room, people do not mix. Everyone stays with people from their rank (Anaesthetic nurse, scrub scout or auxiliary). People do not mix; it was not like that before, I remember. (auxiliary nurse, OT Z, author's translation)^{xv}

There is no collective. Other than a group of people that knew each other before coming here, there is no collective. The break room, for instance,

you go there, and everyone is individually doing their thing. People do not talk to each other. I mean you sometimes see people that you know, but there are also many people that you do not know. (scrub/scout nurse, OT Z, author's translation)^{xvi}

Before we worked in small teams, in each, we had a scrub, scout, anaesthetic and auxiliary nurse along with the surgeon and the anaesthetist. We worked together as a team, and we had strong ties that we no longer have in a large structure like this one. We had a lot of solidarity and interprofessional support, there were not things like "You are an auxiliary nurse, you do the cleaning while I do the noble task of taking care of the patient." That did not exist, and everyone helped when we were cleaning and installing the patient. Of course, we had specific tasks that only certain people can do because they have the qualifications. However, when the surgery was over, no one would stop and say: "I am going to get a coffee while you others do the cleaning". Everyone stayed and helped until the room was clean and everything was back at its place, and then we would have a moment of conviviality together. We would share a coffee, and that was super important. It is something we lost in a big structure like this. We divided the groups. The teams are bigger, and people tend to form groups based on their occupation. In small structures we had multi-disciplinary teams, and now we have occupation-based teams, and it is not a very good thing for support and teamwork. (scrub/scout nurse, OT Z, author's translation)^{xvii}

When asked about teamwork, the nurses also mentioned the absence of true interprofessional collaboration between the different functional groups. An informal hierarchy between auxiliary nurses, scrub/scout nurses and anaesthetic nurses seemed to have emerged based on qualifications and areas of practice. Anaesthetic nurses were at the top of the hierarchy; they had the highest degrees and were seen to be doing more patient-centred care. At the opposite end were auxiliary nurses whose qualifications ranked below high school diplomas in the French qualifications ranking system and who were seen to be doing accessory tasks. The atrophied group structure and the distinct occupational groups intensified these informal ranks and hierarchy, negatively affecting teamwork in OT Z. The nurses tended only to execute tasks that were seen as suited to their rank within the hierarchy. The focus was no longer placed on the process

of completing a surgery as a team but instead on the individual execution of a specific set of tasks within the scope of practice of each profession, as suggested in the extract below:

I find that team spirit is entirely non-existent. Everyone does his small role. I find that there is a world of difference between the anaesthetic side, the surgical side and the recovery side. Before, it felt like everyone was working together. We were not necessarily more in numbers, there were less of us, and maybe that was the reason. In the end, people work more as a team when they are in small numbers rather than when they are in big numbers. When there are too many people, people tend to watch others do the work instead of doing it. I have worked in places before where, when a patient was in the room, whoever was free helped with the installation and the preparation. Here you will never see that. That is why there is a split, in fact. People will not help you if you are not doing the same thing as them. There are exceptions of course, but yesterday, for instance, a team of three surgeons were waiting to get ready, but the auxiliary nurse was busy setting up the patient. The anaesthetic nurse kindly went to help the surgeon get dressed, and so the anaesthetist in the room tells her “You would be better off double-checking the anaesthetic tubes instead.” That is what I mean. Everyone should stay in their corner and not help anyone. Because she is an anaesthetic nurse, she is expected to do only anaesthetic nurses’ tasks and not help the surgeon because that is someone else’s job. It is undoubtedly specific to this person, but we see it a lot here. (scrub/scout nurse, OT Z)^{xviii}

6.2.4 Self-estrangement. Self-estrangement is the last of the four dimensions of alienation described by Blauner. To define it, he refers to Marx’s original description of work becoming an instrumental activity subordinated to the realisation of the workers’ most basic needs for food and shelter. According to Blauner, workers are self-estranged when their jobs become simple means to the end of making a living. Work in that context evokes a sense of boredom and monotony instead of a sense of purpose, self-expression, and self-actualisation. To the sociologist, self-estranging activities are

characterised by the absence of growth and constitute a threat to the development of positive occupational identities.

In OT Z, the nurses we interviewed highlighted the intrinsically involving and interesting nature of their work. The hospital was recognised as a world-class institution that provided a wide range of surgical specialties and often handled complex and rare surgical cases that were not done within private clinics. OT Z was also home to a wide range of cutting-edge equipment and technology. Everything from operating tables to patient monitoring devices, installation equipment and even cleaning tools were upgraded to match the latest industry standards, which provided staff with a more ergonomic and less physically demanding work environment. Additionally, OT Z was equipped with a high precision surgical robot, only available in 20 other hospitals in France, and was the birthplace of many clinical and technical innovations. All these aspects made the OT an attractive place for the nurses to work and contribute to its excellence.

There are benefits they get from working here. They do not have to carry heavy loads, and the beds are motorised, we have patient lifters, transfer mattresses. For the cleaning we bought new microfiber equipment that is more ergonomic and quicker. We use the latest most efficient products on the market. So, there are advantages and disadvantages to everything. Despite the disadvantages, there are also quite a few advantages and so they balance each other out (OT manager, OT Z, author's translation)^{xix}

Everything is new and modern, which is very good. We have pleasant and spacious operating rooms. We do not have to hurt our arms carrying heavy loads anymore, we have space to move in the rooms. It is nice. The bigger we get, the more things we have and the more we learn. To me this is a positive aspect. (scrub/scout nurses, OT Z)^{xx}

The nurses also mentioned the challenging nature of work that required their constant attention. In fact, working on a wide range of specialties and across modules

required the nurses to be always alert and engaged as they learned new techniques and procedures. The uniqueness of every patient and their surgery made the nurses' work more engaging despite its cyclic nature. Some of the nurses felt that working in the OT was preparing them for future jobs and that, with such a broad skill set, they would not have any difficulty finding a job in another institution or in a private clinic if they wished to do so.

I have learned a lot of things and it is going to be a steppingstone for something else. Overall there is some degree of reward, despite the conflicts and the dysfunctions. We still learned a lot from all that and I am learning more about my job and how it is changing and will change in the future. Anyone who works here really has a lot of skills that will make things very easy if they want to go elsewhere. (scrub/scout nurses, OT Z, author's translation)^{xxi}

Finally, the nurses' viewed their work chiefly as an end, rather than a means to satisfy other ends. When asked about their role, guaranteeing patient safety and quality were at the forefront of the nurses' answers. Delivering optimal care in the best conditions possible was a priority for all of them as they took pride in the service they provided to patients and to the community. Signs of self-estrangement were thus only revealed when the nurses discussed their inability to provide patients with care that was reflective of their professional standards and ethos due to organisational pressures, time, or financial constraints. In such situations, the nurses explained how they became detached and did not always identify with the work they were doing, or, as the extract below suggests, comply with the directives of the managers:

Honestly, I do not care about the financial aspect. It is not my priority. If I feel like I need to use three packs of compresses in a surgery, I will use the three packs and not two because they are expensive. It is not good what I am saying because we must be careful. If I need to use something for a patient and I know that it is the best option for them, then I would use it regardless of the cost. (anaesthetic nurse, OT Z, author's translation)^{xxii}

There are times when you get out of here and you have that feeling that you did not do a good job. It is not necessarily related to you as a person but to the structure that made you have a lot of [silence]. You were not able to welcome your patient correctly because you were busy getting something ready or [silence]. You spend your 10 hours, you do what you have to do, you do your job, you try to take care of the patient in the best possible way you can, but it happens that at the end of the day you are not satisfied with what you did. Because when you take them to the OR and did everything you are supposed to do so they are relaxed, there is a whole approach they teach you when you are preparing a patient for anaesthesia, then one of the other nurses in the room pushes a metallic table that makes a horrible noise and freaks out the patient that you now have to put to sleep in suboptimal conditions. It is a bunch of little details that when combined just make you feel unsatisfied with what you did. I think this is related to the organisation. (anaesthetic nurse, OT Z, author's translation)^{xxiii}

I find it necessary at times just to detach and get a little bit of distance, otherwise [silence]. I try to find people who have the same values as me and with whom I can connect and create relationships. (auxiliary nurse, OT Z, author's translation)^{xxiv}

I know how to be detached, so when things happen that I do not like they will not disturb me as much. Well, they will disturb me when they happen, but they will not really get to me. (scrub/scout nurse, OT Z, author's translation)^{xxv}

6.3 Resisting alienation in OT Z

Elements of resistance to the forms of objective alienation to which the nurses in OT Z were subjected were also identified. They are described below.

6.3.1 Resisting depersonalisation. Given the sterilisation and aseptic requirements, all staff and visitors are required to wear green scrubs, head caps, shoe covers or change into sterilisable clogs before entering the secured environment of the OT. However, some nurses were wearing different kinds of head caps that were colourful, reusable and had the logos of their union groups printed on them. The caps were often critiqued by SNs who asked the uncomplying staff to change them for the more aseptic single-use caps. This request was often ignored. Participants were asked

about this issue, but they typically preferred not to answer questions referring to their apparel, highlighting that it was a non-issue. On the other side, the managers also did not wish to talk about reinforcing the wear of non-reusable caps. More widely, there is a current debate around the use of reusable cloth caps in OT from an infection control perspective. Reducing the risk of surgical site infection could, therefore, be the motivation behind the OTRMC desire to only use disposable caps. However, from a nurses' perspective, the choice of cloths caps with a syndical logo on them is arguably a way to resist the impersonal and anonymous feel of the OT, reaffirm their professional identity and become less "one of the masses". The depersonalising effect of the singular green outfit was particularly highlighted by managers who seemed concerned about security and maintaining control over the identity of people working in the OT:

The OT is big. There are a lot of people, so for me the difficulty here was to be able to identify them. Everyone is wearing green and so it becomes very complicated. It took me a lot of time to identify who was who and who I was speaking to. (OT Manager, OT Z, author's translation)^{xxvi}

We have so many people who come and go all the time. I always say that anyone could come into the OT if they are appropriately dressed. Fortunately, we have a swipe card system that keeps it secure, but it is sometimes impossible to know who's who, and who's doing what. The big structure makes it impersonal. (OT Manager, OT Z, author's translation)^{xxvii}

6.3.2 Defending functional identities. Forms of resistance to the alienating effects of meaninglessness amongst nurses in OT Z were also identified. For instance, when asked to perform surgeries that were not within their module, nurses were quite vocal in communicating their disagreements and sometimes refused to conduct the work allocated to them, which often led to conflicts in the OT. Although very few conflicts were witnessed firsthand during the research period, it is possible that the researcher's presence on-site stopped such events from happening. When tension levels were high,

participants often asked to go off-the-record, and on certain occasions asked for the research activities to stop. After a brief altercation with a nurse who was unhappy with her OR allocation, the SN on duty pointed out the researcher's presence and explained, *"She [the nurse] was only calm because she saw you there. Otherwise, she would have reacted completely differently"*. In fact, the nurses dubbed the SNs' office the "office of tears". The hospital offered all SNs in OT Z a variety of professional development courses in conflict management and resolution. These educational opportunities are revelatory signs of what one of the interviewed SNs described as a tense and conflictual work situation:

The scheduling nurse's role is a lot of things. It is also managing conflicts. Conflicts of all kinds (surgeons that are not happy, nurses that are not happy, auxiliary nurses that are not happy, anyone who is not happy really). Conflicts that are to do with cancelling patients to avoid overflow or switching them from one operating room to another. The management of conflicts is a daily thing that we do because we are in the middle of everything We are at the frontline and it's crucial for us to keep our calm and know how to answer questions, reformulate and control the situation when we see that things are starting to get too violent Conflicts are sometimes with surgeons but also with nurses who are not happy because they don't feel like they have enough training to do a procedure, or they have been doing long procedures for a couple of days, or they don't like the surgeon they are working with Operating theatres are closed and confined environments with a lot of conflicts and a strong hierarchy. It is not always easy and evident to navigate that And then we have strong characters, people who will be immediately very aggressive, and we know them People, informally, call our office the "office of tears" but that is not for nothing. Everything is concentrated in that office, all the activity, anything that is happening, it happens there. If there is any conflict, that is where it will happen, if people have things to say, that is where they will come and say them We did training, they were very helpful, training in conflict management, the management of violence and aggression and in handling stress. I made sure to go to all of them There are difficult moments; there are days that are not always very fun. The advantage is that we are three and we have very clear and direct contact with the managers who are made aware of any conflict that erupts and they defend us and have our backs. (scrub/scout nurse, OT Z, author's translation)^{xxviii}

The conflict and the strong opposition of the staff regarding last-minute changes that include transferring patients from one module to another were perhaps what prompted the OTRMC to create policies around such practices. A list of interventions that could be conducted in any of the three modules was created and approved by relevant clinicians who agreed that these surgeries only require a broad skillset and should be able to be done by any staff members regardless of their module affiliation. Conflicts in OT Z could be interpreted as a form of resistance to the extreme versatility, interchangeability, and their subsequent alienating effects on nurses.

6.3.3 Resisting social alienation. Signs of resistance to social alienation were identified in the interviews with auxiliary nurses whose number has been reduced as a result of their increased versatility in OT Z. Whereas in the old structure, every OT had its independent group of auxiliary nurses that were familiar with the speciality and the staff, in OT Z only one group of auxiliary nurses provided support to the nurses working across all modules. Every auxiliary nurse was allocated to two ORs and nurses got in touch with them by dialling an internal phone extension. Auxiliary nurses provided support to scrub/scout nurses in installing and transporting patients but also helped ferry equipment and tools from the main storeroom to each OR upon request from scrub/scout nurses. In OT Z, the atrophied group structure coupled with the deleterious informal hierarchy between nurses seems to have had a particularly negative impact on auxiliary nurses, who indicated that they were seen by the other nurses as being unproductive and not pulling their weight, as explained during the interviews:

Some people see us and do not even say good morning. The least you can do is say good morning to people when you see them. It is called being polite. It is true that it is very basic, but people need to understand that it

is important to say good morning to others and not just come in, go in their rooms, and do their thing. (auxiliary nurse, OT Z, author's translation)^{xxix}

When I first started, I had a team of auxiliary nurses who were really suffering because they felt like they were not recognised and not respected by the rest of the team I used to have a different nurse every day in my office complaining that auxiliary nurses were not doing their work, that they were always on break, that they were never there when they were needed When I started people were very aggressive towards each other. It was not rare to see someone yelling at an auxiliary nurse, "You are never here when I need you; I am going to talk to your manager." (OT Manager, OT Z, author's translation)^{xxx}

The self-estrangement and alienation associated with this lack of recognition and respect for the auxiliary nurses' role and tasks were counteracted by a set of measures and interventions that were piloted by an OT manager. The goal of the interventions was to foster confidence in auxiliary nurses by highlighting the importance of their role and the quality of their work. The OT manager created a checklist that covered all the tasks executed by auxiliary nurses and made sure they filled it out and signed it at the end of their shift. The goal of the checklist was to make the work of auxiliary nurses visible and allow other staff members to see for themselves the work that was being done. The manager also used an external audit company to assess the quality of the cleaning done by auxiliary nurses, and the results of the audits were made available to all the staff in the OT. By visually representing, tracking and independently assessing the work conducted by auxiliary nurses, the manager was trying to change the way they were perceived in the OT and thereby reduce their alienation.

We did a lot of work on valorising their profession and making sure they feel valued and convinced that what they do is important and that without them the OT would not function....We started doing audits and using checklists to record all the work done by auxiliary nurses. We used an external company to do bacterial audits, and the results were very good, and showed that the work done by the auxiliary nurses was very well done,

rigorous and that they were competent. The goal was to let everyone know that they were doing good work—that is meeting all the required standards....Tracking and listing all the tasks done by auxiliary nurses made these tasks visible because they were recorded and gave value to their work. Before the checklist, it didn't matter if they did the job correctly or not because it was not recorded anywhere. Now the checklists are on the door of every OR and everyone can see that the work has been done. At the start of every day, the scrub/scout nurses go over the checklists and see the work that the auxiliary nurse did. (OT Manager, OT Z, author's translation)^{xxx}

Chapter summary

This case study began by presenting the overall strategy of OT Z leading to the adoption of a Lean-based MCS: faced with internal financial constraints and the need to meet the Ministry-set KPIs of utilisation and overflow, the OTRMC deployed a set of Lean practices aimed at eliminating wastes and ensuring goal congruence to support the execution of its strategy. These practices are summarised in Table 6.1.

Table 6.1: Characteristics of the Lean-based MCS in OT Z

Waste	Example in OT setting	Lean measures
Overproduction	Having fully staffed and available ORs but no patients to operate.	Use flow, customer pull and production levelling techniques to avoid unused OT time. Multiskilling staff to reduce set-up and change over times. A new regulator position was created to ensure production levelling.
Waiting	Waiting for patients to arrive in OT.	Use of visual control and Kanban to manage flow and reduce wastes. A floor manager position was created to manage flow and troubleshoot daily problems.

Excess inventory	Bulk ordering of equipment and instruments.	Using just-in-time approach to order equipment and have them delivered just in time for surgeries. A MDN position was created to manage the logistics of equipment ordering and delivery.
Transportation	Moving items from and to storage areas.	Reconfigure space to create storage areas near ORs for frequently used equipment.
Motion	Time spent looking for or installing equipment.	Wall mounting equipment that is used frequently. Standardising tasks and stabilising processes to identify unnecessary movements that could be eliminated.
Over-processing	Overlapping tasks or work that needs to be done.	Standardise tasks, redefine scope of responsibilities to avoid overlap.
Defects	Clinical errors or mistakes.	Using checklists to ensure safety and quality. Creating a reporting tool for staff to signal errors and defects. Creating a quality-management position to work on process-refinement.

Source: Author's conceptualisation

The second section of this case study revealed how the Lean-based MCS was regarded as alienating by nurses to the extent that it contributed to their feeling of powerlessness, meaninglessness, and social isolation. The nurses in OT Z were powerless as they lacked authority over the pace of their work, had partial control over its quality and had limited freedom of movement. They described their work as being meaningless because of an increased functional rationalisation and a powerful injunction to be versatile, which made it harder for them to identify with the tasks they executed. The meaninglessness of their work was accentuated by their limited scope of responsibility. The nurses also described a state of social alienation as the OT lacked a functional process of integration and was characterised by an atrophied group structure.

Despite describing the Lean-based MCS as alienating, the nurses mentioned that their work was nonetheless rewarding. They highlighted the intrinsically involving and interesting nature of their work and some felt that it was preparing them for their future jobs. The interviewed nurses viewed their work as a worthy goal in itself. They took pride in the services they delivered to patients and to the community. Signs of self-estrangement were only revealed when the nurses mentioned the inability to provide patients with care that reflected their professional standards and ethos due to organisational pressures, time, or financial constraints. Signs of resistance to the alienation were also identified and discussed.

Chapter 7

A non-alienating Lean-based MCS: the case of Ocean View Hospital

This chapter presents the findings of the case study conducted at OVH. It provides a characterisation of the Lean-based MCS in use at OT X and focuses on how this was experienced by the participants. This chapter is the second in Part 3 of this thesis, which includes the empirical fieldwork (Figure 7.1).

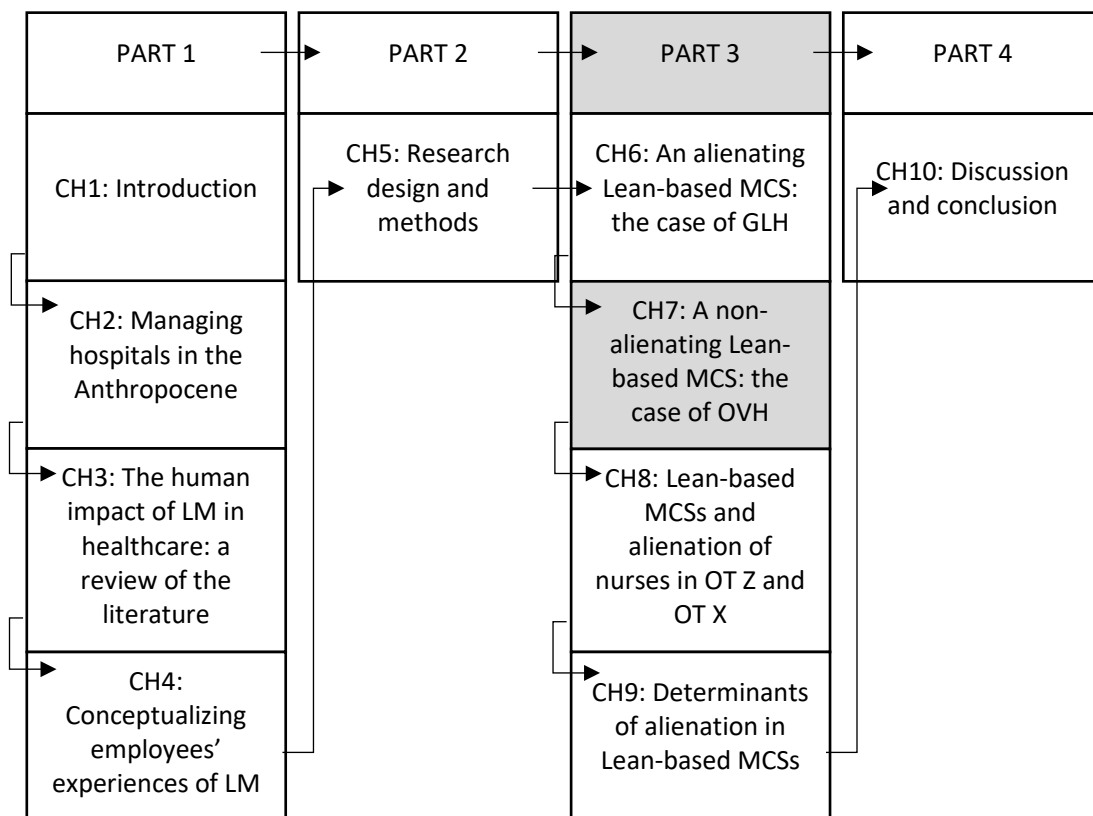


Figure 7.1: Thesis structure overview - Chapter 7

Source: Author's conceptualisation

In NSW, hospitals are bound by performance targets defined by the State's Ministry of Health (MOH) that are reported monthly in the form of a dashboard (NSW Agency for Clinical Innovation, 2014). Using the same definition of utilisation presented in the previous chapter, OT X was required to meet a state-set target of 80 per cent of OR utilisation. This target was meant to guarantee the efficient use of theatre resources, maximise throughput and improve patient flow (NSW Ministry of Health, 2012). The OT also had to track all instances of day-of-surgery cancellation and keep a record of the reasons leading to such events. The Ministry provided a pre-set list of patient and hospital-related reasons, and a state-wide target of less than 2 per cent was set for this KPI. Along with utilisation rates and unplanned cancellations, the OT had to report on a set of metrics aimed at ensuring the timely access of patients to surgical services.

For elective surgery, the OT had to disclose the percentage of patients who had surgeries within their clinically relevant time frames, with the target set at 100 per cent for patients who needed surgery in 30 days and 97 per cent for those requiring surgery in 90 or 365 days. The number of overdue patients in each category was also disclosed, along with the median waiting times per category. When asked about their strategy, the hospital's Division of Surgery and Anaesthesia (DOSA)—responsible for managing OT X—indicated that it mainly prioritised meeting the KPIs for timely access to elective surgery.

The following case study is divided into two sections. In Section 7.1, the Lean-based MCS used by the DOSA to support the execution of its strategy is presented. In Section 7.2, the nurses' experience of the Lean-based MCS will be discussed. Figure 7.2

is a visual representation of the OT layout that complements the descriptions made in this chapter.

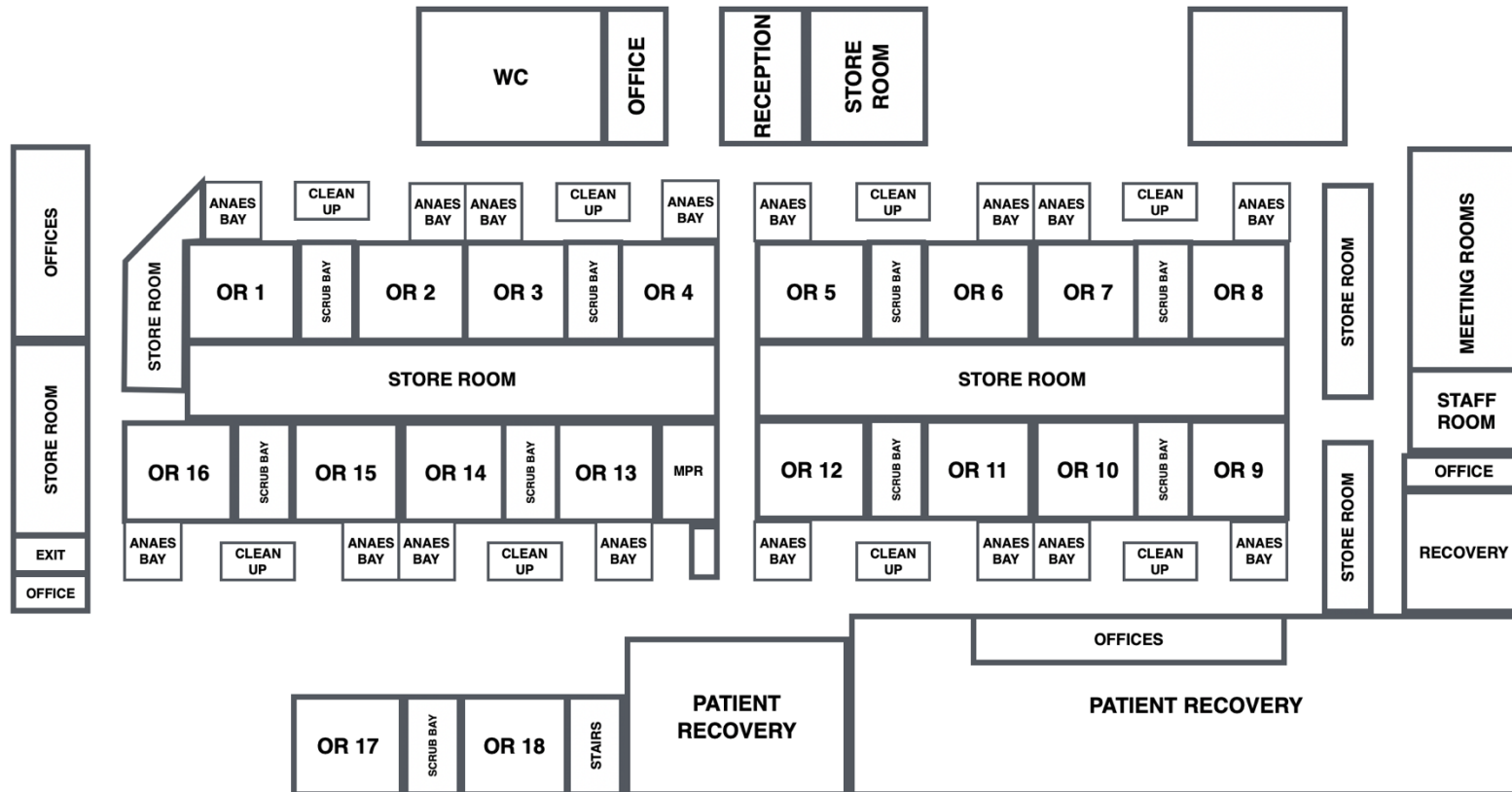


Figure 7.2: Layout of OT X

Source: Author's conceptualisation – Key: ANAES (Anaesthetic)

7.1 Eliminating waste and optimising processes: the use of a Lean MCS in OT X

This first section will focus on the different Lean principles and measures used by the DOSA in OT X to guarantee access to the theatre, improve quality and efficiency to meet the MOH KPIs. These practices and measures together formed the Lean-based MCS in OT X to the extent that they were used to ensure the execution of the OT strategy.

7.1.1 Using Lean principles to guarantee access and minimise delays. Access to the OT was one of the strategic priorities of the DOSA. The hospital was required by the MOH to treat elective surgery patients within clinically recommended timeframes. This section describes how the Lean principles of production and demand levelling, as well as visual management and continuous process flow, were used to guarantee the timely access of the patients to OT X and minimise delays.

7.1.1.1 *Levelling production and demand to improve access.* The DOSA relied on predefined lead times to level its surgical activity. Lead times were defined as the duration between the time a patient was placed on the surgical waitlist and the time their surgery was completed. In OT X, elective surgeries had a lead time of either 30 days, 90 days or 365 days based on the clinical condition of the patient and their medical assessment. For emergency surgeries, procedures had a lead time of either less than 15 minutes from the patient's arrival to the hospital or under 1, 4, 8, 24 or 72 hours, depending on their clinical assessment. When submitting booking requests to the integrated booking unit (IBU), surgeons and clinical departments were required to classify the patient in one of the categories mentioned above, thus specifying a lead time for the completion of surgery. Beyond levelling production, having different lead times allowed the DOSA to guarantee quick access to the OT for the patients who needed it

the most. To make sure that lead times were respected, the DOSA invested in the development of a surgical waitlist tool that allowed it to monitor the progress of its surgical activity in near real-time. Once they were booked in, the tool collected lead times for elective patients, and compared them to their allocated surgery date. This comparison enabled the flagging of any cases that had an allocated theatre time past their predefined lead time. The tool also classified patients based on the number of days left before they reached their completion due date.

The waitlist tool was also developed to be a decision support tool for the management of the OT. It allowed the OT to produce detailed reports listing the patients booked by each department along with their lead time, planned surgery time and whether they were breaching; i.e. having a surgery date past their lead time. These reports were sent weekly to the surgeons and monthly to heads of departments and were monitored daily by OT managers. The tool was also able to produce historical reports as well as predictions for up to 240 days. These reports were crucial and performative (Strum et al., 2013) to the extent that they legitimated the DOSA undertaking any required action to make sure lead times were respected. Beyond merely tracking and monitoring activity, the waitlist tool was also used to hold clinical departments and surgeons accountable for their performance and help identify solutions that could be implemented to maintain the performance of the OT.

Faced with a sustainable increase in demand over the past year, the DOSA had also been implementing a variety of demand levelling techniques to avoid overwhelming the OT with a demand that exceeded its production capacity. Initially, the division reviewed the surgical referral pathways and imposed clinically-based selection criteria on referred elective patients who required surgery. By establishing and

reinforcing these criteria, the DOSA was able to transfer some of its demand to other specialty centres or public hospitals in the same region where patients could have their procedures done within the appropriate time frames. Additionally, the capacity of outpatient clinics was reviewed to align it with that of the OT; the volume of patients reviewed by clinical departments and surgeons had to be equal to or less than the OT time allocated to them. The DOSA was also piloting various other projects looking at clinical variations in diagnosis as well as the appropriateness of surgery. For instance, it implemented a mandatory physiotherapist assessment for all patients with back pain before any surgical consultation. Not only was this assessment meant to enable better utilisation of the surgeon's time, but it also helped in triaging patients who did not require surgery, providing them with other alternatives.

Considering the variety of surgical procedures conducted in OT X, production levelling would not have been possible without reducing set-up and changeover times when switching between the different procedures. To achieve that goal, any surgery that took place in the OT was classified into one of three modules. Regardless of clinical affiliations, each module was home to a variety of surgical procedures of similar acuity levels, and that required easily transferable nursing and anaesthetic skills. Module 1 covered all cardiac, neurovascular, and upper gastrointestinal surgeries. Orthopaedic, hand, urology and spinal procedures belonged to module 2. Ear, nose, and throat surgery, as well as plastics, burns, obstetrics, gynaecology, colorectal, paediatrics and endoscopy, were all grouped in module 3.

Within each of these modules, multiskilled scrub, scout and anaesthetic nurses were expected to intervene on a multitude of surgical procedures which significantly reduced the changeover times that would otherwise be necessary if every procedure

required a different nursing team. Having a multiskilled workforce also allowed the DOSA to more quickly and flexibly mobilise resources to make sure surgeons had the support they needed to conduct surgeries within the predetermined lead times.

Developing and maintaining the versatility of the nursing staff was one of the operational priorities for the DOSA. Nurses were expected to not only feel comfortable while working on surgeries within their modules but also across all three modules of the OT. The high load of emergency procedures and the rotating shift-based roster used for staffing also reinforced the need for multiskilled nurses capable of intervening on any emergency at any time of the day.

7.1.1.2 Using flow and visual management to minimise delays. The DOSA also applied the Lean principle of continuous process *flow* to avoid day-of-surgery cancellations and maintain the accessibility of the OT. Articulating the pre, peri, and postoperative phases of a patient journey in OT X was the responsibility of the floor manager (FM). Their role was to ensure that patients are “*operated on in a timely manner and staff (are) working in a safe environment to be able to provide good care*” (Floor Manager, OT X). The FM reviewed the OT list 24 hours in advance to make sure that the production levelling done by the IBU was accurate. A levelled list meant that the workload was aligned with the production capacity of the OT and its workforce. At this early stage, the FM relied on their clinical expertise and knowledge to assess the feasibility of the surgeries within the opening hours of the OT. They executed changes, if needed, after consulting with the surgeons and the IBU. Part of their role was also to reorder the list to give patients priority access to the OT if they were approaching the end of their lead time.

Daily, the FM was responsible for making sure that the planned schedule was respected. They anticipated, identified, and addressed any logistical issues that could potentially lead to delays in the flow of patients. To avoid interruptions, they allocated theatre call times for each patient while considering aspects such as anaesthesia induction times and any signs of clinical complications. A patient collection form was used to signal to the wards or the short-stay surgical unit that patients were due to arrive in theatre. The form included the patient's name, their location (either in a ward or in the short stay surgical unit), the number of their OR and their planned procedures. Once initiated, the patient collection form was handled by a patient transport officer who was responsible for transporting the patient to the OT. This *Kanban* system (Ohno, 2014) was used to avoid overcrowding in the OT reception area while making sure patients arrived just in time for their surgeries. In the case of unforeseen delays (e.g., unexpected high volume of emergencies or patients being cancelled due to clinical reasons), the FM was responsible for making any necessary last-minute changes to the list to ensure that emergencies were dealt with and that elective surgeries were completed within their lead times.

To help with the execution of their tasks, the FM relied on computer software to visually monitor the progress of the OT list. Using a spreadsheet format, the software presented each patient on a separate row, grouped them by OR, and used the different columns to display the following information: additional patient information, procedure type, surgeon name, any flagged clinical information, patient's status and a free comments section. The last two columns were frequently used by the FM to keep track of the patient's journey through the OT. In the status section, the FM used three pre-set patient status categories: patient checked in, surgery in progress and surgery completed.

They also used the comments section to keep a record of any additional information related to any of the surgeries.

7.1.2 Ensuring the quality of care. Quality was an integral part of OT X's activity. The following subsection presents how the DOSA applied Lean principles to ensure the quality and safety of the care delivered to patients.

7.1.2.1 *Getting quality right the first time.* In OT X, ensuring that patients had access to high-quality care was the responsibility of all members of staff. The DOSA worked hard on sustaining a culture of getting quality right the first time through the implementation of various organisational measures and projects. An electronic incident management system was accessible to all staff members to report any undesirable clinical and organisational events that negatively impacted the quality of services provided to patients. Once reported, incidents were allocated a severity assessment code (SAC) by staff based on the probability of their reoccurrence and level of impact they had on the quality of care. Clinical nurse unit managers (NUMs) reviewed all incident reports submitted by the nurses in their module ensuring they had the correct SACs. Once reviewed by NUMs, the reports were passed onto a Clinical Nurse Consultant (CNC) who ran an investigation to identify the root causes of the issue and subsequently implemented solutions to avoid reoccurrence.

The CNC was also in charge of conducting research and providing staff with the latest evidence-based knowledge to drive continuous improvements in patient care and nursing practices. Working in conjunction with other CNCs in the various departments of the hospital, the OT CNC was considered a valuable resource for the OT nurses as they quickly helped identify relevant policies, procedures or guidelines that impacted on their day-to-day practice. The CNC was also responsible for designing and, in some

cases, delivering education to staff, making sure that their knowledge was always up to date. By ensuring that staff were aware of policies and guidelines and that their knowledge was up to date, the DOSA's aim was to empower them to stop and report any process or practice that deviated from standards or that could harm patients.

7.1.2.2 *Standardisation and process stabilisation.* Standardisation of practices was described as essential for quality improvement in OT X. For each professional category, policies, procedures, and guidelines defined the way various tasks should be executed. Checklists were used to ensure consistency in the execution of processes while acting as a safety buffer to help avoid adverse events. Standardisation through policies and guidelines was also a way of ensuring that learnings from previous adverse events were incorporated into daily practice and therefore decreased the likelihood of their reoccurrence. The CNC, along with module NUMs and specialist nurses all contributed to the development of locally standardised practices.

Standardisation was also used to support the multiskilling of nurses in OT X. For every surgery, senior nurses were responsible for developing preference cards that were individualised to reflect a surgeon's preferences for how they operated. The cards included a list of all equipment, trays, and instruments that any surgeon required for a typical procedure. They were a way of enabling nurses working across specialties to quickly identify what was needed to set up the OR before receiving a patient. Interviewees also described how the cards helped improve the flow of communication between the surgeon and the nurses, especially if they were working together for the first time.

7.1.2.3 *Delivering evidence-based care to avoid over-processing.* Avoiding non-value adding work that results from duplication, reworks, or unnecessary

complexity was one of the responsibilities of the CNC as part of ensuring the delivery of patient-centred care. By continually reviewing the latest research and evidence-based recommendations, the CNC advised staff on legacy practices that should be ceased. In the area of preoperative fasting, for instance, CNCs developed guidelines aimed at reducing the time patients were required to fast. According to an internal study conducted in the OT, patients were fasting for significantly longer times than required. To address this issue, the CNC was designing and delivering education to the OT clinical staff around fasting guidelines.

7.1.3 Improving the efficiency of the OT. This section presents the use of pull production, just-in-time, and space reconfiguration to improve the efficiency of OT X.

7.1.3.1 *Using a pull approach to avoid overproduction and maintain high utilisation.* Overproduction in an OT setting is reflected in low utilisation rates. Not using available theatre time to conduct surgery was the equivalent of producing goods that would never be sold. To avoid overproduction, the DOSA in OT X was using the Lean principle of pull production to make sure that the capacity and availability of the OT matched its demand. The IBU's primary mission was to ensure the alignment between the demand for OT time, on the one hand, and the availability and capacity of the resources on the other. To make this alignment possible, an extensive analysis of the OT activity was conducted, consolidating the number of surgical cases done, the minutes allocated to these cases and the variances in time for similar surgical procedures. For each type of surgery, operating times were averaged per surgeon and were subsequently compared to the number of cases booked by those surgeons. The result of the analysis was a comprehensive overview of the theatre time utilisation, capacity and demand for each clinical department and individual surgeon. To ensure

accuracy, the analysis took into consideration both planned elective surgeries and unplanned emergency procedures as they competed for both the human and physical resources. Based on the results of this analysis, a master surgical template (MST) was created in which OT time was allocated to clinical departments, which were in turn responsible for allocating it to surgeons based on their patient load and work schedules. Allocating OT time to departments instead of individual surgeons enabled the DOSA to maintain a degree of flexibility. If a surgeon was not utilising their time, the unused hours would be allocated to another surgeon within the same department, and if no other surgeon was available, the IBU temporarily allocated the time to another department. If none of the departments expressed interest in using the hours, the booking unit notified the OT managers to adjust the level of resources accordingly by closing ORs. The surgical template also varied throughout the year to accommodate the various external factor that impacted on demand or OT capacity. During the Christmas holiday period, for instance, the capacity of the OT was significantly reduced to only accommodate patients who required surgery within 30 days. Theatre capacity was also adjusted when surgeons were on leave or attended international conferences. Using this pull strategy meant that operating time was only available if it was going to be utilised.

7.1.3.2 *Just-in-time delivery of equipment.* In OT X, NUMs and material managers (MM), along with a sterilisation department, worked closely on making sure that the right equipment was in the right OR at the right time and in the required quantity for the surgeries to take place on time. The process began one week before the surgical lists were finalised. The OT NUMs, one for each module, went through all patients with confirmed surgery dates and examined the associated clinical notes to identify the equipment required for each procedure. Once identified, the NUMs

conducted a cross verification with the available equipment stored in the OT and highlighted any items that need to be purchased or hired and delivered for surgeries to take place. A list of required equipment was then handed over to the MMs whose role was to handle procurement and stock traceability.

Equipment, prosthesis, and consumables in OT X were purchased by the hospital, consigned by manufacturers, or leased by suppliers or other institutions. The MMs' role was to determine the products that came under each of these categories and then liaise with internal users and external providers to make sure that stock was available when needed. An electronic procurement management system was developed to capture usage of equipment and devices in real-time during surgeries (e.g., sutures, dressings, and disposable scissors). It automatically generated purchasing orders if stocks got below a pre-set limit. For low-cost items such as gloves and other consumables, the MMs conducted a daily round to verify stock levels and used a handheld wireless barcode scanner to place orders of any needed item by scanning the barcodes located on the storage container or shelves. NUMs also coordinated directly with the MMs when they foresaw an increase in usage that would require increasing stock levels of certain items.

High-cost prostheses were consigned to the hospital, which meant that they were stored in the OT but were only billed to the hospital if used. While on consignment, the manufacturer or supplier was responsible for rotating the stock and making sure that it was up to date. This arrangement between the DOSA and manufacturers allowed the hospital to store a wide variety of items, guaranteeing quick response times in case of emergencies, while eliminating the high costs associated with purchasing but not using the equipment. Custom-made implants or high-end equipment were ordered from

suppliers on a case-by-case basis. When ordered, the MMs, in coordination with the NUMs, liaised with external providers to make sure the ordered items were delivered just in time for surgeries.

Once used, sterilisable and re-usable equipment were enclosed in insulated trollies that were wheeled out of the OT by staff and placed in elevators that delivered them to the sterilisation unit located one floor above the OT. Being in the same building as the OT, the sterilisation department was able to sterilise and deliver equipment with a fast turn-around making them quickly available if they were needed for multiple cases within the same day.

Using electric lifts to link the OT with the nearby sterilisation unit, having multiple agreements with suppliers and providers and requiring that clinical NUMs review surgical lists helped to ensure that equipment and devices became available just in time for surgeries to take place in OT X.

7.1.3.3 *Configuring space to optimise movement.* Architecturally, OT X was designed with the aim of reducing unnecessary movements of staff and equipment. Using a dual corridor system, the ORs were accessible through external corridors for patients and via a central sterile stock room for staff. By controlling the use of each corridor, this design enabled a strict separation between sterile and unsterile supplies, thus reducing the risk of contaminations and infections. It also enabled the storage of frequently used equipment at a convenient location that was easily accessible by staff. Clustered by specialty, each OR had an adjacent dedicated storage area where frequently used equipment and consumables were stored. Not only did this design make it easy for staff to rapidly wheel in the equipment required before their surgeries, it also allowed them to quickly access any additional items they needed without having to

travel long distances. The central sterile storeroom was also equipped with multiple lifts that connected it to the sterilisation unit. The lifts helped reduce the risk of contaminating sterile equipment that could result from transporting them through an uncontrolled environment while eliminating the unnecessary transport that would have otherwise been conducted by staff.

7.2 The nurses' experience of the Lean-based MCS in OT X

In this section, Blauner's taxonomy of alienation is used to account for how the nurses in OT X experienced the Lean-based MCS in OT X.

As previously discussed in chapter 6, Blauner identified four sub-types of alienation: *powerlessness*, *meaninglessness*, *social alienation*, and *self-estrangement*. For each of those dimensions, Blauner also described their opposite non-alienating states of *control*, *purpose*, *social integration*, and *self-involvement*. These non-alienating states were salient in the data collected in OT X and are used below when accounting for the nurses' experiences.

7.2.1 Control. For Blauner, control over the sociotechnical environment is dependent on the worker's freedom of movement, their ability to make decisions concerning the quantity and quality of the work they produce and the capacity at which they are free to choose their techniques. Central to these freedoms is the workers' ability to control the pace of work. In fact, according to Blauner, control over pace is what sets human workers apart from the machine and allows them to regulate the degree of pressure exerted on them during the execution of their tasks. Freedom of movement and control over quantity and quality are thus much more likely to exist if the workers have control over their work rhythm and are relatively free from external pressures. In regard

to work methods and techniques, Blauner notes that workers have little opportunity to make choices in these domains, especially in modern technocratic organisations. Where this freedom exists, workers can use their skills and knowledge to solve the problems they encounter in the execution of their tasks. This subsection reveals how the nurses in OT X expressed a sense of control over their work environment.

7.2.1.1 Nurses' freedom of movement in OT X. The Nurses in OT X spent most of their shifts in ORs with restricted freedom of movement. Their motions were limited by the nature of the surgical procedures, especially if they were scrubbed and unable to leave the aseptic field. In the OT, tea, bathroom, and meal breaks were organised by a team leader for anaesthetic nurses. Team leaders (TL) were nominated daily by the anaesthetic NUM and part of their role was organising breaks and temporarily relieving the anaesthetic nurses from their duties. For scrub/scout nurses, a floating staff member was responsible for relieving the rest of the team for breaks throughout the day. At the start of every day, the scrub/scout nurses in each OR went over the OT list and determined the roles each of them was going to take throughout the different surgeries. The idea was for them to alternate the workload between scrubbing, which requires high degrees of concentration and very restricted mobility, and scouting, which was often seen as less demanding. When the OT was fully staffed and more than two scrub/scout nurses were allocated to an OR, it became possible for one of the scout nurses to leave the OR and participate in short education sessions or work on a quality improvement project.

The lack of free movement in OT X was compensated for, to a degree, by the flexibility accorded to the nurses who were able to request the ORs in which they would like to work. Although final allocations were always completed by managers who had

to consider skill mix, training requirements and shift start and end times, there was a consensus amongst staff in OT X that they did their best to allocate nurses to specialties in which they enjoyed working. Allocations were never definitive and were subject to last-minute changes to palliate the impact of sick leave or to mobilise additional resources in response to an emergency. The nurses we interviewed did not explicitly mention lack of free movement although they referred to it when talking about how being in the OR for prolonged periods limited their participation in social or educational events.

I compare my job to some of my friends' jobs. Sometimes I think "gosh I could never do that". Going to lunch with your colleagues for instance. I mean [in the OT] it will be like someone comes in: "Okay. I'm here to relieve you for half an hour. And then when you get back, I have got to go next door and relieve them." So, it is kind of like all right, I could go to the tearoom. I have just enough time to heat up my lunch, wait in the line for the microwave, heat it up, sit and eat it and then wash my bowl and then go to the bathroom and then get back in the theatre. Like I mean people that get to go out for lunch. That is like, wow. (scrub/scout nurse, OT X)

The nurses in OT X were able to request their roster. A "pencil roster" for each module was placed in the central stock room for the nurses to request shifts and see the requests of their colleagues. The nurses were encouraged to talk to one another if their choices conflicted. Every full-time staff member was also allocated five "red requests" per month which were placed on the roster using a red pen. Red requests were always respected, and they were often used by nurses when they had non-work-related obligations or engagements that they needed to honour. Although they could be used to request shifts, the red requests were typically designed to signal unavailability.

Our staff are given the privilege of self-rostering where they are allowed to get five red requests. If they are requested, then we give them to them.

For the rest of the shifts, they can write down what they want, and we try our best to give it to them. And that helps with job satisfaction and it helps with their personal life. So that helps retain staff. (NUM, OT X)

Some people request their entire roster, if it works for us then why not. (NUM, OT X)

Although the nurses did not have full freedom of movement when they were on shift, this was compensated by their ability to choose when and where they worked.

7.2.1.2 *Work rhythm and output.* In OT X, the nurses had no control over the number of surgeries they performed on any given day. The volume of patients was determined by the booking unit based on surgeons' availability and waitlist management priorities. The emergency workload was also unpredictable, and nurses did not know in advance the number or type of procedures they had to do. However, during interviews, the nurses often mentioned that if patients were scheduled for surgery on a specific day, it was because they needed to have their procedures done within a clinical timeframe. Although the number of patients might be high at times, the focus on patient outcomes often mitigated the sense of powerlessness that could have otherwise resulted from the nurses' lack of control over the number of procedures.

Sometimes it is one patient in and one patient out, but it is about what you give to the patient and how you treat them. Understanding that the patient needs the operation. At the end of the day they need the surgery for a reason. You have got to come back to the patient. It is patient-oriented. It is not a car being made—the patient is here because they have a cataract and need to have an operation at the end of the day we do not really know what the gravity is. They may not be able to drive and maybe they have an elderly mother that they are caring for It is about getting cases done and looking after patients and we need to focus on that (scrub/scout nurse, OT X)

In OT X, the lack of control over the quantity of output did not seem to result in a lack of control over the pace of work: being required to work faster at times was justified by the need to help more patients. The nurses also pointed to the importance of

having sufficiently trained personnel available as it enabled them to regulate the pressure exerted on them by varying their efforts according to alterations in their levels of fatigue. When the pace of work intensified, the nurses mentioned how they were able to alternate roles or get additional help from their colleagues to reduce the intensity of the fast-paced schedules.

7.2.1.3 *Work environment and processes.* In OT X, the nurses described having control over their work environment and methods. Scrub/scout nurses and anaesthetic nurses were constantly leading and implementing a variety of workplace and quality improvement projects under the supervision of their clinical NUMs. During the period of data collection, the storeroom, for instance, was completely re-arranged by one of the senior nurses who, over the course of multiple months, had consulted staff on the best and most convenient location for storing the various equipment. Not only did that project help create a more accessible storeroom, but it also engaged and empowered staff who described how their needs were taken into consideration.

Workplace improvement projects were also conducted by clinical nurse educators (CNEs) whose goal was to make sure that the OT was a safe place for the patient, as well as a pleasant work environment for staff. As an example, the CNEs piloted a project to mount glove boxes on the walls of the ORs, facilitating access to them while limiting the number of times nurses touched the boxes to decrease the risk of infections. Before mounting the gloves, one CNE described how they consulted with the nurses on the most convenient locations, taking into consideration the different aspects of the everyday work routines of the nurses. Engaging and consulting staff was viewed as a way of ensuring the successful implementation of any project to the extent that it gave staff ownership and a greater investment in the change:

Any project that I do, I really make sure to consult with all the clinicians in all of the specialties to make sure that they really have buy-in. Even just for where the wall-mounted gloves were positioned in each theatre. I went to the nurses that work in those theatres quite regularly, and I got them to tell me where they felt it would be most useful for them to access. I mapped what they said so that then when the workers came in, I was able to mark on the walls where exactly the nurses wanted those glove racks to be. The outcome from that was a really positive feedback. When you need the frontline people to make a decision work, they need to have their concerns heard and taken into consideration (CNE, OT X)

CNEs also frequently organised what was referred to as clinical practice review. These were sessions where scrub/scout nurses and anaesthetic nurses came together to reflect and discuss their various practices. The aim of the sessions was for the nurses to flag and identify any ongoing issues with current practices and propose solutions to improve them. Often, after issues were flagged, the CNEs described how they conducted a literature search to identify evidence-based practices that were proven to be effective in other institution before they worked on implementing solutions. The topics discussed during those sessions were determined by staff and were not limited to a specific domain or areas of practice. Instrument management, sterilisation, hand-over between the OR and the recovery unit as well as data entry during surgery were amongst the list of topics discussed during those forums.

So, we have what is called here a clinical practice review. Instead of an in-service. It is an open forum where staff are given that hour. So, whoever can attend, they come along, and the forum is open to anybody to say, "Hey, you know what we did in theatre the other day? It was great. The patient had a good outcome. This works really well." And then someone else will say, "Look, this happened again the other day. It is really frustrating. It means I have to be out of the theatre trying to fix it. I cannot be there for my patient. We need a better system for this." And because the senior nurses and the educators attend those meetings, it is an opportunity where we are saying okay what is going on on the floor. What do you need from us? How can we help? (CNE, OT X)

The nurses in OT X also mentioned how they were able to conduct and implement any changes in their work environment or process if they identified a need to. For instance, one of the anaesthetic nurses mentioned that she created a reference guide for some procedures and made it available to her colleagues after identifying that a lot of people had difficulty understanding certain guidelines. Another scrub/scout nurse had entirely reorganised the freezer containing human tissue donation, educated her colleagues on the changes and wrote a reference guide that centralised all the essential information, making it easily accessible to staff. Nurses also reported being involved in decisions relating to the purchase and use of new equipment in ORs. In ophthalmology, a senior nurse who was interviewed mentioned being involved in trialling a new type of laser the hospital was considering buying. She also conducted research to identify potential risks associated with using the laser and developed guidelines around the use of the new device.

We keep on in the theatre what we call a bone freezer. It is a freezer that contains human tissue donation. I could see that there was a need for it to be completely revamped—the way it was handled, the way we educate people and the ease of access to information about how to use it if you do not use it all the time. So, I took on that little project myself and have been doing it myself for about three years.... Now, it gave me the opportunity to set up an in-service so I can educate the rest of the operating theatre. There is a resource there for the staff. I worked on making our documentation complete. (scrub/scout nurse, OT X)

(At) the moment we are doing a trial for a new ENT laser, so I am looking at the specifications of the new laser, determining if it is any different, if there are more risks and what are the implications for practice because we will be using fibre and all that sort of thing. I will have to do a safe work method for that. That is sort of the extra things I do. I have been involved in the stock room organisation and labelling as well as documenting all the equipment that we have and where it is kept. (scrub/scout nurse, OT X)

You can even implement projects in your workplace to take charge of your workplace and improve your workplace. So, if there is something that I

want to change and want to take responsibility for doing it, I can do it. It is quite empowering. (scrub/scout nurse, OT X)

7.2.1.4 *Quality of care.* Delivering high-quality care to patients was described as the responsibility of all staff members in OT X. When asked about their role in the OT, all the nurses we interviewed talked about being advocates for the patients. Speaking up for patient safety was described as an integral part of their jobs and was encouraged and supported on an organisational level through multiple initiatives, particularly in the form of education and training. In all areas of specialties, CNEs were responsible for making sure the nurses had an adequate level of training to deliver high-quality care. A combination of mandatory and optional education modules with theoretical and practical components was offered to nurses throughout the year. The education curriculum allowed them to satisfy their licence obligation of conducting at least 20 hours of continuous professional development with the convenience of being at their usual work setting. Educators also ran a wide range of short learning sessions, at least twice a week, on a variety of topics to support the nurses in their clinical practices. Nurses indicated that having access to continuous on-site education helped improve their knowledge, practice, and patient care.

Education is important because without it I will not know anything. If you do not have the education and the support from the educators, then you are not confident in what you are doing. Education provides support for the staff to work. (scrub/scout nurse, OT X)

We want nurses to be learning that next level. We want them to be learning the specialist knowledge because we want them to be practising to the best that they can. We want them to be providing good patient care. (CNE, OT X)

There is research on technology in the operating room and there is definitely the research on cases where things have not been used correctly. It is usually due to a lack of education regarding the device resulting in

people using it incorrectly which leads to really poor patient outcomes.
(CNE, OT X)

Constantly being at the forefront of knowledge was also described as a way of empowering the nurses and encouraging them to critically reflect on their practices. The interviewed nurses talked about how education gave them a voice in the OR and allowed them to speak with confidence if they noticed anything that was non-compliant with standards or might lead to patient harm. The ORs were described as having a rigid hierarchy dominated by the surgeons and the anaesthetists. Giving the nurses access to education seemed to have “levelled the playing field”, in that it provided them with a position of authority from which they were able to confront the hierarchy, express concerns and ask further questions to foster their understanding.

Being able to back yourself up if you make a statement, having the knowledge behind you to back yourself up if people disagree with what you are saying. Education and experience are very important. It is not necessarily university education but also working in the area and being able to say from experience, “No”. You might not understand the theory behind why we do not set up the theatre in a certain way but if you have done it multiple times before you can speak up and say, “No. When we do not set it up that way this happens.” That comes with experience.
(scrub/scout nurse, OT X)

First it [education] gives me a voice, so I know why my surgeon is putting Betadine on for three minutes and I know why you should not wipe it off straight away, I know the chemical reactions that could happen if you mix alcohol with something else. I know, for cardiac surgery, which artery we are doing. And I know why I am not going to use certain graphs on certain patients. So first you ask these questions to other people to be more efficient, but you can also question the surgeon’s choice and you can learn from each other. They will also question your choice and learn from it.
(scrub/scout nurse, OT X)

It is that whole thing of questioning why. You want nurses in the operating theatre who are scrubbing and see something that should not be the way it should to be able to speak up. Like if the count is not right, you need someone to be confident and say, “We are missing [equipment] and we need to find them before closing up [the patient].” It is that sort of thing. We need to give them confidence and to make them question what they

are doing so they are not just doing it because somebody is telling them to, but rather because they have actually thought through and critically about what they were doing. (Manager, OT X)

Empowerment to speak up for patient care in OT X was also enabled through very strong managerial support. In fact, all the interviewed managers had examples of situations in which they were called on by the nursing staff when surgeons were not complying with policies or safety procedures. Conducting an X-ray if an item was missing from the surgical trays was an example often mentioned. During a surgical procedure, nurses counted all the surgical instruments opened and used and then recounted them afterwards to eliminate the risk of anything being left inside the patient. If an item was unaccounted for, the OT policy stated that an X-ray of the patient should be conducted to identify any foreign bodies. If a surgeon was not compliant with the policy, nurses were encouraged to remind them and if they refused to comply the nurses often called upon their managers for support.

It happened the other day, they were short one screw. The nursing staff asked the team to do an X-ray and the medical staff said no. So, the nurses came and got me, and I went in and said, "Look, I've just heard that you lost a screw. Is it okay if we do an X-ray just to make sure?" And they did. The scrub nurse came to me afterwards and said I was not going to hand them anything unless they did an X-ray. So, it is a little bit about the staff having that gumption to say, "No, these issues have to be escalated". You need to be in theatre and be present and set the boundary about what is acceptable and what is not. The manager needs to go in there in front of the staff and say to the surgeon that this is the way we do things in the hospital. (FM, OT X)

We had an incident report where a piece of equipment, you know, a surgical clamp, the screw fell off and the nurse allowed the surgeon to close without X-ray. And she said, I want you to X-ray and he said no. But she did not escalate to get that X-ray done, although that is the policy. The policy is that when something is missing on the count, anybody before coming off the operating table has to be X-rayed. And the patient had to come back for a subsequent operation because the surgeon said it would not be in there. So that is an example of a power imbalance. We have and always will have junior nursing staff and I think helping to improve

relationships is about empowering that nurse to speak up. (Manager, OT X)

Supporting the nurses to take ownership and responsibility of patient safety and the quality of care they delivered was also embedded in an organisational ritual that had been recently introduced in OT X. Before beginning the first case of the day, all ORs were required to conduct a safety huddle. The goal of the huddle was to bring all the members of the team together (scrub/scout nurses, anaesthetic nurses, surgeons, anaesthetists and operation assistants) and give them an opportunity to introduce themselves, state their roles and go over the list of surgeries they would be conducting during the day. Throughout the huddle, a discussion between all the team members enabled the identification of any potential risks, organisational or logistical needs, and helped reduce the risk of errors by ensuring effective communication. The huddle was an opportunity for nurses to ask questions or flag any issues that could potentially have an impact on the quality of care. Slowing down, anticipating and reflecting was a way of giving the nurses power and control over quality in OT X.

We put the team huddles in place. So that way everyone identifies who they are and they have a keyword to say if they are at a critical point. We are also empowering nursing staff to go, “What is your role? Do you really need to be in the room? If you are here just standing by in case we need you, you can stand by outside of the room.” Everyone does not have to be in the room just in case. (Manager, OT X)

It [the huddle] also makes us work much more efficiently and effectively as a team as well because we are able to get a bit of insight on what is going on with the patient and we are able not only to bounce ideas off the surgeons but also to kind of think for ourselves and get stuff that we can see that they are probably going to be required, maybe have them set up just outside of the theatre so that when we need them we can move around quickly and efficiently. (scrub/scout nurse, OT X)

You need to know a patient's history and that [the huddle] sort of helps you. Communicating helps you understand the whole picture of the patient

and also what is their [the surgical team] concern during the operation. So everyone is on the same page. (scrub/scout nurse, OT X)

7.2.2 Purpose. Blauner described purposeful work as that which promoted the workers' understanding of the organisation's total functioning. Jobs that promote purposefulness are ones where employees have a broad scope of responsibilities that allows them to understand how they contribute to the overall achievement of the goals of the organisation. The following section will reveal how the nurses described their work in the OT as purposeful.

7.2.2.1 *Changing the focus from the individual job to the overall process.*

Beyond being a tool to ensure quality, the huddles instigated in OT X were reported as essential to shifting the nurses' perspective from individual tasks to the broader series of actions undertaken by the different teams during surgical procedures. Focusing on the overall process instead of specific tasks seemed to be a way to empower the nurses whose responsibility, therefore, extended well beyond the execution of their tasks. Delivering complex surgeries to patients was described as an integrated process rather than a combination of independently executed tasks.

In OT X, teamwork was widely suggested to be the foundation of delivering care to patients. The nurses were encouraged to think in terms of the collective whole rather than focusing on their individual parts. This collective thinking was visible in nurses assuming the responsibility for developing guidelines to assist their colleagues in using unfamiliar equipment. It was also visible when senior nurses developed preference cards to help less experienced nurses in preparing an OR quickly without having to spend time looking for guidance. Most of the nurses we interviewed

mentioned support and teamwork as elements that contributed to their satisfaction with their job and workplace.

I really like the support. I think anything that happens, we have many people that will rush in and help. (anaesthetic nurse, OT X)

The team here is really, really good and you can really rely on each other if you have any questions. (scrub/scout nurse, OT X)

If the operating assistant is busy, you will find the nursing staff and the medical staff doing that [installing a patient]. Same with transferring patients. It is not a nurse's job. But to get the list going, people will do it. (FM, OT X)

People are in there together and they are supporting each other. We are always there for each other. (scrub/scout nurse, OT X)

7.2.2.2 Increased substantial rationality. Beyond process thinking and collective responsibility, evidence of increased substantial rationality among nurses in OT X was also identified and interpreted as the result of cross-functional multiskilling. In essence, being confined to the ORs should have limited the opportunity for nurses to view and understand the other roles that existed in the OT. In OT X, however, not only were nurses expected to have a variety of clinical skills that enabled them to intervene on various surgical procedures, but they also had the possibility of learning and temporarily exercising other functions if they wished to do so. This cross-functional multiskilling, arguably, enabled them to have a broader understanding of the processes of the OT and how their jobs fit into the bigger picture.

Cross-functional multiskilling was conducted differently for each of the core jobs in the OT. For anaesthetic nurses, taking on a TL role allowed nurses the opportunity to temporarily step away from their clinical functions to exercise a managerial role. The TL was delegated on a shift-by-shift basis by the NUM and their main role was to oversee and coordinate the anaesthetic nurses. They were responsible

for managing allocations, coordinating breaks and being a first responder to any of the nurses' questions or requests. The TL acted with some of the responsibilities of a NUM, but only for a shift. Being a TL was described as an opportunity open to any of the nurses interested in furthering their skills by taking on the organisational responsibility of their team. For scrub/scout nurses, cross-functional multiskilling involved enabling them to temporarily adopt the role of the FM. Participants mentioned this occurring on weekends or after hours when patient flow was reduced. Nurses interested in this opportunity were required to attend a study day to learn about the role and skills required for this position. Once trained, they had the opportunity to coordinate the flow of patients and liaise with surgeons and NUMs to make sure patients were operated on in the best conditions and within the ideal time frames.

7.2.2.3 *Lack of relationship to the patient.* The lack of direct interaction with patients was not typically raised unprompted as an issue among the nurses interviewed. However, when asked, they all acknowledged that given the nature of work in OTs, patients only stayed for a fleeting amount of time and were often unconscious, meaning there was limited time for interaction with staff except for brief periods before the surgery. The insular, "bunker", nature of the OT was pointed out as being singular and the opposite of other areas of the hospital where patients are awake and get to interact and show their appreciation for the work done by nurses.

Interviewees indicated that the lack of recognition from the patient did not bother them, perhaps because of the role peer-to-peer interaction seemed to play in their overall job satisfaction. During interviews, nurses explained that being recognised by their colleagues for their skills and expertise was a significant source of satisfaction and gratification. Peer-to-peer recognition provided a way for nurses to feel that their

contribution to the team was valued by their colleagues and that they were doing a good job. This was perhaps due to the increased functional rationality or was the result of the team and process thinking present in the OT. As much as the nurses highlighted the importance of doing a good job for the patient, they also stressed the importance of being a good team member by helping and supporting colleagues.

If you went to the ward, you will find that they get cards and chocolates and things like that, but here the patients do not remember what happens when they come to theatre. Sometimes we get patients that give us thank you cards, but you do not get the same recognition the wards get. I also get pretty good feedback, because when I am not here people would say, "I'm glad you're back," when I get back, and people tell me, "Oh, we didn't realise how much you did." (scrub/scout nurse, OT X)

What matters is what you do during the surgery So what matters is the people you are working with, your peers. That is really important to have peer recognition.... We are pretty good at telling each other, "Oh, you did this really well," or if you teach someone something they will say, "Thank you. You're a really good teacher," and then they teach you something and you say thank you. So that has been very nice. (scrub/scout nurse, OT X)

It is nice when the surgeon walks in on an emergency list or a trauma and they see you and they go, "Oh good, you're here. Fantastic." Clearly, I am doing a good job because they are glad I am here. (scrub/scout nurse, OT X)

7.2.3 Integration. Blauner (1964) referred to integration as the opposite state to social alienation. To him, work environments that promoted integration were ones where employees had a sense of commitment, belonging and loyalty to their work communities. In such environments, a strong process of normative integration resulted in a consensus amongst employees regarding the expected goals, behaviours, and potential rewards. This subsection will reveal practices that promoted social integration in OT X.

7.2.3.1 Combatting anonymity. An internal study conducted within OT X identified that 30 per cent of the workforce did not know the names and roles of their

colleagues. This anonymity was linked to the OT's physical size and the fact that most staff members worked rotating shifts which decreased their likelihood of working with the same colleagues every day. Several workplace improvement projects were put in place within OT X to combat this anonymity, which was seen as a potential source of errors and frustration amongst staff. First, whiteboards were installed inside the ORs for staff to document their names and roles at the beginning of the day. The board allowed all team members to quickly identify who was working inside the OR for the day, including the surgical team, anaesthetic team, nurses, operational assistants, and other personnel. Second, the huddles conducted at the beginning of every day provided team members with an opportunity to introduce themselves by communicating their names and role for the day. Finally, staff members in the OT were encouraged to print their names and roles on their theatre caps worn during the day. The goals of this initiative were to prevent the possibility of mix-ups when staff members had the same first name, and to facilitate the handover of patients. Although staff member might be familiar with the names of some of their colleagues, it was sometimes hard to recognise them when they were fully scrubbed and only their eyes were visible. Not having to constantly ask someone their role or name was described as a way of improving camaraderie and collaboration within the OT.

The huddles at the beginning of the day are great because it means that everybody in the operating theatre gets introduced. It is inclusive and involves everyone who is involved in patient care. So, the operational assistants, the anaesthetists, the surgeon, physiotherapist and whoever. (scrub/scout nurse, OT X)

Sometimes you need to get somebody's attention in a hurry, and you do not just want to yell out. I had an anaesthetist who used to call every single nurse "sister" because he just never learned anyone's name. So, he would just be out and say "sister" and it would be kind of awkward. So I think having the hats is good because if you have forgotten someone's name and

they haven't put it on the whiteboard you can quickly and easily identify who somebody is, or if you do not know what their role is as well you can see on their head their role. So, I think they are good. (scrub/scout nurses, OT X)

I guess in the peri-op environment most of the mistakes that are made are due to lack of communication. That is something that is told to us in training, studying, that we have to communicate effectively because it is the only way we can reduce mistakes and maximise patient outcomes. And not knowing who is doing what within the theatre environment in a complex surgery is an issue. If you do not know who the consultant is or who the anaesthetist is, you cannot tell them at the right time if there is an issue or if something needs to be done. You also need to know each other's roles, each other's expectations of the list and also have a friendly and nurturing working environment so that if you are a nurse you feel comfortable enough to voice any issue. (scrub/scout nurse, OT X)

7.2.3.2 *Internal structure and normative integration.* The normative structure in OT X was supported by a ranking system used to classify nurses. Those in higher, more senior positions were often the most experienced nurses and seemed to have internalised the goals and values of the OT. They clearly expressed these and worked on transmitting them to the younger or more junior nurses. When they first started working in OT X, junior nurses were allocated four months at a time in each of the three modules. At the end of their first year, they would have familiarised themselves with the different surgeries and teams and developed the skills needed to work across different specialties. As described by interviewees, junior staff often followed an individualised educational plan, they scrubbed under the supervision of a senior nurse to get hands-on training if staffing levels were adequate, and they were expected to complete a certain number of educational milestones by the end of their first twelve months. At the end of this year, the nurses requested to join a module where they would start refining their skills on the surgical specialties within that module. Once part of a module, the nurses had the opportunity of requesting to work on night and weekend shift, which required

continuous training and multiskilling in the various type of surgeries within their module and across the different modules. Nurses also had the opportunity of conducting quality improvement projects or furthering their education by pursuing additional university or post-graduate education. From there, they could progress in formal rank, becoming a clinical nurse specialist (CNS). Second in charge after a module NUM, a CNS required a post-graduate qualification and was expected to demonstrate a high level of clinical leadership and problem-solving skills. Beyond clinical practice, they oversaw research, piloted various quality improvement projects, acted as mentors and preceptors, and delivered education to more junior staff. Every surgical specialty in OT X had at least one CNS who worked most of the time in that specialty, was familiar with the surgical and anaesthetic teams and was, therefore, a valuable resource to whom other staff could turn and ask questions. Scrub/scout CNSs were also in charge of developing preference cards that were used by junior nurses to collect equipment and prepare ORs. CNSs were also expected to deliver education, contribute to presentations, and facilitate hands-on training for nurses in their specialty.

We have senior staff and that is always the people who work in the same rooms every day. And then middle staff, they generally sort of move around a bit; they get some exposure to some other specialties and then your junior staff who would be buddied up. Most of the time, sometimes it does not happen just due to staffing, but most of the time they are just buddied up with a senior staff member, someone who is appropriate and who is a good teacher and has good practices. (NUM, OT X)

Clinical nurse specialists are more senior registered nurses. So, you have your registered nurses that just graduate from university and they are classified up until 8 years. Then you have your clinical nurse specialist, they have a particular specialty that they are quite enthusiastic about and they would take ownership of that specialty and they will be well educated in that area with the help of educators. They will develop resources for other staff to be able to access, such as surgeon preference cards. They are also involved with managing the different instrumentation trays and keeping an eye on those. If there is certain instruments that are routinely

being requested but are not on the tray, they will work with the NUM to look at purchasing that instrument or if there is an instrument that is hardly ever used, having it removed from the tray (Manager, OT X)

Part of my role as a CNS, I have to do a quality improvement project. Which I kind of do every year. I do a lot of auditing and I also mentor as well. I have a preceptorship with a new grad nurse. At the moment, I am doing the hand hygiene initiative. Trying to improve our area in terms of hand hygiene and trying to improve our compliance. It is a national benchmark that we have to reach. I also go to meetings about infection control and things like that, so I am becoming a resource person to everyone about all sorts of things that are in that sphere. If there is any new information, I am responsible of feeding it through to everyone. (CNE, OT X)

This tiered staff structure (junior staff, core staff and specialist staff) appeared to foster a balanced skill distribution in the OT where employees of different levels of training and responsibilities worked together on delivering patient care. Nurses were encouraged by their NUMs to develop their skills and further their education to progress in the ranks. The OT provided a dedicated fund from which money could be used to support the nurses who wished to attend or present at scientific conferences or undertake special qualifications. On a hospital level, there was an agreement with a local university to give nurses special tuition rates if they wished to pursue further education.

I am pretty satisfied with where I am at. Because I started here, and I have grown a lot and had a lot of support from my manager moving forward, including post-graduate studies. I am in a very good place where I am comfortable in my role and in terms of where I am. There is potential to move around in other roles, which is what I have done. I have gone from a registered nurse to a clinical nurse specialist in my area and my manager really encouraged me to do that. My manager encouraged me, and they can subsidise your study. We have to pay for our study, but the hospital pays for [some of] your study. And it is not based on your performance but rather on how you are motivated. Everyone has the opportunity to do it if they wish. My manager always pushes me to do things which shows me that I can take on more things. I have done other things and people have appreciated it. (CNS, OT X)

Nurses were also encouraged to utilise all their skills, display, and develop their leadership and non-clinical potentials. Participants reported that the use of such skills was in fact recognised yearly in a ceremony with OT nurses. NUMs encouraged their teams to nominate three staff members from each different role (scrub/scout nurses, anaesthetic, recovery, and operations assistant) to receive an award. Beyond recognising those who had particularly invested in their jobs and demonstrated leadership, this form of recognition was described as a way to motivate the rest of the staff to accept the goals of the organisation and act according to the established norms and standards:

They [the nurses] were nominated by their colleagues as *I think they're a good nurse because...* . Most of it was, “They take the time to teach me,” “They're always encouraging new staff,” or “They really pay attention to detail in taking care of their patients.” You know you can tell the difference between the outstanding nurses and the nurses who do their job to the minimum. Just because someone is a nurse does not mean they are a good one. And it is that peer recognition as well. And being able to say I want this person to get recognised because they do a good job. (CNE, OT X)

The advancement possibilities offered to staff arguably led them to view their employment as a career rather than a short-term job, and potentially increased their loyalty and helped foster their identification with the organisation. In fact, all the interviewed nurses mentioned how happy they were to be working in OT X despite also mentioning issues that they would like to see resolved.

7.2.3.3 The quality of supervision. In OT X, the frequent direct communications between nurses and the managerial staff were believed to play a crucial role in staff integration and their identification with the organisational values and goals. Twice a month, the OT start time was delayed by an hour during which staff either attended an overall OT staff meeting, a module meeting, or a group education session. These sessions were called “late starts”. During the general staff meeting that occurred once a

month, KPI and performance data were presented to the staff. An in-depth analysis of performance was presented by a data manager who compared activity levels to previous years and national benchmarks. OT management teams also discussed any incidents that were reported, all process or policy changes that had taken place, and provided staff with various updates on topics related to OT management, patient safety, quality of care and department and hospital-wide issues. Staff were also provided with the opportunity to give feedback and present their ideas or any suggestions they might have. Module meetings were organised once every two months and they were coordinated by the NUMs of each module. Interviewees indicated that they were designed to provide staff with time for face-to-face communication with their direct managers and colleagues working in the same module. During such meetings, module-specific information was shared, and staff had the opportunity to discuss issues such as rostering, coordination, practice change or any module-specific topics. Finally, late starts were also used to deliver a variety of educational sessions, either to all staff or by breaking them down into different groups. In these education sessions, staff had the opportunity to reflect on their practice, learn about quality improvement project, discuss incidents and share their experience or attend a presentation given by either an educator, a senior staff member, a surgeon, an anaesthetist or other external speakers. Typically, when rostered, nurses were busy in ORs, and there were few chances for the whole OT staff to come together for collective deliberations, but having this protected time twice a month was described as a way of overcoming the scattered nature of the workforce in OTs. Beyond this protected time, the module NUMs also organised quick meetings at any time if they needed to communicate with their teams. Nurse educators also hosted at least two short education sessions every week at various times to accommodate the busy nature of the

nursing workforce and provide staff with ample opportunity to engage in group educational activities.

We have staff meetings with everyone I think once a month. I think it is excellent. All the places that I have been to have a staff meeting every month and you need it to get everyone up to date with the new standards, new ways of doing things and there is minutes that are being typed and you should have access to that and read them because there is very important information being passed. For instance, I learned that we are required to enter all the medication we use in the medication tab on the software they use. And I only knew that through meeting minutes. (scrub/scout nurse, OT X)

If you think about the concept of the huddle, it's like a huddle with a different focus. The huddle is about making sure you have a safe procedure and that everything is ready to go. The late start is a huddle talking about what is happening across the operating theatre and the hospital. And at the end of the day, you could be talking about finances or pressure devices that you are putting under patients on tables, but ultimately it is about patient and staff safety. If you do not do that, you are not telling people that you value them. If we do projects in theatres, we would use that as a forum for feedback. We use it for a whole variety of reasons. But if you don't invest in your staff, you are not going to have a happy staff. You can talk about patients all you like but if you do not have happy staff who want to come to work and do their job in the best way possible and feel valued and that they can have a conversation about something that is concerning to them, you are not going to have the staff. Or you are not going to have the effective staff. The people in theatre also value late starts and what goes on during that time. It is not like a ward, where you see each other all the time and have different instances of communications. They are behind shut doors, not everyone goes to tea break together and not everyone goes to lunch together. That's the only opportunity they have to come together. (Manager, OT X)

Based on interviews with multiple participants, the role of NUMs in OT X seemed more focused on consulting and helping their staff deliver high-quality care rather than exercising direct, disciplinary supervision. In fact, most of the coordinating and day-to-day problem-solving functions of the managers were conducted by team leaders or senior CNS. Their knowledge and expertise were often respected, and it gave them a legitimate source of authority over their fellow team members. NUMs, on the

other hand, appeared to focus more on logistical, strategic, and organisational functions such as rostering, recruitment, purchasing of equipment, elaboration and review of policy, and coordination with the different internal and external stakeholders. It appeared that, by virtue of being at the frontlines, closer to actual operations, nurses' opinions and requests were taken seriously by their NUMs, who indicated that they viewed themselves as advocates and supporters of their team members. When staffing was short or the nurses were under high pressure, the nurses we interviewed indicated that NUMs often stepped away from their managerial tasks to help them on the floor. This relationship of support and collaboration between managers and staff appeared to create a climate in which staff felt part of a cohesive team working towards achieving the same goal.

Being a good manager does not make someone a good leader. You know you want people to manage by example and be personable and be transparent to people. (Manager, OT X)

I always try to be just approachable and take their concerns seriously when they tell me. If someone comes to me with a request to gain a set of skills or something, I encourage them and follow up with them to make sure that what they want happens. (Manager, OT X)

I feel like managers will back you up if you are doing the right thing. (scrub/scout nurse, OT X)

If the team leaders want breaks, or they are really struggling. I just go out there: "I'm going to work clinical today." (Manager, OT X)

If you are a NUM, you have to do what you are asking your staff to do. If I am asking them to push a bed, I will also push a bed. If I am asking them to clean, I will also go get a mop and clean. It happens that I put the NUMs in theatre to give the staff tea breaks and they will do it. They would do it, but it is also an expectation that we would do that for your staff, you have to look after the staff if you want them to work for you. You do have to be the example. It is coming back to the basics and looking at how you want to be treated. You have to look after your patient and look after your staff. (Manager, OT X)

It is helpful because she [the manager] helps on the floor when we are busy and in stressful situations, she knows what it is like so she will come and help. (anaesthetic nurse, OT X)

7.2.4 Self-actualization. According to Blauner (1964), work is self-expressive when it contributes to the worker's sense of self-respect and dignity. To him, such work becomes inherently self-fulfilling as employees feel a sense of control over work that is meaningful and socially rewarding for them. This subsection focuses on how the nurses described their work at OT X as self-actualising.

7.2.4.1 Education, growth, and development. Nurses in OT X characterised their work as highly dynamic and intrinsically interesting due to the constantly changing nature of their work processes and environment. Stimulation, variety, and challenge were often mentioned during interviews when nurses were asked about what they liked the most in their job. Although some of them had become experts and had considerable levels of experience, gaining new knowledge, and updating their practice based on recent evidence-based research to deliver optimal patient care remained an integral part of their job. A culture of curiosity, constant learning and development was also fostered by the multitude of educational opportunities offered to staff members by the educators. When coupled with the opportunity to further their career, nurses in OT X had a strong incentive to keep learning, not only to deliver the best care, but also to increase their income (after becoming a specialist, nurses received a wage increase), develop their leadership skills and gain social status. Interviewees suggested that specialist nurses in OT X who had accumulated a lot of knowledge were regarded as resource persons, which gave them authority, leadership, and more significant input into their workplace. The chance for growth and development in OT X challenged the self-estrangement generated by personal stagnation described by Blauner (1964).

What makes me happy is the challenge and how much I am learning. I think it really comes down to education. It is a real evidence-based approach to nursing, where doctors and nurses debate about projects and research. So, you are on the same level as doctors. It is just that your area of interest is nursing and not medicine. But you feel like you have to be an adult learner in the way you approach things. It is very specific and complex and technical nursing that we do. It is really interesting. It is not a craft anymore and nobody can really tell you what to do if you have the evidence to back you up. Most of the nurses here are doing their own studies on the side. They all have post-graduate diplomas and certificates. Nurses here are always studying and learning. (scrubs/scout nurse, OT X)

I like the stimulation, like doing different stuff. Learning, seeing different cases. (scrub/scout nurse, OT X)

The more learning and education and study days and things you go to, the more you build up your portfolio. If you become a CNS, you can then apply for even more positions such as a CNE position if one becomes available, so there is opportunity for more promotions. But when you get the initial promotion there is a pay rise and there is more responsibility, which means you have more authority, which means you have more input, which means you have leadership. Then you get the social status of that person who knows a lot, "They are a CNS." So, the more things you attend, the more opportunity you have to get that first promotion which, then leads to... I mean how do you think the nurse manager got into a nurse manager position? (CNE, OT X)

7.2.4.2 Greater opportunity for involvement. Despite being a dynamic work environment, some of the nurses mentioned that their work at times felt monotonous and boring. Although trouble, in the form of an influx of trauma cases, patients deteriorating or significant delays, was not particularly welcomed, the nurses highlighted the sense of satisfaction and accomplishment that ensued from being challenged or succeeding in the face of increasingly difficult circumstances. Piloting quality improvement projects or requesting to work outside of their allocated module were amongst the strategies mentioned by the nurses to combat monotony and derive greater satisfaction from their jobs.

Sometimes it gets boring, but you have to find your own way of making it interesting It is kind of give a little, take a little. They allocate me to a

specialty, but they also know that I like to learn and so they challenge me. And again, if it gets boring then I have the option of being like, “My list is finished, I will go and explore something interesting.” (scrub/scout nurse, OT X)

If you get tired of one specialty, you can change to another specialty. So that means that you maintain your learning curve and you are challenged. So, in terms of professional satisfaction, if you become stale in one area you can change to another area and feel that kind of enjoyment of learning and achieving all over again You know change is good. It is good to be able to do something different once in a while. It could also be challenging, which is again I think is a positive thing. It is good to be able to challenge yourself. You can feel a little bit out of your depth which is all right too, but you need to have support. (scrub/scout nurse, OT X)

7.2.4.3 ***Positive occupational identity.*** Finally, all the nurses we interviewed mentioned that their work contained many aspects they found inherently fulfilling. They did not seem to consider their job merely as a means to an end but rather an end in itself—some even described it as a “vocation” (scrub/scout nurse). Delivering the best possible care to their patients was a source of a positive occupational and individual identity for the nurses, who often referred to themselves as being experts in their domains. Signs of self-estrangement were identified when the capacity for achieving that goal became hindered by internal or external pressures, thereby challenging their identity. For example, some of the nurses deplored the “industrial” and “cold” feel of the OT when pressure was occasionally exerted on them to meet KPIs. However, when asked about KPIs most of the nurses were unaware of the various indicators and their significance. Conversely, patient outcomes and quality improvement were of far more interest to staff, who spoke in great detail about these issues during interviews.

I love my job; I would not be here if I didn’t love my job. As I said, I live for big laparotomies [smile], the blood and guts! Give me blood and guts! [excitement]. (scrub/scout nurse, OT X)

I turn up every day and I have a smile on my face every day and nine times out of ten I have a really good day. So, there are clearly things that are good. (scrub/scout nurse, OT X)

The focus on KPI cannot go away and that is hard. When we had to cancel emergencies to get through elective cases. That was very hard. There were days where I would go home and be in tears or go to handover and be in tears, and that was not something that I could do because I did not feel like that was the best care we are giving to the patients. You go home, you have a cry and know that you are trying to do your best and then you come in the next day and do your best. (scrub/scout nurse, OT X)

We have to keep reminding ourselves that there is a person under all of this and a whole lifetime, however long that might have been, that brought them here to our operating theatre. (scrub/scout, OT X)

I think that we as nurses are all about the patients, we are the patients' advocates, we are the ones that say this should be done differently or why is this patient waiting all this time. But the rest of it is crunching numbers. So, when you are trying to be an advocate, but you are also being pushed because the number crunchers have decided that you are not efficient enough, it makes your life very stressful. (scrub/scout nurse, OT X)

Chapter summary

This case study started by presenting the overall strategy of OT X and the Lean-based MCS aimed at eliminating wastes and ensuring goal congruence supporting its execution. The practices constituting the MCS are summarized in Table 7.1.

Table 7.1: Characteristics of the Lean-based MCS in OT X

Lean inspired principle	Application	Goal
Production levelling	Use of a master surgical template Establishing standard delivery times for surgical procedures.	Meeting the MOH KPI for the elective waitlist and emergency access to theatres.
	Multiskilling staff to maintain the flexibility of productive resources by reducing setup and change over time.	

Lean inspired principle	Application	Goal
Continuous process flow	Use of visual management and Kanban to monitor progress and avoid delays.	Meeting the MOH KPI of less than 2 per cent cancellations on day of surgery.
	Floor Manager plays a pivotal role in orchestrating the day to make sure schedules are respected.	
Getting quality right, the first time	Empowering staff through education to stop and fix errors.	Ensuring that patients have access to safe, high-quality care.
	Electronic incident management system.	
Standardisation and continuous process improvement	Developing policies, procedures, and guidelines to reduce the variability of practices.	Passing quality and safety audits.
		Meeting mandatory training and education requirements for staff.
Avoiding over-processing	Conducting research to identify non value-adding practices and change them.	
Using “pull” systems to avoid overproduction	Creating a master surgical plan to align the availability of OT with demand.	Meeting the MOH KPI of 80 per cent theatres utilisation.
	Allocating OT time to departments and monitoring its use to potentially re-allocate based on activity.	Meeting the MOH KPI for the elective waitlist and emergency access to theatres.
Just-in-time delivery of equipment and tools	Linking sterilisation department to the OT through lifts to ensure just in time delivery of sterilised equipment	Containing costs. Avoiding delays that may lead to cancellations.
	Negotiating various contracts with suppliers to ensure the availability of stock.	
Space reconfiguration	NUMs and MM reviews OT lists to make sure equipment and devices are available just-in-time for surgeries.	Eliminating unnecessary movements that may cause delays.
	Using dual corridor architecture with a central storeroom conveniently located for staff thus avoiding unnecessary transport times.	

Source: Author’s conceptualisation

The second section of the case study revealed how the Lean-based MCS was considered to be non-alienating by the nurses because it promoted control, purpose, integration and self-actualisation. The nurses in OT X described how they were in control of their work environment as they were able to self-roster; choose, improve and modify their practices; regulate the pressure exerted on them; and maintain a high level of quality even when under pressure to work fast. They mentioned how their work was meaningful as they benefited from a broad scope of responsibilities. The nurses described how they belonged to an integrated community in which a layered internal structure supported a process of normative integration. They also highlighted how they maintained frequent and direct communication with their managers who seemed to focus on consulting and helping them conduct their work.

Finally, the nurses outlined how their work was self-actualising as they benefited from multiple opportunities to receive education which helped them further their career. They also reported that their work was inherently fulfilling and described how delivering the best possible care to their patients was a source of pride and a positive occupational and individual identity for them.

Chapter 8

Lean-based MCSs and the alienation of nurses in OT Z and OT X

The previous two chapters presented two case studies examining how Lean-based MCSs were implemented in OT Z and OT X as well as how they were experienced by nurses. The aim of this analytical chapter is to draw out the similarities between the Lean-based MCSs used in the two hospitals and highlight how they were each experienced differently by the nurses. Building on this comparison, the next chapter will focus on the factors influencing the intensity and type of alienation experienced by the nurses. This chapter is the third in Part 3 of this thesis (Figure 8.1)

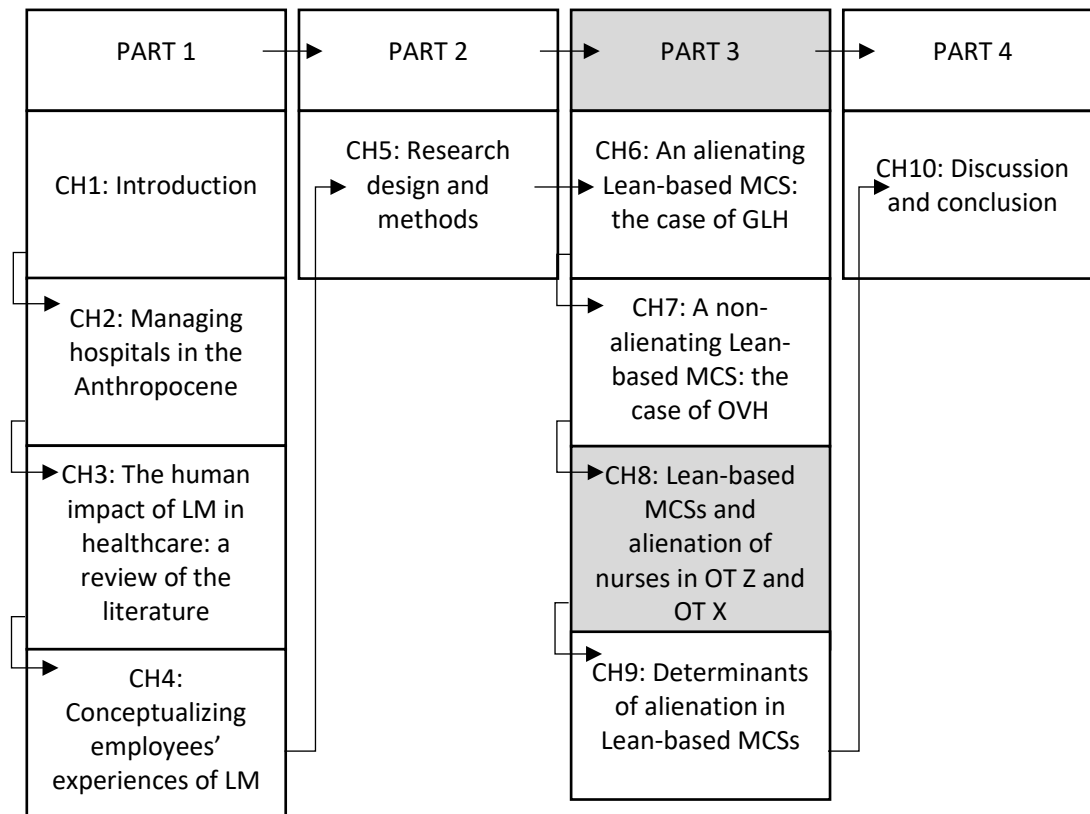


Figure 8.1: Thesis structure overview - Chapter 8

Source: Author's conceptualisation

8.1 Characterising the Lean-based MCSs in OT X and OT Z

This section will focus on how both GLH and OVH used the Lean principles of continuous flow, just-in-time, production levelling, continuous improvement, standardisation, and teamwork to support the execution of their organisational strategy. At the end of this section, and based on findings from the case studies, a characterisation of Lean-based MCSs and examples of how they could be applied in OTs will be presented.

8.1.1 Continuous flow. The Lean principles of continuous process flow, Kanban and visual management were used to optimise the utilisation of ORs, and avoid

delays and cancellations in both OT Z and X. In OT Z, barcode-equipped patient identification bracelets were systematically scanned by nurses in each workstation (reception, operating room, recovery) providing real-time tracking of the patients' journey. Surgical procedures were divided into four distinct phases (induction, installation, incision, stitching and cleaning) for which the start times were recorded in real-time. This tracking information was fed into a comprehensive *visual management* software used by the SNs. Daily, the SNs made sure that there was little to no divergence between the scheduled and actual durations of surgeries. When problems appeared, the SNs took the measures they believed were necessary to neutralise any negative impact. Along with the visual monitoring software, they also used an electronic Kanban system to manage the transport of patients to and from the OT. Using Kanban meant that patients arrived at the OT just in time for their surgeries, which helped avoid congestion and unnecessary delays.

In OT X, the same principles were applied, although the use of technology was less prominent. The FM was responsible for orchestrating the pre, peri and post-operative logistics using a paper Kanban (i.e., a patient transport request form) to manage the flow of patients throughout the day. A visual management system helped keep track of the progress of surgeries in different ORs. A “surgery in progress” status was systematically triggered by the FM once patients were wheeled out of the reception area and a “surgery completed” status was used to signal that an OR was ready to receive its next patient. Just like the SNs in GLH, the FM in OVH addressed any issues that arose to avoid delays or interruptions.

8.1.2 Just-in-time. To reduce the need for storage and avoid the unnecessary costs associated with buying equipment that risked not being used, stocks in OT Z were

managed using the Lean principle of just-in-time. Supplies and equipment were no longer ordered in large batches but were instead purchased on a case-by-case basis and delivered a day or two before they were needed. MDNs were responsible for tracking inventory movement and placing purchasing orders in a timely manner. The sterilisation unit was also externalised to an offsite facility to further optimise the use of space. Shuttles were used to ferry equipment and surgical trays to and from the OT and the sterilisation unit.

In OT X, just-in-time was also used to make sure the right equipment was available in the right ORs, in the right quantity and at the right time for surgeries to take place. Clinical NUMs worked hand in hand with three MMs to ensure the effectiveness of the procurement operations. The hospital also maintained a safety stock of specific equipment and prostheses on site to be used in case of emergencies. However, these items were on consignment agreements, which meant that the hospital only paid for them if they were used. For consumables, an electronic procurement management system was used to monitor usage and stocks in real-time and automatically generate replenishment orders if stocks got below a pre-set limit. The main storeroom of the OT was also linked via lifts to the sterilisation department located one floor above the OT. The lifts enabled the fast delivery of sterilised items to the OT, which was particularly important if they were being used for multiple surgeries on the same day.

8.1.3 Production levelling. In OT Z, production levelling was conducted by the OT regulator. Their main goal was to maintain a constant production rhythm in the OT throughout the year. To do so, an MSS based on an extensive analysis of the surgical activity was created and used to allocate OT time to the various surgical departments within the hospital. However, these allocations were never definitive and were always

subject to change based on fluctuations in demand. If they were not being fully utilised by a department, they were offered to another one to maintain optimal use of OT resources.

From an operational perspective, production levelling was supported by an accurate prediction of cycle times and a reduction of change over times. In OT Z, the duration of surgeries (cycle time) were pre-estimated using historical time analysis that was adjusted for surgeons and procedure types. These estimations allowed the regulator to accurately plan the OT workload and thus avoid overbooking or under-booking some of the OT rooms and their subsequent consequences of overflow or under-utilisation. Additionally, surgical procedures that required similar skillsets were grouped into modules. Within each of the modules, multiskilled nurses worked on a variety of surgical procedure which significantly reduced the changeover times that would otherwise be required if every surgery was conducted by a different team.

In OT X, a booking unit was responsible for fitting elective surgical procedures into a pre-determined production schedule referred to as a template. The template was created based on an historical analysis of the various clinical department's surgical activity. Just like OT Z, time in OT X was allocated, in the form of sessions, to surgical departments. Allocated but unused OT time was offered to all surgical specialties on a needs basis. From an operational perspective, production levelling was supported by accurate estimations of lead times and a multiskilled nursing workforce. In OT X, lead times (duration between booking a patient and the completion of surgery) for elective patients were either a maximum of 30, 90 or 365 days depending on their clinical assessment. For emergencies, the durations varied from 15 minutes to 72 hours based on the level of urgency and the patient's conditions. Predefining lead times at the booking

process was used to prioritise patient access to the OT based on their needs. To support this prioritisation process, a surgical waitlist tool was developed to automatically collect lead times and compare them to the allocated surgery dates. The tool helped identify patients approaching the end of their lead time who thus required priority access to the OT. Lead times were also used to evenly spread the OT workload over time. Just as in OT Z, the creation of modules, the reliance on multiskilled nurses and the subsequent reduction of changeover times also supported production levelling efforts.

Faced with a sustained increase in demand over many years, OT X had also been implementing a variety of demand-levelling techniques to avoid overwhelming the OT with an activity that exceeded its production capacity. Such techniques included transferring patients to other hospitals, modifying the surgical referral criteria and developing processes to assess the appropriateness of surgery for specific medical conditions.

8.1.4 Improving quality and continuous improvement. In OT Z, the compliance with national quality of care and safety standards was evaluated every five years by a national audit agency through a certification process. From an operational perspective, a quality control manager used a four-stage improvement strategy based on the Deming PDCA (Plan, Do, Check, Act) approach to solve problems and improve processes. The hospital also used an electronic system for identifying adverse events. When incidents took place, staff were encouraged to use the system to signal errors, dysfunctions or defects, along with any potential solutions they might have. Every

report triggered an investigation which began by examining the problem, conducting a root cause analysis, identifying solutions, testing, and implementing them.

In OT X, the quality of care was described as the responsibility of all members of staff. Getting quality right the first time was a priority for the hospital, which had been implementing a variety of quality improvement projects focusing on education, continuous improvement, communication and teamwork. First, a combination of mandatory and optional education modules with theoretical and practical components were offered to nurses throughout the year. Having access to continuous and on-site education was reported as a way of improving staff knowledge, their practices, and the care they delivered to patients. Being at the forefront of knowledge was also pointed out as playing an important role in empowering nurses and encouraging them to critically reflect on their practices. Second, Kaizen sessions, referred to as clinical practice reviews, were organised by the educators throughout the year to allow staff to reflect on practices and think of ways to improve them. The educators' role was to facilitate the session, and to eventually conduct research and develop implementation strategies for any improvements that the nurses identified. Finally, safety huddles were introduced at the beginning of each day to provide teams working in the ORs with the opportunity to discuss the list of procedures they were going to be conducting. The goal of the huddles was to improve patient safety and quality of care by ensuring effective communication between the different team members in an OR.

8.1.5 Standardised work. In OT Z standardisation of practices was achieved through the pre-definition of cycle times, the sequence of tasks and the level of inventory available for staff. Pre-defined cycle times were introduced to support production levelling and continuous flow in the OT. Time estimates for the completion

of the constituent tasks of surgeries (induction, installation, incision, stitching and cleaning) were provided during the booking process. A default value of 10 minutes was allocated to each of the induction and installation phases. Cleaning time was adjusted for each case based on the type and duration of the surgery. For each patient, a safety checklist was used to ensure the safety and quality of care they received. The purpose of the checklist was to standardise the different tasks conducted by the nurses to reduce practice variations that could lead to errors or incidents. Controlling the amount of stock available for nurses to execute their tasks was also one of the strategies used in the OT to reduce variability when it came to the execution of various tasks. Along with these three standardisation strategies, incident reports in OT Z often led to the development of policies by the quality assurance manager. These policies aimed to codify and standardise certain practices deemed necessary to avoid the reoccurrence of adverse events.

In OT X, checklists, policies, and guidelines were used to standardise aspect of the nurses' work to reduce the likelihood of adverse events. Clinical nurse educators, consultants and senior nursing staff worked collaboratively to identify best practices before creating policies or developing practice guidelines. Likewise, nurses in OT X did not always have control over the order in which they executed their tasks, which were mostly sequential in nature. Inventory control was also used to reduce practice variation, however, standardisation of cycle times (i.e. duration of surgeries) was not found to occur in OT X.

8.1.6 Space configuration. Both OT Z and OT X used architectural configurations to optimise the movements of staff and equipment, reducing the need for unnecessary movements and transport. In OT Z, dedicated storage areas were located in

proximity to the OR, facilitating the access to frequently used equipment and items.

Essential equipment, on the other hand, was mounted on the walls of the ORs.

In OT X, a dual corridor architecture with a central storeroom allowed staff to conveniently access frequently used equipment and stock items, thus eliminating the need to transport them.

To conclude, the practices forming the Lean-based MCS used in OT Z and X are summarized in Table 8.1.

Table 8.1: Summary of Lean-based MCSs in OT Z and OT X

Lean principle	Application	Goal
Production levelling	<ul style="list-style-type: none"> - Use of a Master surgical template. - Establishing a standard delivery time for surgical procedures. - Multiskilling staff to maintain the flexibility of productive resources by reducing setup and change over time. - Allocating OT time to departments and monitoring its use to potentially re-allocated based on activity. 	<ul style="list-style-type: none"> - Align availability of OT with demand. - Maintain high utilisation rates. - Decrease the likelihood of overbooking the OT. - Managing waitlist and maintain OT accessibility.
Continuous process flow	<ul style="list-style-type: none"> - Use of visual management and Kanban to monitor progress and avoid delays. - Floor manager/scheduling nurse orchestrate logistics to make sure schedules are respected. 	<ul style="list-style-type: none"> - Decreased risk of cancelling patients. - Avoid delays and interruptions. - Maintaining production rhythm and respect predefined schedule.

Lean principle	Application	Goal
Getting quality right, the first time	<ul style="list-style-type: none"> - Empowering staff through education to stop and fix errors. - Electronic incident management system. - Quality manager, educators and clinical consultants conduct research, investigate errors, and implement quality improvement projects. - Nurse-led quality improvement projects. 	<ul style="list-style-type: none"> - Ensuring that patients have access to safe, high-quality care. - Passing quality and safety audits. - Meeting mandatory training and education requirement for staff.
Standardisation and continuous process improvement	<ul style="list-style-type: none"> - Developing policies, procedures, and guidelines to reduce the variability of practices. - Standardising completion times, stock at hand and order of task execution. 	
Just-in-time	<ul style="list-style-type: none"> - Linking the sterilisation department to the OT to ensure just in time delivery of sterilised equipment. - Negotiating various contracts with suppliers to ensure the availability of stock. - Medical devices nurses or purchasing managers review OT lists to make sure equipment and devices are available just-in-time for surgeries. - Use of electronic stock management software to keep track of inventory levels and generate purchase orders. 	<ul style="list-style-type: none"> - Containing costs. - Avoiding delays that may lead to cancellations. - Reduce the need for on-site storage and associated cost. - Reduce the risk of buying equipment that may not be used.
Space reconfiguration	<ul style="list-style-type: none"> - Storing equipment near their point of use. - Wall mounting equipment. 	<ul style="list-style-type: none"> - Eliminate unnecessary time spent on locating and transporting equipment.

Source: Author's conceptualisation

8.2 Alienation of nurses in OT Z and X

Despite being similar, the two Lean-based MCS used in OT Z and X were experienced differently by the nurses. The following section compares the nurses' experiences of the Lean-based MCSs in the two OTs.

8.2.1 Powerlessness versus control. Powerlessness is manifested when workers have little control over the quantity, pace, and quality of their work and when they are unable to choose their work methods and have limited freedom of movement. Control is the opposite non-alienating state of powerlessness (Blauner, 1964). This is now discussed in relation to quantity of work, pace of work, quality of work, work methods and freedom of movement.

8.2.1.1 *Quantity of work.* Both nurses in OT X and Z described having no control over the quantity of work they executed during their shifts. In OT Z, the number of procedures was determined by the OT regulator whose mission was to make sure the ORs were fully utilised. In OT X, the number of patients was determined by the surgeons and the IBU.

8.2.1.2 *Pace of work.* In OT Z, nurses reported having no control over the pace of work that was set in advance during the booking process. The nurses' compliance with the pre-set execution times was monitored in real-time using progress tracking software. The software was used by the SNs who were responsible for monitoring the work pace and troubleshooting any issues that might cause delays or interruptions to the production. In OT Z, the nurses reported increased pressure on them to perform quickly even when working on new and unfamiliar procedures. The lack of control over the pace of work was mentioned as a significant source of stress especially when coupled with high rates of sick leave, insufficient training, and the unpredictable nature of the work. Senior, more experienced, nurses reported how the fast-paced work environment left no room for training the junior staff, which further intensified the pressure exerted on them. In fact, when junior nurses were untrained, senior staff were constantly relied

upon for the execution of long and complex procedures. This was particularly the case for senior scrub/scout nurses.

In OT X, nurses seemed to have more control over their pace of work when compared to their peers in OT Z. To regulate the pressure exerted on them, scrub/scout nurses reported being able to vary their efforts by alternating their role throughout the day. The adequate training level of most nurses enabled this job alternation process to take place without impacting performance or jeopardising the safety of patients. The duration of surgical procedures in OT X was based on an historical average of the different surgeons. However, these durations were only considered indicative and were not described as having an influence on the nurses' pace of work. A progress tracking software was used by the FM to monitor the progress of the OT list each day. The software was used to identify the order of patients and their locations.

8.2.1.3 ***Quality of work.*** In OT Z, nurses reported having very little control over the quality of the tasks they executed. The constant pressure to get through patients quickly was mentioned as a hindrance to their desire to perform their tasks according to their personal quality standards. Some of the nurses mentioned how, in this context, they resorted to accepting occasional suboptimal performances instead of continually striving to deliver high-quality work. In OT Z, nurses were encouraged to use a reporting software to signal any adverse events that could have or had an impact on the quality of care. However, nurses pointed to the limited use of this tool and the time-consuming aspect of filling out the reports.

In OT X, the nurses reported being supported and encouraged by their managers to take ownership and responsibility for the safety of patients and the quality of care delivered. In fact, all the interviewed nurses mentioned that advocacy for patient safety

was an integral part of their role. To ensure quality was integrated in daily practices, the hospital provided nurses with continuous on-site education, making sure that they always had the required skills to deliver high-quality care. Along with educational and training programs, the nurses were also encouraged to stay up to date with the patient safety literature and to critically reflect on their practices and those of their colleagues. Safety huddles were also conducted at the beginning of every day within the ORs. Huddles gave nurses the opportunity to slow down, anticipate and think about what they required in order to deliver optimal patient care.

8.2.1.4 **Work methods.** Nurses in OT Z described having little control over their practices and work methods. When reporting adverse events, the nurses were able to suggest practice or process changes that could decrease the likelihood of errors. Before being implemented, such practices had to be reviewed by the quality manager who conducted a root cause analysis to unravel the elements leading to the adverse event in the first place. If the nurses' solutions were deemed adequate, the quality manager developed practice guideline or policies to implement them.

In OT X, the nurses reported that they had considerable control over their work environment, processes and methods when compared to OT Z. During the interviews, the nurses discussed a variety of quality and workplace improvement projects that they were leading and implementing. Most of these projects were based on recently published evidence-based literature and were designed to address work processes and practices that the nurses had identified as requiring improvement. Educators, managers, and clinical consultants all collaborated with the staff to question existing processes and look for ways to improve patient outcomes and work conditions. Clinical practice

review sessions provided staff with time and resources to collectively reflect on practices and think of ways of improving them.

8.2.1.5 ***Freedom of movement.*** Both the nurses in OT Z and OT X mentioned that they had restricted freedom of movement. This could be linked to the nature of their work that required them to be confined within the ORs. In fact, in both hospitals, the nurses rarely left their ORs except for occasional short breaks. When leaving, if not between surgeries, nurses needed to be replaced by someone who could carry out their duties in their absence.

In OT X, although they had restricted freedom of movement, nurses were able to request to work in particular ORs. While managers did not always honour such requests, most of the time they were able to when the impact on education and skillset distribution was minimal. Nurses were also free to participate in the planning of their rosters which meant they were able to choose the days and times on which they wanted to work. In OT X, self-rostering and allocation seemed to offset the alienating effect of the lack of free movement. Table 8.2 summarises the degree of control the nurses had in both OTs on the pace of work, quality, quantity, work methods, and movement.

Table 8.2: Summary of control versus powerlessness of nurses in OT Z and OT X

	Pace of work	Quality	Quantity	Work Methods	Movement
OT Z	No control	Partial control	No control	No control	No control
OT X	Sense of control	Sense of control	No control	Sense of control	Partial control

Source: Author's conceptualisation

8.2.2 **Meaninglessness versus purpose.** Meaninglessness is manifested when workers are not able to develop a sense of function and see the relationship of their

contribution to the overall organisation due to increased functional rationalisation. It is also the result of narrowly defined jobs in which employees have limited levels of responsibility. Purpose is its opposite state (Blauner, 1964).

8.2.2.1 ***Functional rationalisation and substantial rationality.*** In OT Z, the nurses we interviewed criticised an organisation in which the main emphasis was on efficiency and productivity. All of them used the term “pawns” to describe the instrumental and purely utilitarian relationship they developed with the hospital. Most talked about the absence of a global vision or a purpose. They, instead, outlined a self-centred organisation where individual actions were confined to the execution of narrowly defined functions. When mentioned, this reduced substantial rationality was believed to be the result of the increased functional rationalisation of the nurses’ work. A feeling of meaninglessness amongst staff seemed to be amplified by the cyclic nature of their jobs which appeared to be engaging them in a task-oriented dynamic where the focus was placed on the timely execution of a set of tasks before patients moved onward in their journey and out of their control. Most used the terms “factory” and “production line” to describe the OT, some called it a “war machine” while others referred to themselves as technicians as opposed to nurses. The increased functional rationalisation seemed to have severed the nurses from any connection with the organisation.

In OT X, nurses appeared to experience a more meaningful connection between their own functions and the goals of their organisation. In the OT, the focus was placed on the overall operations undertaken by the teams rather than on the individual tasks executed by the nurses. This process orientation meant that nurses had to think beyond the execution of their immediate tasks and understand that getting the job right required effective collaboration and teamwork. Along with process thinking, the cross-functional

multiskilling of nurses (training them for managerial and leadership roles) also enabled them to have a broader understanding of the different processes of the OT and how their jobs were part of a bigger picture. Additionally, peer-to-peer recognition of effective teamwork seemed to play a big role in the nurses' development of a sense of purpose and function within their team.

8.2.2.2 *Level of responsibility.* Meaninglessness in OT Z seemed to also be related to the fact that staff were not required or expected to have skills beyond those needed for the completion of their immediate tasks. Their contributions were limited to the manual and technical execution of their jobs and their knowledge and experience were not used to help improve the overall performance of the OT.

In OT X on the other hand, the nurses had both an individual and a collective responsibility towards their patients, their hospital, and their local community. In the OT, they were supported by their managers and encouraged to look beyond the scope of their immediate tasks. Most of the nurses highlighted the importance of teamwork and mentioned how they were working on helping their team members with the completion of various tasks (developing reference books, teaching, or transferring knowledge). Beyond their contribution during surgical procedures, nurses were also involved in a variety of other tasks aimed at improving their overall work environment and the quality of care delivered to patients. The level of substantial rationality, functional rationalisation and degree of responsibility described by the nurses in OT Z and X are summarized in Table 8.3.

Table 8.3: Summary of meaninglessness versus purpose in OT Z and OT X

	Substantial rationality	Functional rationalisation	Responsibility	Meaninglessness
OT Z	Low	High	Low	Reported
OT X	High	Low	High	Not reported

Source: Author's conceptualisation

8.2.3 Isolation versus social integration. Isolation is manifested when workers lack a sense of membership to an industrial community and are unable to identify with the goals of their organisation. Isolation for Blauner, is manifested in a sense of anonymity amongst staff that is closely tied to the absence of stable normative structures and integration. Social integration is the opposite state of isolation (Blauner, 1964).

8.2.3.1 *Anonymity.* The nurses interviewed in OT Z reported a feeling of depersonalisation and a sense of anonymity. Most described an atrophied group structure symbolised by deficient teamwork, an individualistic approach to the execution of tasks and the appearance of subgroups in the OT. In their search for a sense of membership and belonging, nurses in OT Z seem to have resorted to forming groups based on their occupational identity.

In OT X, several initiatives were in place to combat anonymity in the OT: whiteboards were installed in every OR and were used by staff to write their names and roles. Huddles were conducted at the beginning of every day which provided team members with the opportunity to introduce themselves and communicate their roles to other. All staff members were also encouraged to print their names and roles on their theatre caps to facilitate their identification.

8.2.3.2 *Normative integration.* Nurses in OT Z expressed a sense of cynicism when talking about their workplace, mentioning that the quality of their work, their level of investment in the organisation and their efforts often went unrecognised. This feeling was further intensified by an organisational structure in which the lack of opportunities for promotions provided nurses with no incentive to demonstrate their skills, take the initiative or show their resourcefulness. In fact, the senior, and more skilled nurses mentioned that they were perceived as inefficient and inflexible because their specialisation meant that they were often not multiskilled, a required operational injunction in the OT. The absence of a recognised group of senior nurses who embodied and represented the values of the hospital provided a weak foundation for the social and normative integration of nurses in OT Z, especially when coupled with a flat formal structure and no opportunities for progression.

In OT X, nurses belonged to one of three classifications: enrolled nurses, registered nurses, and clinical nurse specialists. The main difference between nurses in each of those classifications was the level of qualifications completed by the nurses. This tiered staff structure led to a balanced skill distribution where nurses of different levels of training and responsibility worked together on delivering patient care. In OT X, nurses were encouraged to pursue further education and get involved in additional training to progress their career and move from one classification to another. Yearly, managers and staff nominated three members from each core function (scrub/scout, anaesthetic, recovery nurses and operations assistant) to receive an award for displaying leadership or for advanced clinical or organisational skills. In OT X, the internal classification of nurses supported a strong normative structure in which senior and more

experienced nurses had internalised the goals and values of the organisation and worked on transmitting them to the junior staff.

The findings of the case study also indicated that the frequent direct communication with the managerial staff through regular meetings and the organisation of group educational activities helped reinforce the social integration of nurses and their identification with the organisational values and goals in OT X. The degree of anonymity and the level of normative integration varied in OT Z and OT X and are summarized in Table 8.4.

Table 8.4: Summary of Isolation versus social integration in OT Z and OT X

	Isolation	Normative integration
OT Z	High	Low
OT X	Low	High

Source: Author's conceptualisation

8.2.4 Self-estrangement versus self-actualisation. Self-estrangement is the last dimension of alienation identified by Blauner (1964). Workers are self-estranged when their jobs become a simple means to the end of making a living. Work that is self-estranging is work that evokes a sense of boredom and monotony instead of a sense of purpose, self-expression, and self-actualisation.

Nurses in both OT X and OT Z described their work as intrinsically involving and interesting. In OT Z, modern equipment provided the nurses with less strenuous work conditions and the highly specialised surgical procedures were depicted as making the OT more attractive to them. The nurses also mentioned that working in different modules and the uniqueness of every patient made their work more engaging.

In OT X, the constant stimulation, challenge, and variety were mentioned by the nurses when they were asked what they liked the most in their jobs. The continual opportunities for learning and professional development offered to the nurses in OT X also helped foster a culture of curiosity and collaboration amongst members of staff who in turn found their work more rewarding. The chance for growth and development, enabled by the different classifications of nurses, challenged the self-estrangement that might otherwise result from a feeling of stagnation, providing nurses with opportunities to progress in their careers. In OT X, to combat monotony and boredom, nurses often asked to work outside their module, creating a sense of challenge in their work.

Overall, both nurses in OT X and OT Z considered their job as an end rather than a means to satisfy other ends. Signs of self-estrangement were only apparent when organisational pressures hindered the nurses' desire to provide the best care possible to their patients. In both cases, the nurses deplored the "industrial" feel when pressure was occasionally, in OT X, and frequently, in OT Z, exerted on them to meet financial KPIs or productivity requirements at the expense of delivering high-quality care.

Chapter summary

The overall differences in the forms and degrees of alienation experienced by the nurses in OT Z and OT X are summarized in Table 8.5.

Table 8.5: Alienation of nurses in OT Z and OT X

	Alienating dimension	OT Z	OT X
Powerlessness	Pace of work	No control	Control
	Quality	Partial control	Control
	Quantity	No control	No control
	Work methods	No control	Control
	Movement	No control	Limited control
Isolation	Anonymity	High	Low
	Normative integration	Low	High
Meaninglessness	Substantial rationality	Low	High
	Functional rationalisation	High	Low
	Responsibility	Low	High
Self-estrangement	Self-estrangement	Reported	Reported
	Self-actualisation	Not reported	Reported

Source: Author's conceptualisation

The aim of this chapter was to present the similarities between the Lean-based MCSs used in the OT Z and OT X and highlight how they were each experienced differently by the nurses. Section 8.1 discussed how both OTs used the Lean principles of continuous flow, just-in-time, production levelling, continuous improvement, standardisation, and teamwork to support the execution of their organisational strategy. At the end of this section, and based on findings from the case studies, a characterisation of Lean-based MCSs and how they were applied in OTs was presented.

Section 8.2 revealed that, despite their similarities, the two Lean-based MCSs used in OT Z and X were experienced differently by the nurses. In OT Z, the MCS was alienating to the extent that the nurses described a state of powerlessness, isolation, meaninglessness, and self-estrangement. In OT X, the MCS was not alienating as the nurses benefited from greater control over their work environment, were socially integrated, and found purpose and meaning in their work, which contributed to a sense of self-actualisation.

The following chapter will reveal the factors influencing the intensity and type of alienation experienced by the nurses in OT Z and X. When present, these factors promote a sense of control, purpose, social integration, and self-actualisation. When absent, they render work more alienating.

Chapter 9

Factors influencing the type and intensity of staff alienation in Lean-based MCSs

The previous chapter discussed how despite their similarities, the Lean-based MCS used in OT Z and X were experienced differently by the nurses. This chapter will evaluate three factors that may be associated with the varying forms and intensity of alienation expressed by the nurses in the OTs. It concludes the empirical part of the thesis (Figure 9.1).

The chapter has three sections. Section 9.1 focuses on the process of standardisation used in the two OTs. Although similar in appearance, standards were used and developed differently in each of the cases. Section 9.2 concentrates on the organisational structure and power dynamics in OT Z and OT X, contrasting the degree of autonomy accorded to—and the level of surveillance exerted on—the nurses. Finally, Section 9.3 compares the extent to which managerial practices in the OTs contributed to the nurses' understanding of their work environment.

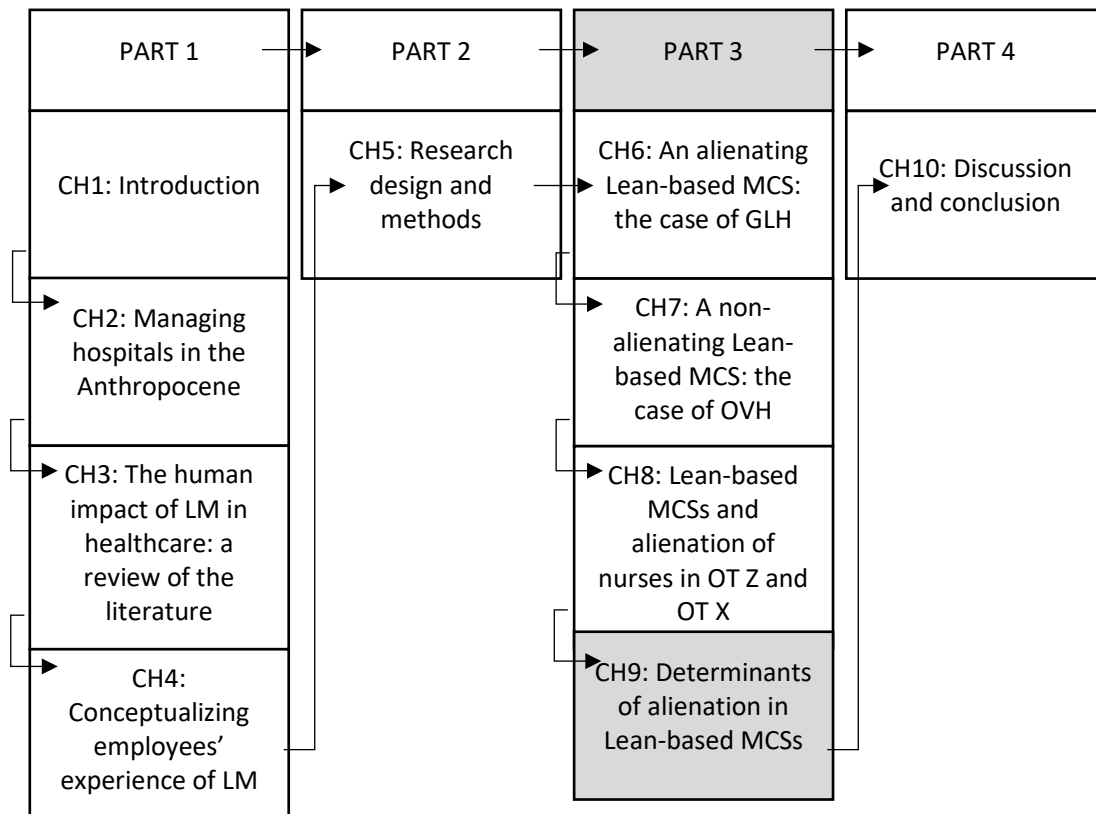


Figure 9.1: Thesis structure overview - Chapter 9

Source: Author's conceptualisation

9.1 Bottom-up versus top-down standardisation in OT Z and OT X

The standardisation of practices was at the foundation of the Lean-based MCSs used in both OT Z and OT X. It was considered a key facilitator of continuous process improvement and described as being integral to the delivery of high-quality care. The two case studies discussed in detail how both OTs were using checklists, policies, and guidelines to reduce variations in the way nurses conducted their different tasks. Despite their apparent similarities, a closer look at how managers at the OTs approached the process of defining standards reveals considerable differences.

In OT X, the nurses described how they were trusted and encouraged by their managers to contribute to the development of the rules and standards governing their practice. Although the level of contribution varied based on the nurses' level of experience and rank within the OT (enrolled, registered or CNS), overall, all the interviewed nurses mentioned how they had the opportunity to contribute to the process of developing and improving procedures and work methods. This bottom-up approach led to high levels of acceptance of, and compliance with, the standards. In fact, the nurses often highlighted the relevance, flexibility, and adaptability of the standardised processes that enabled them to face the emerging contingencies they faced daily.

Clinical practice review sessions were particularly revelatory of the underlying logic guiding the use and elaboration of standards in OT X. Described as forums, these sessions provided the nurses with the opportunity to bring up and discuss with their peers any topic or issue that was impacting their practice. These forums were facilitated by clinical nurse educators or NUMs who not only listened to the issues brought up by the nurses, but also brought their expertise to the table and collaborated with other nurses on finding solutions. Issues discussed in the forums were varied and covered both clinical problems and broader performance related ones. For instance, if a certain KPI was not being met, the nurses and the managers discussed and agreed on the measures needed to improve the overall performance of the team.

In contrast, standardisation in OT Z followed a strict top-down process. As revealed by the case study, the quality manager had the principal responsibility for developing and improving work methods and standards. The latter were designed for the nurses to follow with the aim of error proofing the surgical delivery process, to entirely prevent errors or mistakes from occurring. Although the nurses described the

existence of an electronic error declaration tool that allowed them to give feedback or suggest improvements to the existing processes, they also mentioned that the tool was intended to be used only when reporting incidents or adverse events. Additionally, any suggestions made by the nurses had to be approved and then implemented by the quality manager.

In OT Z, the interviewed nurses highlighted the ways in which work processes, standards, guidelines, and protocols were often disconnected from the reality of their work. Most mentioned that their voices were not heard and that the solutions or ideas they come up with were rarely listened to. They deplored an organisation in which productivity and efficiency seemed to be the only focus and where managers who were far from the front-line made most of the decisions.

As discussed in the case study, the lack of control over work processes was one of the main contributors to the feeling of powerlessness expressed by the nurses in OT Z. The findings suggest that it is not the mere existence of standards that contributed to that feeling but rather the fact that the nurses did not contribute to their development, and these standards therefore were experienced as externally imposed.

9.2 Autonomy versus surveillance in OT Z and OT X

Compliance with standards and performance measurements were approached differently in OT Z and OT X. In the latter, a diffused power structure in a hierarchy of knowledge ensured that the nurses were not only aware of the rules, standards, and acceptable performance levels but that they were supported in their efforts to execute and meet them. In OT Z, on the other hand, a command and control hierarchy used an elaborate surveillance apparatus to monitor and measure the nurses' performance.

In OT X, CNSs were first in the hierarchy above registered and enrolled nurses. They were recognised by their peers, and the hospital, as particularly knowledgeable members of staff. Although they still had a clinical role, they contributed to the overall OT leadership team. CNSs often functioned as mentors or preceptors for less experienced nurses. They participated in a variety of quality improvement projects and assisted the NUMs with the daily management of the teams. Each of the CNSs in OT X looked after a surgical specialty in which they worked most of the time. They were described as a valuable link between the surgeons, managers and the core staff of nurses who constantly rotated across the different modules and specialties. CNSs did not have a formal commanding authority over the nurses in the OT. Rather, the authority they possessed stemmed from their experience, knowledge, and capacity to teach. They were often looked up to and had the respect of their colleagues.

CNEs, like CNSs, had an authority based on their knowledge and experience in OT X. They sat directly above the nurse specialists in the hierarchy and acted as a link between the clinical NUMs and the nursing staff. Devoted to teaching, CNEs played a pivotal role in supporting the organisation of OT X. They developed and implemented educational programs for the nurses. They worked closely with the NUMs and CNSs to identify the areas in which staff required further training and elaborated personalised educational plans for nurses who struggled to meet the required performance levels. Identifying needs was at the core of the educator's role and enabled them to deliver valuable and meaningful education that provided staff with support to execute their daily tasks while making sure they practiced according to the standards in place. They also worked with the CNCs to integrate learnings from adverse events in the daily practices and collaborated with surgeons who sometimes flagged areas in which nurses

needed more training. Creating a learning, nurturing and supportive environment in which the nurses were not afraid to ask for help was part of the educator's mission. They promoted peer-to-peer and interdisciplinary learning by facilitating a variety of collective learning sessions. During such events, experienced staff and other qualified personnel were offered a platform to share their knowledge with the OT nursing staff. Educators also provided firsthand practice sessions to teach staff how to use equipment in a stress-free environment as well as delivering more theory driven classes. Constantly assessing the skills and providing training and education to the nurses was one of the ways in which goal congruence was achieved in OT X.

NUMs were above the educators in the functional hierarchy of OT X. Although they had formal authority over the nursing staff, all interviewed managers described how most of their authority was delegated to other staff members. Indeed, a NUM's role encompassed both an organisational and a clinical dimension. However, the clinical overseeing of modules was often delegated to either the CNSs or the TLs. This delegation was described as having two benefits: it provided the NUMs with additional time to focus on their organisational tasks (e.g., attending meetings, creating rosters, conducting annual performance reviews, hiring new staff, negotiating purchasing and broadly liaising with internal and external stakeholders); and it provided the nurses with personalised, up-to-date and accurate clinical support from expert CNSs who practiced in their specialties. This delegation endowed the nursing staff with considerable power: when problems emerged, it was the nurses—closest to the real operations—rather than the managers, who were most capable of fixing them. That is, proximity to the work being conducted gave the nurses greater power over improving quality and efficiency.

Thus, they engaged in the decision-making process and their needs and requests were considered legitimate and were listened to by the managers.

In contrast to OT X, the practices ensuring that employees' actions and behaviours were aligned with those of the hospital were often described as autocratic and coercive in OT Z. The push for increased efficiency focused on the obsessive elimination of waste was supported by a sophisticated surveillance system implemented in the OT. By extracting and consolidating real-time performance information, the software used in the OT made it possible to monitor the progress of the work being conducted without the need to be physically present in the OT. In fact, NUMs in OT Z asked for their offices to be relocated outside of the OT. The software made surveillance both visible yet unverifiable by the nurses. That is to say, the progress of each surgery was visible on screens in the hallways, offices around the OT and was even accessible from within the ORs, however, nurses had no way of verifying whether their progress was being watched at any given time. The effectiveness of this surveillance apparatus in driving performance was due to the influence it had on the actions of nurses.

In sum, goal congruence in OT X was achieved through a hierarchy of knowledge and an important focus on training and education. These two aspects were reflected in the organisational structure of the OT, which, despite being functional, was characterised by a diffused authoritative structure. The organisational structure was multilayered and supported a process of normative integration through which rules and practices were transmitted from one layer to the next. While ensuring that rules and standards were respected, this process also supported the social integration of the nurses. Contrastingly, goal congruence in OT Z was the result of a sophisticated surveillance system. Coupled with a flat organisational structure and the absence of

normative integration, the approach used in OT Z led to a socially alienating work environment for the nurses.

9.3 Comprehension of internal and external organisational contexts

Managerial practices varied between OT Z and OT X regarding the extent to which they facilitated the nurses' understanding of the existing work processes, standards and the overall context surrounding the activity undertaken in the OTs.

In OT X, managers played a pivotal role in communicating intelligible information to the staff regarding their performance and the overall context and contingencies that surrounded their practice. The case study identified multiple occasions during which two-way communication took place between managers and staff. First, late starts were scheduled twice a month to provide staff with a surgery-free hour during which they attended meetings or engaged in collective educational activities. Regular staff meetings were organised—either all staff or module specific—to provide staff with performance related data and graphs. These were discussed and commented on by the NUMs or the OT manager. Fluctuations in the OT budget, the acquisition of new equipment and any other hospital related updates were also communicated during meetings. Although when described, these meeting appeared unidirectional (i.e., managers relaying information to staff), the participants mentioned that they always included a discussion time at the end where staff had the opportunity to express their thoughts and ideas. The nurses mentioned that discussions were not rare and reported that the attending staff contributed frequently to the conversation.

When general staff meetings were not scheduled, module meetings took place during the late start. Described as being smaller and more intimate, these meetings

focused on a specific area of the OT. They took place concurrently for each of the core competencies per module (scrub/scout and anaesthetics) and provided staff with an opportunity to have face-to-face communication with their NUMs and colleagues working in the same module. The module meetings were depicted as being an opportunity for the nurses to reflect and discuss a variety of topics relevant to their module, including financial, organisational, and clinical issues. When facilitating those meetings, NUMs described how they updated staff on the progress and achievements made on topics raised in previous meetings. For instance, if the staff had requested a specific instrument or equipment, the managers often used the module meetings to give a progress update on the status of the requests made by the nurses.

Frequent face-to-face communication was described as essential to developing the nurses' understanding of the broader context of their workplace. It was described as a valuable investment by participants; they maintained that the meetings both contributed to the nurses' efforts at optimising their individual performance and encouraged them to identify system wide opportunities for improvements. Meetings were also seen as a way of breaking the silos resulting from the often isolated and scattered nature of the workforce in the OT. Coupled with education and training that provided the nurses with the rationale behind the rules and procedures in place, meetings provided them with clear information on their performance and the expectations surrounding their practice.

In OT Z, to avoid the costs associated with interrupting surgical activity, meetings were rarely held; the interviewed nurses deplored this absence of face-to-face communication with their managers. Instead of meetings, e-mails were the main communication channel used in the OT to convey information to staff. Although the

nurses indicated that they would eventually speak face-to-face with their managers during their break or when they requested an appointment, there was no scheduled time for managers and staff to come together and discuss the overall work they did in the OT. Meetings were considered to be a source of waste that was eliminated in the new structure. The absence of meetings was another reflection of the command and control managerial style in which the need for discussions was not seen as valuable. All the participants mentioned that they felt like “pawns” who were given orders to execute without an opportunity to understand and discuss them. This “do as you are told” logic gave way to the appearance of several inconsistencies and contradictions not only between the nurses and their managers but also amongst the nurses themselves, who had different understandings of the rules and procedures they were expected to follow. The nurses described how they felt the absence of a common goal and mentioned that without meetings, targets became individually set which led to conflicts that impacted teamwork. Whereas some participants championed a "quality at any cost" approach, others prioritised speed and efficiency over trying to deliver the best possible care given the context. Findings of the case study suggested that this absence of communication could be responsible for the state of meaninglessness experienced by the nurses in OT Z.

Chapter summary

The aim of this chapter was to reveal the factors influencing the extent to which the Lean-based MCSs used in OT Z and OT X were experienced as alienating or non-alienating. The two case studies presented previously highlight the fact that despite their apparent similarities, a closer look at the impacts of Lean-based MCSs in the OTs

revealed striking differences: in OT X, the nurses described their contributions to the development of organisational rules and standards. They discussed their freedom to implement new work processes and the ways in which they benefited from the transparency and intelligibility of their work conditions both in the OT and within the wider context of the hospital. Managers in OT X appeared to have forgone some of the traditional prerogatives associated with hierarchical management in favour of a consensus-based decision-making approach. Indeed, the daily clinical management of the OT was delegated to senior nurse specialists who provided hands-on support and advice to their colleagues. Not only did this delegation of power allow the managers to focus on the non-clinically related aspects of their jobs, but it also gave the nurses considerable power and legitimised their requests because they were the closest to the real activity. This version of the Lean-based MCSs was associated with a less alienating work environment as it promoted control, meaning, integration and self-actualisation. When asked if they would like to change anything about the organisation, the nurses in OT X systematically pointed out the benefits of the current system and how it helped them achieve their goal of delivering good and timely care to their patients.

In OT Z, on the other hand, the findings pointed towards a coercive and autocratic logic that underpinned the Lean-based MCS. Power in OT Z was concentrated at the top of the hierarchy in the hands of managers who used a sophisticated surveillance system to monitor the performance and compliance of staff. Goal congruence in OT Z was reached through the ubiquitous yet unverifiable surveillance of the nurses. The absence of meetings and the externally located offices of the NUMs were all reflective of a command and control approach that was unable to provide the nurses with a coherent understanding of their internal and external work

environments. When asked what could be changed, all the nurse in OT Z deplored the hegemony of the financial logic that prompted the adoption of Lean, and proceeded to explain that the model was no longer focused on patients and that it was only there to serve financial goals. Most nurses described their lack of identification with the current organisation, highlighting a need for it to change, and the data (Chapter 6) revealed the different ways in which they resisted the alienating tendencies of the Lean-based MCS. This version of the latter was arguably responsible for the feeling of powerlessness, meaninglessness, isolation and self-estrangement reported by the nurses.

Part 4: Discussion and conclusion

Chapter 10

Discussion and conclusion

This discussion chapter constitutes the fourth and final part of the thesis (Figure 10.1). It aims to articulate and expose the unique contribution of the research to the existing empirical and theoretical literature. The chapter brings together the contextual elements presented in Chapter 2, the review of the academic literature on the use of Lean and its human impact discussed in Chapter 3, the theoretical concepts on alienation and dehumanisation outlined in Chapter 4, and the empirical evidence on the use of Lean-based MCSs and alienation in OTs Z and X included in Chapters 6 to 9.

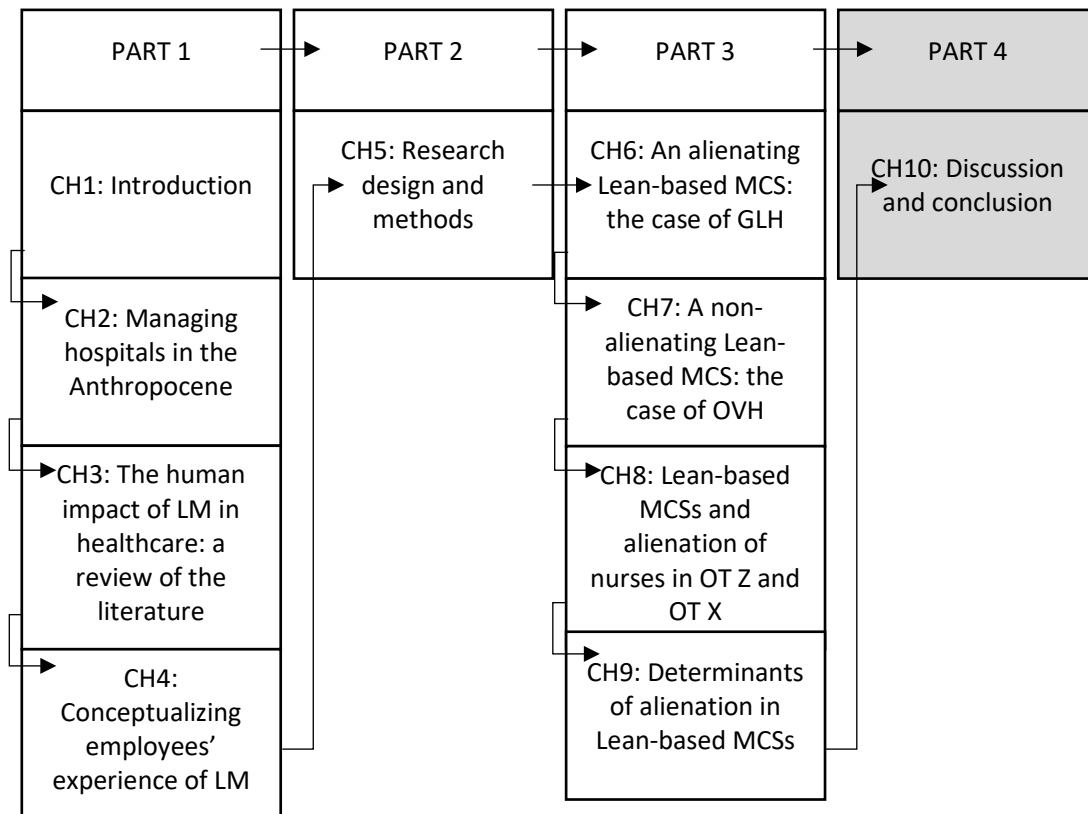


Figure 10.1: Thesis structure overview - Chapter 10

Source: Author's conceptualisation

The planetary reign of our species is the outcome of a series of significant revolutions that took place in perfect Goldilocks conditions and resulted in a gradual increase in the complexity of human societies (Christian, 2011, 2018). Driven by CL, the unique capacity of Homo sapiens to conserve and transmit knowledge across generations, the past 70 years of humanity has witnessed an unprecedented volume of innovations (Baker, 2015a, 2015b). Advances in production, medicine, transportation, sanitation, and in many other domains, have allowed us to harvest new sources of energy and fuelled the development of the modern world. Today, Earth is home to more than seven billion people who collectively act with the power of a geophysical force

capable of affecting their environment as much as their environment affects them (Christian, 2011, 2018; Crutzen, 2002; McNeill & Engelke, 2016; Schwagerl, 2014). While it is a testament to our species' success, this new Anthropocene era comes with great challenges that threaten life as we know it. The sustainability of the planet is at stake and so too are the industries, schools, universities, hospitals, and organisations—the institutions that characterise this era.

It is within the context of the Anthropocene that the research presented in the thesis was carried out. With a focus on healthcare, the thesis examined efficiency as a manifestation of the Anthropocene. In the face of more stringent regulations, budgetary pressures, increasing aging populations, technological advances, changes in demand and rising costs, healthcare institutions have little choice but to increase their efficiency. Efficiency is indeed crucial, as learning how to create it holds the promise of providing the additional resources needed to avoid collapse in the face of unprecedented challenges.

On the organisational level, the increasing need for efficiency is manifested in the adoption of new organisational philosophies such as LM. Initially developed in the car manufacturing industry, Lean encompasses a set of tools and practices aimed at reducing waste in production processes to deliver higher value to customers. Beyond manufacturing, Lean has been widely adopted in the industrial and service sectors (Bhamu & Sangwan, 2014; Hines et al., 2004; Jasti & Kodali, 2015). In healthcare it has been associated with productivity improvements, cost reduction, greater accessibility and overall increased patient satisfaction (D'Andreanmatteo et al., 2015). Despite the growing number of academic studies examining Lean in healthcare, only a

few have addressed its impact on healthcare professionals (Costa & Godinho, 2016; Filser et al., 2017).

The human impact of Lean in healthcare is not only understudied but is, in fact, subject to debate. A systematic review conducted as part of this thesis (Chapter 3) revealed that the human outcomes of Lean have been characterised as either positive, negative, or mixed. While some studies (Collar et al., 2012; Kanamori et al., 2015; Ulhassan et al., 2013) linked Lean to improvements in communication, teamwork, improved morale, and job satisfaction, others (Hung et al., 2018; Lindskog et al., 2016; O'Donnell, 2013; Stanton et al., 2014) have associated it with work intensification, higher anxiety levels and job strain. Furthermore, multiple studies provided more nuanced results and simultaneously depicted positive and negative human outcomes of Lean (Hung et al., 2018; Lindskog et al., 2016; O'Donnell, 2013). Of note, from the review, was the overall empiricist approach of the literature, which lacked theoretical conceptualisation, methodological thoroughness, and design variety. Most of the studies adopted an evaluative framework, often associated with a process-oriented approach that hindered the generalisability of the results.

To address the existing gaps in the literature, the objective of the research was to unravel the factors influencing the extent to which LM is experienced positively or negatively. Not only would this aim allow for an investigation of how LM is experienced by employees, but it also provided the conceptual depth required for theorising the underlying factors responsible for such experiences. This endeavour was thus theoretically situated, but also empirically grounded. As discussed in Chapter 4, Lean has been linked anecdotally to widespread feelings of dehumanisation and alienation amongst healthcare professionals in France. Identifying empirically to what

extent Lean contributes to such experiences, and subsequently theoretically interpreting how the elements of Lean play such a role, was therefore identified as an essential first step for overcoming this so-called societal crisis.

With this emancipatory goal in mind, a critical realist epistemology underpinned the research presented in the thesis. Using a critical realist grounded methodology, two case studies were conducted, in France and Australia, looking at the use of LM in OTs. The significant financial weight of OTs made them indeed an ideal candidate for the use of process-engineering methodologies such as LM. However, instead of a set of isolated tools, the research conceptualised Lean practices as interconnected elements of MCSs supporting the execution of an overall strategy of waste elimination and value creation. Using semi-structured interviews, non-participant observations and document analysis, the thesis aimed to answer the following three research questions:

1. What are the characteristics of Lean-based MCSs?
2. To what extent and in what way are Lean-based MCSs experienced as alienating or non-alienating?
3. What factors influence the extent to which Lean-based MCSs are experienced as alienating or non-alienating?

The case study sites were selected because they displayed structural similarities (i.e., public hospitals using efficiency-focused management strategies in OTs comprised of at least 10 ORs). A cross-case comparison was used to tease out the underlying factors linking the MCSs to alienation.

In response to the first research question posed within this thesis, findings revealed that both GLH and OVH adopted Lean-based MCSs with the aim of eliminating waste, increasing efficiency, and reducing the operational costs of their OTs (OTs Z and X respectively). Within their respective national contexts of increased budgetary pressure and reduced funding, the success and survival of both hospitals were in large part dependent on their capacity to meet national performance KPIs. These were mostly measuring efficiency in the case of GLH but were somewhat broader and more comprehensive in the case of OVH to the extent that they assessed aspects pertaining to the quality and accessibility of care.

In both OTs, new roles and jobs were created and were part of the Lean-based MCSs. Dedicated staff (SNs and FMs) looked after the flow of patients and focused on coordinating pre, peri and post-operative logistics, making sure there was no interruptions or delays. The surgical booking process was overhauled and was carried out by the IBU in OT X and the regulator in OT Z to optimise the utilisation of the OTs. Procurement was looked after by specialist staff (MDNs in OT Z and MMs in OT X). They applied just-in-time principles, reducing the need for stock, and making sure existing inventory was optimised. Sterilisation was the responsibility of dedicated units. Finally, nurses were multiskilled within and across surgical modules, which enabled a significant reduction in set-up and changeover times.

Visual management and other organisational technologies that included a master surgical plan and a surgical waitlist tool were used to monitor and assess the performance of the OTs. In OT Z, they provided real-time information, and they were used—in both OTs—to guide the development and execution of corrective strategies when performance targets were not met. Organisational rituals in OT X in the form of

late starts, module meetings, clinical practice review sessions and other educational activities were frequent and helped ensure that nurses were practising in accordance to standards and norms. Overall, the Lean-based MCSs in the two OTs were aimed at the elimination of the seven sources of organisational waste identified by Ohno (1988): overproduction, waiting, excess inventory, transportation, motion, over-processing, and defects.

Concerning the second research question posed within this thesis, the case studies demonstrated that despite the apparent similarities, the Lean-based MCSs in OT Z and OT X were experienced differently by the nurses. In OT Z, the MCS was described as alienating and responsible for a sense of powerlessness, meaninglessness, and isolation. In OT X, the Lean-based MCS was not experienced as alienating; instead, the nurses described how they had control over their work, executed meaningful tasks and were socially integrated.

Addressing the third research question, a comparison of the two case studies revealed three factors that could arguably be linked to the varying experiences of the nurses in these two settings: the type of standardisation (i.e., bottom-up or top-down), the degree of autonomy accorded to the nurses, and their comprehension of the internal and external organisational contexts. Table 10.1 provides a summary of the research finding and outlines how they contributed to answering the research questions.

Table 10.1 Summary of research findings

Research Question	Findings from case studies 1 and 2	
What are the characteristics of Lean-based MCS in OTs?	<ul style="list-style-type: none"> • Flow, customer pull, and production levelling techniques to avoid overproduction. • Multiskilling to reduce set-up and changeover times. • Master surgical plans to align availability with demand and improve utilisation. • A regulator position, IBU focused on production levelling. • Visual controls and Kanban to reduce waiting times. • Scheduling nurses/ Floor managers managed flow of patient and troubleshooted problems as they appeared. • A Just-in-time procurement approach to reduce inventory. • Medical devices nurses were specialised in managing procurement logistics. • Use of electronic stock management software to optimise purchasing and stock rotation. • Space was reconfigured to reduce the need for transportation. • Unnecessary motions and over-processing were reduced through the standardisation of practices. • Electronic incident management systems were in place to report errors and quality defects. • Education and empowerment were used to meet standards and improve quality of care. • Quality managers and nurses led quality improvement projects. • Late starts, module meetings, huddles, education sessions to deliver up to date information and ensure nurses were practising according to standards. 	
To what extent and in what way are Lean-based MCSs experienced as alienating or non-alienating?	Findings from case study 1 – OT Z	Findings from case study 2 – OT X
	The Lean-based MCS was experienced as alienating by the nurses because it promoted powerlessness, meaninglessness, and isolation. The MCS was resisted and deplored by the staff.	The Lean-based MCSs was not experienced as alienating to the extent that it promoted control, meaning, integration and self-actualisation. The MCS was aligned with the nurses' goals and values and was described as suited to their execution.

Research Question	Findings from case studies 1 and 2
What factors influence the extent to which Lean-based MCSs are experienced as alienating or non-alienating?	<ul style="list-style-type: none"> • Bottom-up versus top-down standardisation • Autonomy versus surveillance • Intelligibility over internal and external organisational context
Source: Author's conceptualisation	

10.1 Contributions

The findings of the research presented in this thesis provide multiple practical, empirical, and theoretical contributions. Regarding LM and its use in healthcare, the research is the first international endeavour to examine a link between the alienation of nurses and the use of Lean-based MCSs in OTs. Individually, the case studies conducted at GLH and OVH each contribute to the existing literature on the use of Lean in healthcare. They provided extensive detailed description of the implementation of Lean practices in OTs and included a list of measures that could be used to improve the efficiency, quality, and capacity of surgical delivery processes.

The studies are the first to adopt a holistic organisational wide approach to account for the implementation of Lean in OTs. Conceptualising Lean tools as interconnected parts of a MCS overcomes a significant limitation of existing publications that focus on evaluating isolated practices and have little to no organisational reach (Costa & Godinho, 2016; Henrique & Godinho Filho, 2018). Additionally, the sustained and arm's length observations of the two settings, coupled with verification and confirmation from interviewees, provides an empirical work-as-done examination (Clay-Williams & Braithwaite, 2017) of Lean, rather than the work-as-imagined approach of a growing number of conceptual publications on the topic (Brandao de Souza, 2009; Henrique & Godinho Filho, 2018; Seidl & Newhouse, 2012)

The individual results of the case studies also contribute to the literature on the impact of Lean on healthcare professionals. Not only did these two case studies assess the extent to which LM was experienced as alienating, but they also included an in-depth characterisation of such experiences. Using Blauner's taxonomy (Blauner, 1964),

the studies addressed the interplay between LM and the alienating states of powerlessness, meaninglessness, isolation and self-estrangement as well as their opposite states of control, meaning, integration and self-actualisation. Considered together, both case studies revealed the more nuanced nature of the link between LM and employee experiences.

The research also contributes to the literature on alienation and its determinants in work settings. The empirical data highlights a limitation of Blauner's framework (Blauner, 1964) in that it fails to explain the reasons behind the divergence in alienation between organisations that possess similar technical structures and product characteristics. In his case studies, Blauner himself did not solely focus on technology when explaining alienation. He acknowledged that the presence of the latter was influenced by factors such as the social structure, division of labour, economic structure and levels of bureaucratisation (Blauner, 1964, p. 5). Such factors were, however, presented as being defined by the different types of technology. Rather than organisational technology in and of itself, the findings of this thesis point towards variances in its design, implementation and use as being a major determinant of experiences of workplace alienation. As illustrated by the case studies, the nurses in OT Z and OT X experienced different levels and forms of alienation despite the OTs having similar technological structures (i.e., Lean-based MCSs). The thesis thus presents additional evidence in support of the recent theoretical developments on the use and design of organisational technologies and their impact on employee outcomes (Adler & Borys, 1996; Broadbent & Laughlin, 2009).

Similarities can indeed be drawn between the principles of enabling design (Adler & Borys, 1996) and the three factors identified in the thesis as influencing the

alienating tendencies of Lean-based MCSs; that is the type of standardisation (i.e., bottom-up or top-down), the level of autonomy and the degree to which the internal and external organisational contexts were intelligible to the nurses. On the one hand, the MCS used at OT X could be considered enabling as it supported the staff in the completion of their tasks by allowing them to participate in the creation of flexible and easily modifiable work standards and by providing the nurses with a coherent understanding of the internal and external organisational contexts. On the other hand, the MCS used in OT Z was more reflective of a coercive design logic that limited to the nurses' capacity to face the daily contingencies of their work. Standards and procedures were described as rigid and were not developed by the staff who also reported having little understanding of the rationale behind organisational practices. Performance improvements in OT Z were achieved using a sophisticated surveillance system in what could be qualified as a Panopticon like structure (Foucault, 1995) where actions of individuals were being closely monitored to ensure their compliance. Mahmoud and Angelé-Halgand (2017) further explored the use of Lean in OT Z using Foucault's analytical lens. Overall, the empirical results of the case studies support Adler and Borys' (1996) theoretical analysis in pointing towards a link between the design logics guiding the development of organisational technologies and alienation.

Beyond the design, the results of the thesis point to a potential link between alienation and the models of rationality governing the use of MCSs. Broadbent and Laughlin's (2009) distinction between transactional and relational MCSs is particularly useful in that regard. Despite their apparent similarities, the MCSs used in OT Z and OT X could be differentiated using Broadbent's transactional and relational idiotypes of MCSs (Broadbent & Laughlin, 2009).

In OT Z, the Lean-based MCS portrayed many of the characteristics of transactional MCSs. Organisational goals and strategies were defined based on rational calculations with the aim of ensuring a return on investment within a maximum duration of 10 years. Performance indicators were mainly focused on efficiency and did not account for other dimensions of performance. Standards and protocols were primarily theoretical rather than practical (i.e., founded in theory [top-down approach] rather than emanating from and translated into practice). Managers in the OT held considerable power and their authority stemmed primarily from their rank in the organisational hierarchy. Finally, the nurses had very low ownership of the Lean-based MCS and resisted it when possible.

In OT X, the Lean-based MCS reflected many characteristics of a relational MCS. Performance indicators were comprehensive and reflective of the various concerns of different stakeholders (i.e., quality and accessibility of care, the safety of patients as well as efficiency). Strategies to reach organisational goals of the OT were discussed by managers and staff. Work methods and procedures were theoretical but were also chiefly grounded in practice. Beyond formalising best-practices, staff were also trained in how to implement them through multiple hands-on training forums. Power and authority in the OT were diffused and associated with knowledge instead of hierarchical positions. Ownership of the Lean-based MCS was high and the nurses described it as the best for achieving their goals.

Broadbent's typology of transactional and relational MCSs is founded on the initial distinction between two different models of rationalities: instrumental and communicative. According to the first, linked to transactional MCSs, individual actions are driven by rational calculation conducted with the aim of identifying the most

effective way of achieving an unmistakably desired end (e.g., reaching a full return on investment in 10 years in OT Z). Contrastingly, in a communicative model of action, exemplified by relational MCSs, ends and means are collectively defined and legitimised in a process of collective negotiation between various stakeholders (e.g., ensuring quality, safety, efficiency, and accessibility in OT X). In associating alienation to the MCSs used in OT Z and X, the findings of the thesis thus hint to a possible existing connection between the models of rationalities and the form and intensity of alienation experienced by staff.

Findings of this thesis additionally contribute to the literature on MCSs. Using Blauner's framework, the research demonstrated that MCSs are experienced as alienating when they generate a sense of powerlessness, meaninglessness, isolation, and self-estrangement amongst employees. Contrastingly, they are perceived as non-alienating when they promote control, meaning, isolation and self-actualisation. The results of this research, therefore, form the basis for a new conceptual model that can be used when researching MCSs and how they impact employees. The model extends Broadbent and Laughlin's (2009) work, suggesting that a focus on the functional aspects of MCSs (e.g., the type of Lean tools and practices) is insufficient when seeking to understand whether they are alienating or not. The thesis demonstrated the way in which MCSs are utilized is of greater significance when it comes to the development of alienation, than any functional components. Figure 10.2 summarises the findings of the thesis depicting the distinction between alienating and non-alienating Lean-based MCSs.

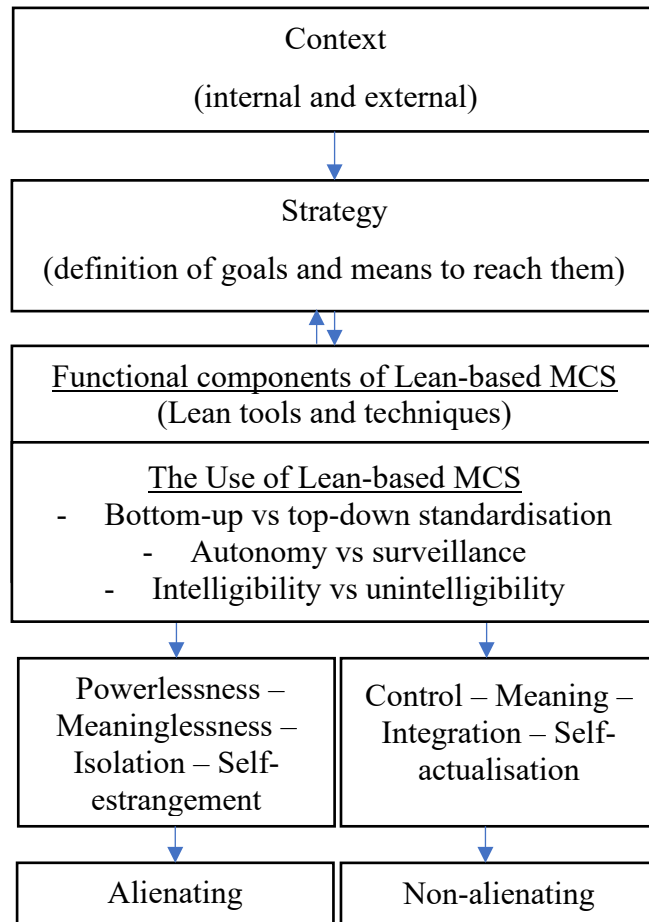


Figure 10.2: A conceptual model taking account of alienating tendencies of MCSs

Source: Author's conceptualisation

10.2 Implications

Beyond its contributions to existing theory, the research also presents substantial implications for policy and practice. For policymakers, the research highlights the importance of KPIs and their significant weight in shaping organisational strategy, especially for public healthcare institutions. As demonstrated in the case studies, meeting government set KPIs was a driving force that heavily influenced the Lean-based MCSs in each of the hospitals. To avoid the alienating tendencies of MCSs, KPIs should be more representative of the interests of different stakeholders and not only

those of governing and funding bodies. In healthcare, these interests may include aspects such as quality, accessibility, patient-centredness and safety.

For hospitals, the research has implications for their sustainability in the Anthropocene. Underscoring previous research, Lean can indeed help hospitals unlock the additional resources required to ensure their survival in the current context of increased pressures and resource scarcity. The thesis elevates a potential barrier to the implementation of Lean by demonstrating how it could be adopted without necessarily generating adverse effects on employees. In doing so, the research findings pave the way towards more efficient, sustainable health systems in which the wellbeing of staff is not sacrificed.

For managers of healthcare organisations, the results of this research provide a readily operationalisable framework for developing workplace interventions to improve workers' experience in Lean environments. For example, alienation in such settings may be avoided when staff are given greater opportunities to develop and improve their own work standards and protocols, when traditional command and control hierarchical structures are replaced by more participatory ones and when staff develop a sound understanding of the internal and external organisational contexts (i.e., regular face-to-face communication explaining why standards and protocol are there in the first place and why meeting them is important).

For clinicians, this research provides comprehensive data on the challenges facing healthcare delivery in the Anthropocene. Efficiency is a necessary part of current health service delivery models subjected to numerous pressures and demands for services; such services are only likely to be further redesigned to optimise the use of existing resources as time goes on. As previously discussed, developing clinicians'

understanding of this context has the potential of improving their job satisfaction and reducing the alienating tendencies of MCSs that incorporate Lean practices.

For existing and potential patients, the research has significant implications for the quality and safety of the care they receive. Ensuring that staff are trained adequately and working in optimal conditions is indeed a prerequisite to the reduction of errors and mistakes that could have poor or even fatal consequences for patients.

10.3 Strengths and limitations

The research discussed in this thesis has several strengths and limitations that impact upon its internal and external validity. The internal validity of qualitative research is determined by assessing the scope at which the research design captures the intended object of the study (Wacheux, 1996). In this regard, and as demonstrated throughout the thesis, the choices of methods and instruments used to conduct this research were well suited to answer its initial question. The data triangulation strategy used by collecting information from multiple sources and through different mediums (interviews, observations) helped ensure that the results authentically reflect the studied phenomena (Chan, Rosewall, Kenefick, & Milosevic, 2016).

External validity, when assessed in terms of results generalisation, is often limited in qualitative case study research (Yin, 2014). This limitation is tied to the inherent nature of any qualitative enquiry that examines contextually embedded phenomena. The thesis addressed this limitation by providing a rich account of the study settings, allowing readers to assess the applicability of the results to their situations, or extend them to other situations. The test here, in addition, is credibility rather than generalisability. Furthermore, the use of a multiple case study design added

significant robustness to the project and provided a solid foundation for theory-building, thereby reinforcing the analytical validity of the overall study (Yin, 2014). The theoretical reasoning demonstrated throughout the research rendered the findings applicable to other settings both within and outside of the healthcare sector. The research was also limited by the time and space constraints of its allocated three-year timeframe. Additional resources would have enabled the inclusion of more participants from different professional groups within the studied OTs or allowed the accomplishment of more case studies in other hospitals which may have further strengthened the internal and external validity of the research.

10.4 Future research

This thesis paves the way for future research of this type in the fields of management and health service research. Future studies could, for example, examine the experience of other professional groups working in OTs using Lean-based MCSs. This could include surgeons, anaesthetists, allied health professionals and operation assistants. These studies would help establish whether Lean-based MCSs could be more alienating for certain professional groups and less alienating for others. Studies could also examine the use of Lean-based MCSs in other acute health delivery settings such as emergency departments or intensive care units. These investigations could help to tease out factors specific to OTs that may be contributing to the sense of alienation experienced by staff (i.e., physical confinement of staff, strong hierarchy, or nature of surgical activity). Lean-based MCSs could also potentially be studied on a more meso level (i.e., examining its implementation across multiple divisions within a hospital) or a macro level (i.e. its implementation across hospitals within a local health district, state,

or nation). These more holistic examinations would broaden the current understanding of how Lean-based MCSs are used to drive the delivery of more efficient care across health organisations.

Researchers could also seek to identify other factors moderating the link between alienation and Lean-based MCSs. Such factors could, for instance, be related to the internal organisational context. The case studies did indeed reveal that OT Z was under considerable financial pressure resulting from an institutional desire to generate a return on the investment within a relatively short time. This was not the case for OT X. Identifying whether there is a link between the internal context of organisations and the alienating tendencies of Lean-based MCSs thus seems worthy of further investigation.

More studies examining the use of Lean-based MCSs and alienation could also be conducted in other countries. Such studies could seek to identify the policy level factors influencing the use and implementation of Lean-based MCSs. On an external level, although both OT Z and X faced similar challenges (increased demand, regulations, and costs) and operated in countries where public policy was heavily influenced by NPM principles, the research identified that those national contexts varied somewhat. The KPIs used to assess performance of the OTs exemplified this contextual difference. In Australia, KPIs were significantly more comprehensive and pertained to aspects such as quality, safety, and accessibility of care and not just efficiency. In France, the KPIs solely focused on measuring efficiency gains that translated into financial profitability and cost savings, which could be explained by a political desire to overcome the chronic financial deficits facing the French public healthcare system. Future research could focus on a more in depth-comparison of national context, specifically focusing on the process and stakeholders involved in the development of

KPIs. This is of particular relevance to public organisations who, unlike their private counterparts, do not independently develop their own performance metrics.

Finally, within and outside of healthcare, future researchers might choose to carefully examine the relationship between Lean-based MCSs and alienation using different methodological approaches. Quantitative measures could, for instance, be used to assess each of the alienating and non-alienating dimensions. These measures can help develop a more granular understanding of the extent to which each of the dimensions (powerlessness, meaninglessness, isolation, and self-estrangement) contribute to an overall sense of alienation or if some play a more prominent role than others. Before and after evaluative study designs could also be used to assess the effectiveness of the three identified factors and their capacity to counterbalance the alienating tendencies of Lean-based MCSs.

10.5 Concluding remarks

This thesis examined the link between Lean-based MCSs and alienation of nurses in OTs. The research comprised two case studies conducted in France and Australia. It highlighted the different characteristics of Lean-based MCSs and examined how they were experienced by the nurses in each of the settings. A cross case-comparison revealed that the nurses' experiences of the MCSs were influenced by the type of standardisation (i.e., bottom-up versus top-down), the level of autonomy accorded to them and the degree of understanding they possessed over the internal and external organisational context. Collectively, the two case studies presented new information about the use of Lean-based MCSs in healthcare and the determinants of alienation in work settings. The thesis provided fundamental insights for the

development of new and more human-centred Lean-based MCSs. Such systems hold the promise of unlocking more resources—that will be required to ensure the sustainability of health systems in the Anthropocene.

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APPENDIX 1

Semi-structured interview schedule

Hello, my name is Zeyad and I will be interviewing you today. Thank you for taking the time to have this interview. Firstly, have you read and signed the participant information and consent form? And do you have any questions about the research we are undertaking?

I'm going to ask you a series of questions about your organisation and how you feel at work. Please try and answer honestly and let me know at any time if you have any questions.

- Q1: Can you introduce yourself, the reasons that led you to work here, your background including your previous professional experiences?
- Q2: What is your role at the operating theatre? How is your work organised? – to facilitate response, participant may be asked to describe a typical day in the operating theatre.
- Q3: What do you think of the current organisation of the operating theatre? can you state some positive and negative aspects of this organisation? participants may be asked to provide illustrative examples. (If participant states problems or difficulties he encounters: what are the mechanisms that you resort to for resolving or bypassing the problems?)
- Q4: Are you satisfied with your job? What elements of your work are particularly satisfying/dissatisfying?
- Q5: Do you find your work stressful?
- Q6: Do you feel recognised by your organisation and your colleagues for the work you do?
- Q7: What changes would you like to see in the current organisation?

Thank you for your time. Do you have any questions you would like to ask me? The participant information and consent form are yours to keep, so feel free to contact me using my contact details supplied there if you would like further information on the study.

APPENDIX 2

Outline of observation grid

DATE	OBSERVATIONS	METHODOLOGICAL NOTES	ANALYSIS NOTES
Entry 1	Account of unfolding events as witnessed by the research. To maintain privacy, notes will not include references to specific participants but rather to their role in the operating theatre.	This column is to be used by the research to highlight specific events he would like to further inquire either during another observation session or during stage 2 of the data collection	This column will include any primary analysis conducted by the research during observation sessions. Notes may include references to specific research topics or theoretical frameworks

Endnotes

ⁱ Voilà deux ans maintenant que nous gouvernons et il y a toujours urgence. Peut-être davantage encore. Urgence économique, comme le crient les salariés des usines de Belfort, d'Amiens et d'ailleurs. Urgence sociale, comme le crient nos concitoyens des territoires isolés, comme le disent les personnels hospitaliers. Urgence écologique, comme le crient les jeunes Français à l'encontre des gouvernements et des entreprises qui n'en font pas assez. [...] Notre pays, qui a tout et que le monde envie, a perdu confiance. En tout cas, des millions de ses citoyens ont perdu confiance en lui. Cette confiance, nous voulons la rebâtir [...] En remettant l'humain au cœur de nos préoccupations. (Edouard-Phillipe, French Prime Minister)

ⁱⁱ Il faut aller vite. Installer les gens, endormir les gens. On ne les voit même pas, parce qu'il faut vite faire ça, faire ça. (IBODE, OT Z)

ⁱⁱⁱ Ils [les aides-soignants] sont encouragés vivement à aller très vite. Parce que le chirurgien ne veut pas attendre trop longtemps entre deux interventions, fin voilà. Il y a une vraie pression pour que du coup on enchaîne rapidement les interventions les unes après les autres. C'est une pression informelle mais aussi une pression presque formelle, parce que à partir du moment où on affiche au programme qu'il n'y a que 20 minutes pour faire le pansement et le bio nettoyage, la pression est mise d'emblée donc c'est presque formel. (Cadre de Bloc Opératoire, OT Z)

^{iv} C'est l'usine parce que t'as plus l'impression de faire du travail à la chaîne que vraiment prendre en compte ton patient et puis faire une prise en charge optimale de ton patient et tu ne peux pas le faire parce que tu n'as pas le temps. Je ne dis pas que le travail n'est pas bien fait, on a tous une conscience professionnelle et on fait de notre mieux mais il y a des jours où ça peut être mieux fait. Mais après ça ne dépend pas de nous ; la structure est tellement énorme, on est interdépendant de tout le monde. Des raisons qui sont liées je pense à la grandeur de la structure qui fait que tout est devenu un petit peu impersonnel, chacun est responsable de rien, les gens ne sentent pas forcément concernés, moins qu'avant en tout cas, surtout moins qu'avant. [...] Il faudrait savoir prendre son temps pour bien travailler mais ça ce n'est pas possible, il n'y a plus de temps, mais c'est un peu partout. C'est comme ça aussi dans les services. Il faut rentabiliser, il faut rentabiliser, c'est ça le maître mot maintenant, partout. Il faut faire rentrer des sous. (IADE, OT Z)

^v [...] Quand tu es dans ta salle, si tu ne t'intéresse pas à ce qui se passe autour en fait tu ne vois pas, parce que tu es enfermé et en plus on te dis au téléphone : tu vas manger à telle heure, tu vas remplacer telle personne, ou bien tu prends ta pause.[...] comme c'est beaucoup plus grand, c'est pas visuel et du coup, tu vois moins où s'en aient sur le

programme, si il y a encore des gens qui travaillent, il faut regarder sur l'ordinateur, mais si t'es dans ton couloir entrain de ranger tes trucs, tu ne vois pas. Tu ne vois pas que dans le virage derrière, il y a encore une salle qui bosse. Fin tu l'assumes mais deux heures après tu ne le sais plus, t'es dans ton truc, tu ranges, tu prépares et du coup tu ne vois pas. (IBODE, OT Z)

^{vi} Je fais des interventions ici, je ne fais plus de soins infirmiers, je ne regarde plus les gens, je fais que des interventions en fait. Parce qu'il faut aller vite. J'ai fait ce métier parce que j'aime la technicité et puis le contact humain un peu particulier avec le patient, mais que j'ai perdu aujourd'hui. Donc on va dire que maintenant ce qui me reste, c'est la technicité. (IBODE, OT Z)

^{vii} On change une salle, des fois à la dernière minute, pour essayer de remplir les salles, ou pour gagner du temps. [...] Quand tu vois que tu vas être short, tu peux changer de salles de manière aussi à boucler le programme parce que sinon on va déborder on restera jusqu'à une heure [...] tu [l'infirmière] peux très bien avoir préparer pour de la chirurgie plastique (ventre, seins) et puis Hop récupérer une chirurgie d'orthopédie (une fracture d'un pied, de hanche) donc ça change. Mais par contre elles sont formées, voilà quand on change les patients de salles, on les change dans la spécialité. Ça pose problème parce que les gens ont vu le programme le matin et ils ne sont pas content de voir que ça a changé, ils se sont dans leur tête préparé. C'est rassurant de savoir ce que tu as à faire dans ta journée, t'as le temps de te projeter, de te dire ça je connais, on va faire ça comme ça et puis d'un coup on va te dire non ce n'est plus ça c'est l'autre. Donc ça engendre du stress aussi et puis des fois on change de chirurgie mais des fois aussi on peut te faire changer de salles si on a besoin de toi ailleurs. Donc voilà, il y a ça aussi mais sans changement on ne terminera pas le programme opératoire. Et puis on est aussi dans une logique d'optimisation, on nous demande d'optimiser les ouvertures de salles, ça veut dire que je ne peux pas avoir une salle avec un trou grand comme ça et puis une salle en débordement, ce n'est pas très jolie à regarder, vaut mieux que toutes les salles soient remplies et qu'on fait aussi tous les patients. On est dans l'optimisation des salles. (Infirmière de programmation, OT Z)

^{viii} Je trouve que parfois c'est hyper fatigant de se plier aux problèmes d'organisations. Par exemple vue que je suis formé au 3 spécialités, dans une journée je vais faire les 3 spécialités différentes. C'est un peu bouche trou. C'est ça quoi, je ne suis plus la personne qui va être dans cette salle là avec ces patients-là, je suis la personne qui va supplier à un moment donné à d'autre gens et aux dysfonctionnements organisationnelles, je rentre dans des cases. Qu'il faille juste des noms sur un papier pour que ça rentre sans qu'on pense derrière au bien-être de l'équipe et au bien-être général. (IBODE, OT Z)

^{ix} Nous on parle des problèmes d'organisations et des solutions qu'on peut apporter, on en parle mais ça reste à notre niveau. (IBODE, OT Z)

^x Je suis arrivé au bloc quand j'avais 30 ans, il y a des gens qui pouvait être mes parents qui m'ont tout appris, qui justement on a une cadre qui est partie, c'était ma maman, on

avait vraiment des rapports, c'était vraiment une famille, le grand frère, la maman [...] Maintenant c'est dilué. Il y a des gens même dans ton secteur, t'es coincé en salle et tu ne vas pas les voir, le lendemain tu leur dis tu étais en repos ? ah non mais j'étais voilà en salle donc c'est ça. (IBODE, OT Z)

^{xi} Quand on rente dans le bloc, on a l'impression d'être noyer dans une masse. On passe dans les couloirs où les gens ne se connaissent pas, on ne sait pas qui est qui, on ne sait pas avec qui on travaille (IBODE, OT Z)

^{xii} Il y'a moins d'esprit d'équipe après ça dépend, mais c'est beaucoup moins qu'avant. Chacun fait son boulot mais sans s'occuper du voisin, parce que t'as pas le temps, tu fais tes heures, tu vas manger et puis tu t'en vas. (IBODE, OT Z)

^{xiii} Aujourd'hui, ils nous demandent de tout faire. Au début on a résisté mais c'est finalement arrivé. Ce n'était pas facile. Surtout si tu étais un expert avant. (IBODE, OT Z)

^{xiv} Avant, nous avions l'habitude de nous réunir et de parler. Parlez de problèmes d'organisation, de problèmes personnels, de problèmes de patients. Aujourd'hui ce n'est plus possible. Nous n'avons ni l'espace ni le temps pour le faire. Ce n'est pas bien. Les relations au sein des équipes sont créées lorsque les gens se rencontrent certes sur leur lieu de travail mais pour parler d'autre chose que du travail. Aujourd'hui ce n'est plus possible. Alors les gens parlent, oui, mais à une ou à deux personnes. Et la conséquence ? on se soucie moins des autres. (IBODE, OT Z)

^{xv} La salle de pause c'est là où tout le monde va mais chacun reste en fonction de son grade quand même. Oui je pense que les gens ne se mélangent pas assez, il y a de la hiérarchie. Je me souviens dans les anciens blocs que ça se mélangeait plus. (AS, OT Z)

^{xvi} Il n'y a pas de collectif à part les gens qui se connaissent par secteur mais il n'y a pas de collectif au bloc je ne pense pas. La salle de pause, par exemple, chacun fait son truc, soit par groupe de secteur mais ce n'est pas un endroit où tout le monde se mélange, fin on peut retrouver des gens qu'on connaît mais il y a aussi plein de gens qu'on ne connaît pas. (IBODE, OT Z)

^{xvii} Avant, on travaillait avec une petite équipe. On avait une aide-soignante, une infirmière, une IADE, un chirurgien et un médecin anesthésiste. On était 5 et on bossait comme une équipe, et ça crée des liens qu'on n'a plus dans une grande dimension comme ça. La solidarité et l'entraide, il n'y avait pas t'es aide-soignant tu fais telle tâche et tu vas t'occuper du ménage et moi je m'occupe du malade, je n'ai que les soins « nobles ». Non. Chacun participait dans le nettoyage, l'installation fin chacun était impliqué tout en restant dans ces compétences quand on était sur l'acte chirurgical mais tout ce qui tourne autour on ne s'arrêtait pas pour dire j'aller prendre le café maintenant, non tout le monde

travaillait ensemble, on finissait la tâche complète, c'est-à-dire rendre la salle propre, ranger le matériel et le nettoyer. Et puis après le moment de convivialité c'est vachement important aussi. On partageait un café voilà et ça s'est vachement compliqué dans une grande structure. Oui ça a scindé les équipes entre aides-soignants et infirmières, plus on grandit du coup plus on se retrouve par corps de métiers. Dans les petites structures on a des équipes pluri professionnelles, alors que là on a des équipes mais des équipes par corps de métiers. On crée des équipes par corps de métiers. Ce n'est pas une bonne chose pour l'entraide au quotidien dans le travail. (IBODE, OT Z)

^{xviii} La relation d'équipe je la trouve complètement inexistante. C'est chacun dans son petit rôle. Je trouve qu'il y a un monde d'écart entre le côté d'anesthésie, le côté de la chirurgie, le côté des infirmières, le côté de la salle de réveil, c'est ... avant je ne sais pas, tout le monde travaillait dans le même sens. On n'était pas forcément plus nombreux, on était moins nombreux, c'est peut-être pour ça en fait. Finalement les gens travaillent plus en équipe quand ils sont moins nombreux que quand ils sont nombreux. Quand ils sont nombreux, ils regardent les autres travailler en fait. Je ne sais pas. Mais ici, je ne sais pas j'étais dans des endroits où quand on installait un patient, celui qui avait les mains libres mettait l'appui bras quoi. J'ai vu des chirurgiens, des anesthésistes mettre des appuis bras, ici tu ne verras jamais ça. C'est entre gars mais il n'y a plus de bras. C'est pour ça que c'est bien scindé en fait. Il n'y a personne qui va aider l'autre si ce n'est pas de la même spécialité, après il y a toujours des exceptions Hier, une équipe de chirurgiens, 3 qui sont rentrés, l'aide-soignante était déjà occupée, la penseuse aussi et donc l'IADE gentiment est allé aider les chirurgiens à s'habiller, l'anesthésiste qui était en salle lui dis, tu feras mieux d'aller t'occuper de tes tuyaux. Voilà, chacun reste dans son coin et surtout ne pas aider l'autre. Parce que c'est une IADE, elle doit rester IADE et ne doit surtout pas aller du côté des chirurgiens. C'est certainement spécifique à cette personne mais on le voit beaucoup ici. (IBODE, OT Z)

^{xix} Il y'a des bénéfices secondaires, parce que les charges sont moins lourdes, les lits se lèvent, on a des lèves malades, on a des matelas de transfert, pour le bio nettoyage, on a des ballets ergonomiques, on a de la microfibre, des produits plus efficaces, voilà. Il y a des avantages et des inconvénients, comme dans tout. Donc le personnel s'y retrouve, parce que même s'il y a des désavantages, il y a des bénéfices donc l'un dans l'autre ça s'équilibre. (Cadre de bloc opératoire, OT Z)

^{xx} On a eu des salles toute neuves, on se casse plus les bras, on a de la place en salle quand même. Plus on grossit plus il y a des choses qui vont se mettre en place. Pour moi c'est positif. (IBODE, OT Z)

^{xxi} J'ai appris plein de choses, ça va être un tremplin pour autre chose et donc pour moi c'est positif. Et puis c'est hyper enrichissant, même si je te dis il y a la gestion des conflits, c'est compliqué, mais on apprend de tout ça, moi finalement peut être j'apprends mon nouveau métier, j'apprends ce qui va se passer plus tard pour moi. Je pense que toute

personne qui est passé au bloc a vraiment beaucoup de choses en main pour aller ailleurs. Je pense que quand t'es passé ici, t'es formé a beaucoup de choses. (IBODE, OT Z)

^{xxii} Moi je n'en ai rien à ciré de l'aspect financier, honnêtement, non ce n'est pas ma priorité, si j'ai besoin de 3 paquets de compresses, je poserai 3 paquets de compresses et non pas 2 parce que c'est cher. Ce n'est pas bien ce que je dis, il faut faire attention mais voilà. Si j'ai besoin d'un appareil ou d'un matériel spécifique parce que je sais que j'en ai besoin pour x raison et que ce matériel est cher je vais l'utiliser. (IADE, OT Z)

^{xxiii} Il y a des fois par exemple tu sors de là tu te dis que tu n'as pas bien bossé. Ce n'est pas forcément lié à toi, c'est lié à la structure qui fait que t'as eu pas mal de (silence). Tu n'as pas pu accueillir ton patient correctement parce que t'as été pris ailleurs, tu passes tes 8h, tu fais ce que t'as à faire, tu fais ton boulot, t'essaie de prendre le patient en charge du mieux que tu puisses faire mais il arrive qu'en fin de journée ne t'es pas satisfait de ce que t'as fait. Parce que bah voilà, des tas de raisons. Parce que quand t'as ramené en salle et que t'as tout fait pour qu'il se sente détendu, relaxé (il y a toute une approche qu'on apprend à faire avec le patient) et puis quelqu'un qui était en salle va faire un bruit pas possible donc voilà tu n'endorms pas le patient dans les bonnes conditions. C'est plein de petits détails qui font que tu n'es pas satisfait de ce que t'as fait. Et ça je pense que c'est lié à l'organisation. (IADE, OT Z)

^{xxiv} Il faut prendre du recul, sinon (silence). Il faut se raccrocher aux personnes qui vont dans notre sens à chacun et puis avec qui on crée des liens (AS, OT Z)

^{xxv} Je vais prendre beaucoup de recul, donc même si ça ne me plaît pas, ça ne va pas me perturber pour autant. Enfin ça va me perturber pour le moment mais ça ne va pas m'atteindre (IBODE, OT Z)

^{xxvi} C'est un gros bloc, il y a énormément de monde donc pour moi la difficulté ici au début c'était d'identifier les personnes, parce qu'effectivement on est tous en vert avec une charlotte et donc c'est quand même compliqué, il m'a fallu quand même beaucoup de temps pour identifier qui était qui, et à qui je m'adressais. (Cadre de bloc opératoire, OT Z)

^{xxvii} Là on a tellement de personnes qui viennent sur le plateau, je dis n'importe qui peut rentrer dans le bloc, il suffit juste de s'habiller correctement. Heureusement que c'est sécuriser avec la carte. Il y a plein de personnes qui viennent sur le plateau on ne sait même pas à qui on a affaire, quand vous êtes dans une petite structure, tout de suite, tiens il y a un intrus. Ça dépersonnalise beaucoup je trouve. (Cadre de bloc opératoire, OT Z)

^{xxviii} Le poste de programmation, c'est plein de choses qui se greffent, c'est la gestion des conflits, des conflits de toute ordre (des chirurgiens pas contents, du personnel (Infirmier, aide-soignant) pas content, voilà tout le monde pas content. Les conflits par rapport au débordement aussi, par rapport à l'acceptation ou non de notre part des rajouts, suivant si c'est faisable ou pas. La gestion des conflits fait partie du quotidien, puisque notre poste

en plus de sa situation dans le bloc fait que tout le monde afflux.[...] c'est vrai que on est en première ligne et donc il faut savoir garder son sang-froid et savoir répondre aux questions et éventuellement reformuler ou reporter à plus tard quand on voit que c'est un petit peu trop violent[...] Ca peut être des conflits avec des chirurgiens mais aussi avec des infirmières qui ne sont pas d'accord parce qu'elles ne sont pas formées sur telle spécialité, ou parce qu'elles y sont tous les jours, ou trop souvent avec le même chirurgien ou sur des grosses instrumentation.[...] un bloc opératoire, c'est un secteur fermé donc il y a beaucoup plus de conflit. C'est un milieu à part le bloc opératoire, c'est un lieu où c'est le chirurgien avec ensuite les infirmières puis ensuite les aides-soignantes. C'est assez hiérarchiser quand même et c'est un milieu très fermé [...] Et puis après il y a des caractères, des caractères forts, des gens qui de par leur personnalité vont être tout de suite dans la plainte ou dans l'agressivité. On les connaît au bout d'un moment ces personnes [...] Le poste de programmation on l'appelle gentiment le bureau des pleurs, mais ce n'est pas pour rien effectivement, c'est là où tout se concentre, toute l'activité du bloc se concentre ici, tout ce qui va se passer va se passer là, s'il y a des choses à dire, c'est là que ça va se dire. [...] On a fait aussi des formations, il y a des formations très aidantes, la formation gestion de conflits, violence agressivité, comment gérer son stress. J'ai demandé toutes les formations possibles et imaginables [...] il y a des journées qui ne sont pas toujours très drôles. L'avantage justement d'être trois et en plus avec notre hiérarchie qui connaît très bien les problématiques du tableau et qui nous défend et qui nous épaula. Donc c'est aussi aidant. (Infirmière de programmation, OT Z)

^{xxix} Il y a des gens qui ne nous disent pas bonjour, c'est le b.a.-ba de dire bonjour, ça s'appelle de la politesse. C'est vrai ce sont des choses toutes simples, mais il faut se dire bonjour quoi. (AS, OT Z)

^{xxx} Quand je suis arrivé, j'avais une équipe d'aide soignants qui était voilà en souffrance, ils avaient vraiment le sentiment de ne pas être reconnu, de ne pas être respecté dans leurs tâches. [...] la première semaine tous les jours il y avait une IBODE ou une IAD qui venait se plaindre des AS, ils ne font pas ci, ils ne font pas ça, on ne les voit pas en salle, on ne sait pas où ils sont, ils sont toujours en pause et voilà. [...] les équipes ne communiquaient pas, ou c'était par l'agressivité donc c'était compliqué. Exemple ? l'IBODE qui vient dans mon bureau pour me dire ça fait 3 fois que j'appelle l'AS et elle ne répond pas, et puis finalement l'AS sort de la salle et là l'IBODE la voit et « oui voilà, t'es jamais là quand il faut, toute façon j'en ai parlé à ta cadre. (Cadre de bloc opératoire, OT Z)

^{xxxi} On a fait beaucoup de travail sur la valorisation de la profession aide-soignant pour faire en sorte qu'ils se sentent valorisés et convaincus que ce qu'ils font est important et que sans eux le bloc ne fonctionnerait pas. [...] On a commencé par mettre en place la traçabilité de ce qu'ils faisaient parce qu'en fait il n'y avait pas de traçabilité du bio nettoyage qui était fait notamment en fin de journée. Donc on a retravaillé sur les techniques de bio nettoyage et il y a des audits qui ont été faits et des prélèvements qui sont faits aussi régulièrement par le laboratoire de matériaux et tout ça montrait qu'au

niveau du bio nettoyage tout était vraiment bien fait et rigoureusement fait et que les prélèvements étaient bons. Donc voilà ça peut être par des messages comme ça. L'objectif c'était de leur dire que le travail qu'il faisait était correcte et conforme à ce qu'on attendait d'eux voilà ce n'est déjà pas mal. [...] Le fait de tracer a donné une valeur au travail puisque du coup c'est fait quoi ! on a fait quelque chose. Alors qu'avant rien n'était noté donc qu'elle le fasse ou qu'elle ne le fasse pas, ça n'apparaissait nulle part. Les fiches de traçabilité sont affichées sur chaque porte de salle du bloc, ça permet à tout le monde de voir. Voilà, tout le monde sait, ça fait partie maintenant de la checklist que les aides-soignants et les infirmières doivent vérifier le matin quand elles font l'ouverture de la salle. (Cadre de bloc opératoire, OT Z)