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Towards Better Quality in Healthcare and Operations Management: A Developmental Literature Review

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***Abstract*—**This work presents the various perspectives, dimensions, components and definitions given to quality in the operations management (OM) and healthcare services (HCS) literature in time, highlighting gaps and learning opportunities between the two disciplines through a thorough search into their rich and distinct body of knowledge. Greater and new insights about the general nature of quality are obtained with findings such as in OM, quality has been approached in six fairly distinct paradigms (excellence, value, conformity to specifications, attributes, satisfaction and meeting or exceeding customer expectations), whereas in HCS, two approaches are prominent (Donabedian's structure, process and outcomes model and Lohr and Schroeder's circumscribed definition). The two disciplines views on quality seem to have progressed much in parallel with little cross-learning from each other. This work then proposes an encompassing definition of quality as a lever and suggests further research and development avenues for a better use of the concept of quality by academics and practitioners alike toward the goals of greater organizational performance and improved management in healthcare and possibly other service domains.

***Keywords*—**Healthcare, management, operations, quality, services.

I. Introduction

QUALITY is familiar to all. It is reputed to be a key component of performance, a source of competitive advantage and a driver of change and innovation for as much any product as for any service [1]. However not everything about quality is still today entirely crystal clear. Much ambiguity about its most useful nature and about its optimal assessment and management remains [2]. For instance, there are certainly no quick and simple answers in figuring out if or when quality should be best seen as a part of performance or performance a part of quality and when or how it matters for customers and for managers. Solutions to these puzzles can only come on more easily when the multiple meanings of quality are acknowledged and when quality is considered from different perspectives.

Discussions about quality can otherwise regress into debate and confusion fueled by miscommunication, misunderstanding and mismanagement risking dire consequences. This is particularly true and real in healthcare where the stakes are undisputedly high and stakeholders are numerous and differing [3]. Even after almost 15 years from the famous call of the American Institute of Medicine (IOM) in 'Crossing the Quality Chasms: a new health system for the 21st century' [4], the concept of quality in healthcare remains elusive and in search of a robust definition [5].

For the purpose of better understanding quality in healthcare, examining the broader field of OM appears conducive. Quality is indeed one of the fundamental overarching topics of OM [6]. Numerous OM scholars have discussed quality in more or less scope and depth from their experiences and various fields of expertise. This paper presents insights gained from a thorough search into the body of knowledge on quality in the manufacturing and service OM literature first, and secondly, from the distinct school of thoughts of the Healthcare Services (HCS) literature in examination of commonalities and cross curricular learning. After highlighting the contributions and gaps of both disciplines, it proposes an encompassing definition of quality that could be used as a lever to stimulate richer discussions amongst academics and practitioners in OM, in HCS and other disciplines. This paper ends with ideas on further research and development about quality.

II. Methods

This work falls into the category of developmental literature review as proposed by Templier and Paré [7] and is constructed from a thorough search of the Management and Medical literature in English and in French. Its inception is from a final examination essay question: 'Compare and Contrast the Notion in Quality in Healthcare and in Operations Management'. It is built from a set of more than 750 suggested readings from Professors during doctoral studies and further researched using key words (definition, quality, operations management, service, health care) in various combinations in search engine of three major Management electronic databases (ABI/Inform Complete (Proquest), Business Source complete (EBSCO) and ScienceDirect (Elsevier) and two Medical electronic literature databases (MEDLINE (EBSCO) and Pubmed (NCBI)). Documents were then screened by reading the title and abstract in the search for distinct quality paradigms. Using features of current electronic databases, a snowballing technique of looking through citations of all relevant articles was also used to enhance comprehensiveness. In addition, a Google Scholar Citations search was performed on key and landmark titles [3]-[5], [11], [12], [35], [36], [38], [40]. Selected documents were than read for deeper understanding of quality paradigms discussed.

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III. Quality in Operations Management

The importance of quality in OM could hardly be overstated. Quality is indeed omnipresent in OM: it is found explicitly or implicitly in most if not all its theories and models. Ferdows and De Meyer, for example, put quality at the base of their manufacturing operation capabilities pyramidal 'sand cone' model, on which they propose dependability, speed and ultimately cost efficiency build on [8]. In the famous Deming 14 points for management to save and renew both manufacturing and service industries, quality figures third after recommendations for continuous improvement and leadership for change [9]. OM has dealt with quality from its emergence [10] and the predominant quality paradigm in OM is certainly conformity to specifications. But, five others enlightening paradigms of quality were found in the management literature, namely: 2- quality as excellence, 3- quality as value [11], 4- quality as attributes [12]), 5- quality as satisfaction from Kano's theory of attractive qualities [13] and 6- quality as meeting or exceeding customer's expectations [14].

Fig. 1 illustrates them on a timeline from their landmark contribution and they are hereby presented chronologically.

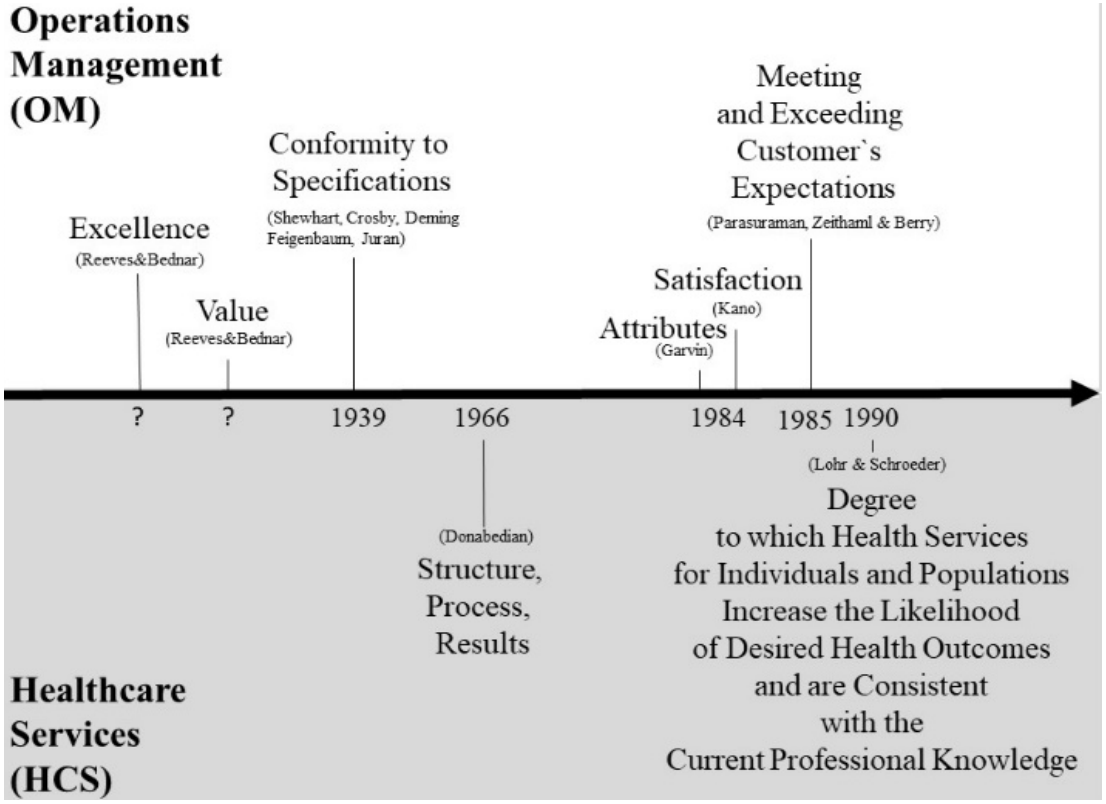

Fig. 1 OM's Quality Paradigm Timeline

A. Quality as Excellence

Dating from what appears as far back as Antiquity, when quality is seen as excellence, aspirations are raised. Products and services are of 'quality' under this paradigm. It uplifts quality to an inspiring, motivating and rallying force. However, quality becomes then an absolute, arbitrary, abstract, subjective and a personal construct, making quality management the more challenging, since criteria of excellence are relative and prone to change over time and context. In addition, excellence is expensive: unless customers are seeking and willing to pay for it, offering excellent products or services that nobody buys because they are content with other ones of relatively less but sufficient quality is a strategic disaster [11].

B. Quality as Value

A more practical alternative for management is to consider quality as value, in terms of price (or costs either of money or resources) and quality, most effectively from the customer perspective. Quality becomes then more functional but somewhat tautological. This approach has the advantage of allowing comparison and analysis of customer choices amongst substitute products and services. But there is much challenge in determining which components of quality are valuable and in weighting their relative importance [15]. Moreover, value judgement remains highly personal and unstable, as they are also prone to change over time and context. Citing Stahl and Bounds, Reeves and Bednar judiciously remark that 'quality may be a component of value, but value is not synonymous of quality' [11].

Quality as excellence or as value suggests that quality has an extrinsic nature that is tagged on products and services based on moral and social determinants. But these paradigms distort the etymology of quality. Its origin is in fact a

contraction, attributed to Ciceron, of the Latin word *qualis* (what, state, condition) and of the ancient Greek term *poïotês* (quality), itself created by Plato, from the word *poïos* (of what nature, of which kind) [16], [17]. Quality has therefore more accurately an intrinsic nature and it is taken in this passive neutral sense that quality has no antonym and needs to be further rated (good to bad, favorable to unfavorable, etc.). In this regard, quality always exists. All products or services have some qualities to be appreciated.

C. Quality as Conformity to Specifications

If the works of Shewhart in the 1930s were foundational of this quality paradigm, Crosby, Deming, Feigenbaum and Juran have been the most influential proponents of this approach. Quality as conformity to specifications has the strengths to be considered the most objective, quantifiable, agreeable and adopted definition of quality [11]. It is particularly suited for multiple measure and statistical control. But it has several shortcomings. Paramount information about the nature (type, kind and number) of specifications and their relative importance, about the way they were determined and about who selected them and why are often undisclosed or concealed. Ideally, specifications would be solely based on customer preferences but these preferences are notably unstable, susceptible to change over time and context and can often be quite contrasted, even amongst target customers. It is also relevant to distinguish, as Juran did, between two types of conformity: conformity of design (what is planned) and conformity of conformance (what is executed) [18]. What is indeed the actual quality of an ill devised product or service rendered impeccably compared to a defective but well-conceived product or service? Moreover, quality as conformity to specifications most applies to products but turns out inapt for many services as determining appropriate specifications becomes just too challenging. This situation happens particularly when customers lack relevant past experience, when there is much information asymmetry between customer and service providers or when delivery much depends on customer co-production, as it is the case in healthcare [18]. Despite these reservations, the five strongest movements of quality management in OM: 1- the theory of swift and even flow (Schmenner and Swink), 2- the theory of constraints (Goldratt and Cox), 3- Total Quality Management (Deming, Juran, Ishakawa), 4- 6-sigma (Motorola) and 5- Lean (Toyota), are all grounded in the scientific method and adopt quality in the paradigm of conformity to specifications. The most explicit one is 6-sigma, since its objective is reduction of variability [20]. Total Quality Management stresses the importance to meet customer needs, hereby warming up to other quality paradigms, but it is essentially for the purpose of obtaining better specifications [21]. Quality is more implicit in the case of the theory of constraints, which is focused on removing process obstacles, and in the case of lean, which target waste elimination [22], [23]. Of note, authors of these latter movements (Goldratt and Cox – theory of constraints and Womack and Jones – lean) are great promoters of excellence/perfection but not specifically of quality. Finally, Schmenner and Swink mention the importance of quality in their theory of swift and even flow for high performance but without much more say [24].

D. Quality as Attributes

This fourth quality paradigm, quality as attributes, has been submitted by Garvin [12]. Quality is then defined by the presence or absence of attributes and their amount. The equation is more attributes render more quality but at consequent more cost. Differences in quality plainly become differences in quantity, easing computation. Derived from manufacturing and economics, quality as attributes is simplistic and crude but it has the merit to build on the intrinsic nature of quality as an inherent characteristic that may be objective and not just perceived. In his proposition, Garvin stresses the multidimensionality of quality, suggesting eight product-associated dimensions: performance, attributes, reliability, conformity, durability, serviceability, aesthetics and perceived quality [12].

E. Quality as Satisfaction

Quality as satisfaction is a fifth paradigm first described by Kano and his theory of attractive qualities in 1984. Long overlooked, this perspective has been gaining greater academic interest recently. This approach adds a more sophisticated understanding of quality [13], [25], [26]. It postulates that perceived quality and customer satisfaction are influenced by five kinds of product and services attributes (unidimensional, expected, attractive, neutral and inverse attributes): 1- unidimensional attributes entertain a linear relationship from complete dissatisfaction to complete satisfaction according to the level of presence of the attribute (for example: speed of registration in a hotel or an emergency room); 2- expected attributes are those taken for granted by the customer. Their absence generates dissatisfaction but their presence does not increase satisfaction (for example: asepsis in a surgical suite); 3- attractive attributes are unexpected or unexpressed features that increase satisfaction if they are present but does not influence satisfaction if they are absent (such as a surprise rebate); 4- neutral attributes have no influence on satisfaction whether they are present or absent and 5- inverse attributes whose presence decreases satisfaction and absence increases it (for example: having to fill a long questionnaire) [13], [26]. The methodology on how to establish the list and types of attributes precisely is laborious. But, by just being mindful of this model and the dynamics of attributes, managers may make better choices on how their product and service offer and design could be improved when level of customer satisfaction changes [25]. There remains however still some controversy in the distinction of perceived quality and satisfaction since one does not necessarily lead to the other [11].

F. Quality as Meeting or Exceeding Customer's Expectations

Finally, Marketing has offered to managers this more contrasting alternative view by proposing that quality aims at essentially meeting or exceeding customer's expectations.

This solution has been developed in response to the need to evaluate more adequately service quality. Pioneered by Grönroos and Parasuraman, Zeithaml and Berry, it is based on the premise that only the customer judgement matters [14], [27]. Indeed, citing Buzzell and Gale [15], 'Quality is whatever the customer says it is, and the quality of a particular product or service is whatever the customer perceives it to be' making all other judgements irrelevant [11]. Years were spent on the development and validation of a generic instrument, SERVQUAL, which measures the gap between customer's expectations and their perceptions with the goal to appreciate service quality for a wide range of industries. Of the 10 dimensions initially considered, five were ultimately found to be sufficiently useful and informative: reliability (the most influential), responsiveness, assurance, empathy and tangibles [28]. There is much controversy about SERVQUAL and whether this instrument needs to be adapted for each industry [11], [29]. Issues reside in the fact that customers are often unaware of their expectations, particularly for products or services that they rarely buy. Their expectations and perceptions may vary according to previous experiences with other products and services and their substitutes. Moreover, this approach is highly subjective, pervaded by biases and estimation challenges such as relativity, discrete range, short and long-term variability, attribution bias, partiality, anchoring, communication breaches (such as (un)willingness to share, misunderstanding), personality and other individual respondent idiosyncrasies to name a few. The strong impact of sampling on the accuracy and reliability of quality estimates is also important to acknowledge. It is indeed impossible to get feedback from all customers; only a fraction can be queried, resulting in inescapable assessment myopia.

G.Product versus Service Quality in OM

Views on product versus service quality differ. From an OM perspective and experience, it is much easier and straightforward to determine and agree on quality parameters of products, having the advantage of being concrete and physical, compared to services, which are more elusive and immaterial in nature. Seth, Deshmukh and Vrat in 2005 and yet again in 2013, Duggal and Verma, have recognized from their literature review that multiple models of service quality exist but there remains no consensus or predominance of any definition and of any operationalization of quality that should yet guide practice or research in service quality [1], [30]. The disconfirmatory paradigm in terms of the gap between customer expectations and perception seems to nevertheless lead the thoughts of most academics [28], [31]. The lag that exists between practitioners who still more often use quality as conformity to specifications in products and in services is perplexing.

Incidentally, these insights support a partial answer to Giroux's interrogation about the pragmatic ambiguity created by the Total Quality Management movement and its variants such as the recent SQBOK model of Tyagi, Varma and Navneet [2], [32]. These models integrate larger managerial issues such as leadership, human resources, information systems, finances, etc., but, in general, neglect to mention which paradigm of quality they adopt and fail to address quality in its multidimensionality, nuances and complexity as Sousa and Voss advocate [33]. Accordingly, they seem to seek better management (Total [Quality Management]) rather than better quality ([Total Quality] Management).

IV. Quality in Healthcare Services

The importance of quality in HCS could also hardly be overstated as in OM. Roth in her model of world-class health care actually argues that quality is the stepping stone in capability development of healthcare systems on which other competitive competencies: delivery, flexibility, technological prowess and cost reduction, build on; a proposition that is much alike Ferdows and De Meyer's sand cone model [8], [34]. However, we observe that the construct of quality in the HCS literature is much less developed than in OM's, with essentially two dominant paradigms: 1- Donabedian's structure, process and results model and 2- Lohr and Schroeder's circumscribed definition (Fig. 1).

Donabedian is credited for the first and still predominant model of healthcare quality. In 1966, he proposed three elements guiding the evaluation of healthcare system quality: its structure, its processes and its results while acknowledging the complexity and multidimensionality of quality [35], [36]. By structure, Donabedian refers to elements of *servicescape* [37] and internal organizational management (human, material and financial resources) of healthcare systems. Processes concern medical practices distinguished in two components: technical care competencies and interpersonal interactions competencies. Results refer to the obtained patient functional and symptom relief health status from care and include patient satisfaction and patient enablement levels. The critical insight of the model is to suggest that healthcare quality is constructed from contextual conditions to allow activities that produce outcomes. Quality is therefore not spontaneously generated. It can and ought to be managed.

Grounded in the conformity paradigm, Donabedian's model follows traditional medical scientific method. Already in his 1966 paper, Donabedian discusses many challenges of healthcare quality that are still very relevant today such as in the selection of indicators, selection of subjects and sampling, choices of standards, their measurements and weights, validity, reliability, precision, feasibility, sources of bias and missing data management issues. He stresses the importance of clarifying the unit of analysis level (system, network, institution, department, program, profession, service, provider, patient) and the importance of considering healthcare processes in its full continuum, beyond but in mindfulness of common inter-professional arbitrary sectorial limits (for example, acute care, chronic care, preventive care, community care) and temporal limits (immediate, over 30 days, annual, over lifetime). He points out the compromises that have to be made between the extent in quality management and the investment and opportunity costs in mobilizing the necessary resources. He briefly mentions the ethical dilemma created by the prioritization of individual (liberalism) or collective

(utilitarianism) interests in resources allocation. He also introduces the reality of medical error and ends his article with a call to ever keep a fresh critical outlook on quality. For all his contributions, Donabedian amply merits his reputation of healthcare quality pioneer and visionary [36].

The current prominent and second most recognized definition of healthcare quality, the 'degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with the current professional knowledge' was first reported by Lohr and Schroeder [38]. Every element of this definition has been carefully selected by a Delphi-like method. *Health services* refer to all care types (physical and mental) provided by all professionals (physicians, nurses, allied) in all settings (hospitals, offices, homes). *Individuals and populations* stress two perspectives of healthcare quality that must be considered. The *likelihood increase* recognizes the uncertainty associated in healthcare in its purpose of benevolence. *Desired health outcomes* wish to put allowance for patient and their relatives' expectations and satisfaction. Finally, *current professional knowledge* recognizes the changing and interdisciplinary nature of healthcare [39], [40]. The *degree* sets it essentially in the conformity paradigm.

TABLE I
STRENGTHS AND CHALLENGES (QUALITY IN OM AND HCS)

Quality as…	Strengths	Challenges
In Operations Management (OM)		
Excellence (Reeves&Bednar)	inspiring motivating rallying	absolute arbitrary abstract subjective personal tautological (a function of price and quality)
Value (Reeves&Bednar)	functional allowing comparative substitute analysis	components selection relative weighting adjuration personal instable over time and context
Conformity to Specifications (Shewhart, Crosby, Deming, Feigenbaum, Juran)	objective quantifiable agreed popular	components selection relative weighting perspective conformity of design vs of conformance
Attributes (Garvin)	easy computations intrinsic	simplistic crude
Satisfaction (Kano)	sophisticated	laborious
Meeting or Exceeding Customer's Expectations (Parasuraman, Zeithaml&Berry)	specifically designed for services shared paradigm with other managerial discipline (Marketing).	generalizability experience dependent biases: relativity, discrete range, short and long-term variability, attribution bias, partiality, anchoring, miscommunication, personality and respondent idiosyncrasies sampling controversy in measurements (gap between expectations and perceptions in terms of burden, complexity, validity, utility)
In Healthcare Services (HCS)		
Structure, Process, Results (Donabedian)	thoroughness constructed feature	selection of indicators, selection of subjects and sampling, choices of standards, their measurements and weights, validity, reliability, precision, feasibility, sources of bias, missing data management issues unit of analysis ethics
Degree to which Health Services for Individuals and Populations Increase the Likelihood of Desired Health Outcomes and are Consistent with the Current Professional Knowledge (Lohr&Schroeder)	framing	sensitivity and specificity operationalizability limiting gaming

Multidimensionality of quality in healthcare is generally acknowledged, but there is no consensus on which dimensions are the most relevant and need to be translated into quality indicators. As evidence, the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) suggested 10 dimensions: accessibility, timeliness, effectiveness, efficacy, appropriateness, continuity, privacy, confidentiality, participation and safety [3]. The IOM (2001) promotes six similar but slightly different ones and in a different order: safety, effectiveness, personalization, timeliness, efficiency and equity [4]. In Canada, according to its Health Council, the focus should be toward six other similar but yet different dimensions in another order: efficacy, accessibility, capacity, safety, personalization and equity [41]. Essentially opinion-based, these lists would certainly gain strength and legitimacy through proper scientific validation. These propositions, which find linkages to OM's quality as attributes paradigm, have nevertheless the benefits to provide

greater operationalization of quality, to increase rigor, to enable benchmarking and to drive much needed improvement of healthcare systems. Their drawback, as Campbell, Roland and Buetow and Haddad, Roberge and Pineault warn though, is to confine quality and its indicators into too rigid and dogmatic practices [16], [36]. Some may even game on narrow definitions of quality and limited number of indicators by selectively investing on improving these outcomes and dimensions and neglecting others [42].

The most recent academic attempt to define quality healthcare by Mosadeghrad: 'consistently delighting the patient by providing efficacious, effective and efficient healthcare services according to the latest clinical standards, which meet the patient's needs and satisfies providers' is derived from in-depth individual and group interviews of multiple stakeholders including patients and various key providers [5]. Its similarity with Lohr and Schroeder's definition is rather expected since it was obtained from healthcare members. Even though it brings a few additional elements, notably ties to OM's value and meeting and exceeding customer's expectations quality paradigms and the suggestion that providers' satisfaction matters, it supports the strength of this view in healthcare. This prescriptive type of definitions has the advantage of framing neatly the notion of quality and provides direction on how to assess it. However, these definitions have the weaknesses, as Campbell, Roland and Buetow indicates, to represent an undesirable compromise between inclusiveness and specificity for a purpose of overt generalization and to still remain not so easily operationalizable [36]. But more concerning, by setting questionable constraints, they risk to deprive quality of much of its conceptual richness.

Table I illustrates the strengths and challenges of the main contemporary OM and HCS quality paradigms discussed

V. Discussion

It should come as no surprise that the breadth and depth of thinking about quality is greater in OM than in HCS literature. After all, OM expertise is on process improvement, whereas HCS focuses on health improvement through care processes that may or not be felt to be improved. Moreover, OM has built its body of knowledge on the more tangible and accessible product quality to then tackle the more elusive and confounding field of service quality. HCS seems to have yet to come to terms with the intricacies of service quality and its body of knowledge has obviously arisen from a much different starting point, following a different path than OM. This argument is supported by Fig. 2, which relates dimensions of quality in service OM and healthcare from three leading North American quality HCS interest groups: the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) now the Joint Commission, the Institute of Medicine (IOM) and the Canadian Health Council (HC) [3], [4], [41].

The distance between SERVQUAL dimensions and the relative concordance between HCS dimensions are remarkable. SERVQUAL proposes dimensions that relate just on customer perceptions and that are all under some actionable managerial responsibilities. HCS dimensions address as much customer, service providers and their co-production interaction factors that are not necessarily under managerial control such as timeliness or effectiveness.

Using Donabedian's structure, process and results model, further distinctions can be identified. Results items predominate (3/5 SERVQUAL, 4/10 JCAHO; 4/6 IOM; 4/6 HC (Canada)). IOM neglects structure items (0/6) and HC (Canada) passes over process items (0/6). Equity finds no equivalent in SERVQUAL and Tangibles, no reciprocal in HCS. No consistent focus on what quality healthcare should be clearly stands out but it is telling that 'safety' and 'efficacy' are two dimensions shared but not ranked similarly by the interest groups. Deeper work on the underlying values driving selection and ranking of these dimensions by each of these organizations would be fascinating. But by simply using the crude dichotomist liberalism (L) – utilitarianism (U) ethical framework, another gap is revealed between SERVQUAL perspective, which is entirely liberal, and HCS's, which appears more balanced but yet inconsistent amongst the interest groups (Fig. 2).

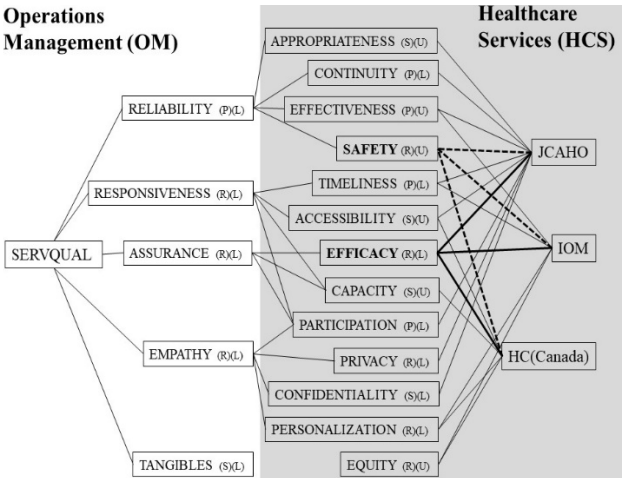

Fig. 2 Dimensions of Quality (OM and HCS)

The views on quality of OM and HCS are nevertheless not that far from each other either. Both fields tend to put more importance on the ultimate outcomes of the customer/patient. They both attempt to synthesize the construct of quality with the goal of obtaining greater performance and understanding. Both have a strong inclination for the scientific method and quantitative analysis with an appreciation of the value of qualitative knowledge.

VI. Quality as a Lever

In consideration of these differences and similarities, adopting a more general definition of quality seems warranted in an effort to integrate the mentioned paradigms and to recognize that quality is and probably should be best used as a collection of them all. We hence offer this comprehensive definition of quality:

As a 'fundamental, intrinsic, multidimensional, relative,

variable and dynamic characteristic that requires continuous management' We believe this pragmatic definition could be used as a lever by both academics and practitioners to situate discussions and to enhance understanding of quality. It provides a checklist and a reminder of all foundational features of quality. It could help generate new insights and foster much needed development.

As demonstrated, both OM and HSC literature support quality to be *fundamental*. Quality is certainly a basic, required and primary condition.

We have shown how quality is *multidimensional* but all these dimensions or attributes of quality are also *relative* from two positions: first, from each stakeholder's stand point and second, from norms and context of each of these stakeholders. In healthcare, there are numerous stakeholders from whom quality may take different valuation [16], [36], [43]. From the patient, to his/her relatives, to members of the healthcare system and society, the same service may be judged radically differently and although a patient-centered point of view is the most desirable, it might not always be the most valid since patient, in their condition may not be apt, able, autonomous and void of conflict of interests to perceive quality of healthcare services accurately [19]. Norms and context of all stakeholders also have a strong influence on the comparative assessment of quality and they need to be appropriately appreciated [44], [45].

Finally, quality may certainly be conceptualized as *variable and dynamic*. Variability is found in every element (dimensions, stakeholders, norms, and context) of quality over time, especially in healthcare. Moreover, each stakeholder is composed of individuals who have their own conceptions of quality with different expectations and multiple needs [16]. All these variable elements become dynamic as each contributes asymmetrically in the co-production of healthcare services in coherence with the concept of service-dominant logic of Vargo and Lusch [46].

Use of the *intrinsic* neutral sense of quality in management as opposed to an extrinsic label has the benefit, especially in healthcare, to reduce harsh feelings that may be triggered when quality is proclaimed to be a novel managerial issue suggesting that what was done previously was not or was of less quality [47]. Intrinsic quality is also in line with contemporary OM improvement strategies such as lean and 6-sigma, which strive to achieve greater performance by reaching ever higher target outcomes [20], [48]. In this regard, to answer one of our introduction riddle, quality becomes a part of an organization's performance.

VII. OM and HCS cross-learnings

Here are a few remarks on what OM and HCS disciplines may learn from each other and what quality as a lever definition may contribute (Table II).

TABLE II
CROSS-LEARNINGS (QUALITY IN OM AND HCS)

	What may Healthcare Services (HCS) learn from	What quality as a lever may bring to
Operations Management (OM) Quality as...		
Excellence (Reeves&Bednar)	extensively used in HCS pragmatic ambiguity that rally forces may impede change	substance
Value Reeves&Bednar)	popularized with Lean Healthcare challenges HCS to be more cost-aware, efficient and accountable	differentiate between value-added and non-value-added features
Conformity to Specifications (Shewhart, Crosby, Deming, Feigenbaum, Juran)	shared main quality paradigm Similar OM's issues (Table I) pros and cons of accreditations	flexibility thoroughness periodic revision and renewal
Attributes (Garvin)	ease decisions may be misleading	depth
Satisfaction (Kano)	better service design aligned with patient-centered care	balanced Input from all stakeholders
Meeting or Exceeding Customer's Expectations (Parasuraman, Zeithaml&Berry)	reliability and tangibles are key dimensions	relativity
	What may Operations Management (OM) learn from	**What quality as a lever may bring to**
Healthcare Services (HCS) Quality as...		
Structure, Process, Results (Donabedian)	integration of multi-level, interrelated and sequential parameters	variability
Degree to which Health Services for Individuals and Populations Increase the Likelihood of Desired Health Outcomes and are Consistent with the Current Professional Knowledge (Lohr&Schroeder)	deal with competing interests and litigation risks	greater scope

Quality as excellence is extensively used in HCS. This perspective fits well with the high expectations, risks and rewards associated with HCS. Excellence is a vague enough concept in which all stakeholders can relate to his/her level of

satisfaction. It provides space with pragmatic ambiguity to allow people to work together for a while [2]. However, impediments in improvement efforts are rapidly experienced since all set expectations by themselves. Need and urgency to change are rarely felt equally. Quality as a lever definition may bring substance to the concept of excellence. Negotiating terms of excellence amongst stakeholders may temporarily cause disruption and delays but agreeing on common far-reaching clear goals is essential to any long-term winning management strategy.

Quality as value finds much resonance in HCS with its current and widening interest on Lean management. Value forces HCS to become more cost-aware, efficient and accountable. Quality as a lever may help HCS stakeholders in differentiating between value-added and non-value-added service activities that respectively need to be pursued or stopped.

Conformity to specifications, as already discussed, is the main quality paradigm in both HCS and OM. HCS obviously encounters the same challenges of OM in the selection of quality specifications and perspective, about their weighting and mitigating the gap between conformity of design and conformity of conformance. The eagerness of most healthcare organizations to get accreditation legitimacy is clear evidence of HCS's commitment in this paradigm. The process of earning accreditation has much value in promoting quality awareness, alignment, buy-in and benchmarking and in driving performance improvement. However, as mentioned, the risks of organizational myopia and gaming are real. Quality as a lever paradigm may add more flexibility in the operationalization of specifications and insure thoroughness in the process. It may also remind stakeholders about the need for periodic revision and renewal of specifications to follow evolution of stakeholders' reality.

HCS already uses quality as attributes paradigm in many of its activities such as technology selection, staff promotion and fund (research, training, discretionary) distribution decisions. When so many of such decisions have to be made incessantly, there is little argument that the facility provided by this paradigm may provide some relief. But HCS has to learn from OM that more does not necessarily mean better or more appropriate and more is not synonymous with quality. This is where the quality as a lever proposition may help to provide depth in the discussions about the actual contribution of each attributes to quality and greater validity for the following actions.

Kano's quality as satisfaction certainly may help HCS to improve its service design. The strong current trend of patient-centeredness in HCS, championed by initiatives such as Planetree designation and IOM's quality dimensions demonstrates the growing attention paid to the approach [49], [50]. Quality as a lever's view may help to provide balance, reminding that participation of all stakeholders is valuable in quality HCS.

The greatest lesson that HCS must learn from OM's meeting or exceeding customer's expectations paradigm appears to be the key importance of reliability in quality perception, which seems alarmingly absent in HCS discourse on quality improvement. There are certainly risks in all change efforts to create instability and confusion in operations which represent a threat to reliability. Even greater risks incur when management wishes to introduce over and over short-term solutions to long-term problems. Fashion becomes fad and most fail [51]. HCS managers must keep reliability in mind, particularly in times when pressures to change and to become ever more efficient rise. A second important lesson is about not neglecting tangibles in service operation quality. Providing a safe, calm, clean, welcoming and healing environment for quality HCS is not a given. It needs to be proactively managed to meet expectations [19], [52]. The reminder that relativity from each stakeholder's point of view and from each stakeholder's context must be appreciated for accurate quality assessment particularly in HCS is a valuable insight from the quality as a lever definition.

Donabedian's Structure, Process and Results paradigm on HCS quality challenges OM to move beyond simplified and targeted view on quality and find ways to integrate multi-level, interrelated and sequential parameters of quality. It reminds OM that quality is a constructed feature. OM expertise in optimization is much needed in identifying the most representative leading and lagging quality indicators with the proper balance and least burden to assess. The notion of variability from quality as a lever adds to Donabedian's paradigm another degree of complexity but strength as well in addressing HCS quality in all its dimensions.

Lastly, OM may gain from Lohr and Schroeder's definition of HCS quality a greater appreciation on the requirements to learn to deal with competing stakeholders' interests for proper quality determination and proficiency on how to deal with the perpetual risk of litigation, which make HCS quality evaluation a high-stake endeavor. Quality as a lever definition may help to widen the scope and reach of Lohr and Schroeder's definition for more comprehensiveness.

VIII. Further Research and Development

These four avenues appear worthiest:

The first builds on Chassin's framework of three types of healthcare quality challenges: overuse (provision of health services riskier than benefits such as getting a CT-scan for every common back pain), underuse (failure to provide health services more beneficial than risks such as vaccination) and misuse (poor provision of appropriate health services such as long waits at an emergency visit) [53]. Whereas features of poor or inadequate quality may be figured fairly easily, exploring the concept of over-quality (such as delivering more services than patient wishes or expects at the risk of causing dissatisfaction or wasting resources and value: for examples, in the case of multiple health professionals making efforts to relocate in a safer setting an isolated elderly in loss of autonomy and at risk of fall against his or her will or serving a balanced nutritional flavorful meal to a picky patient who just craves junk food) appears much needed, particularly in the context of the growing influence of lean management and other value-focused efficiency management models.

A second avenue would be regarding the ethical aspects of quality. Gaining a better understanding of the elements that determine the hierarchy of values (for examples: liberalism (self-determination, autonomy, freedom such as in letting patients do or get whatever they want) over utilitarianism (greater good for all, balance, fairness such as in providing child care to underprivileged families rather than performing trivial cosmetic surgeries)) supporting all stakeholders' appraisal of quality would be prized.

A third one concerns studying under which conditions, whose and how should various stakeholders' point of view (for examples: healthcare professionals, health organization administrators, politicians, third party payers, industry partners, …), not only matter but even perhaps supersedes at times the ultimate customer's perspective and be considered in quality assessment of products and services such in the case of assisted suicide or marijuana usage.

The fourth idea involves exploring the notion of healthcare services as a destination or can and should a hospital stay or a visit to any healthcare professional become similar to a reputable all-inclusive resort or cruise-like quality experience [54].

IX. Conclusion

This paper described six prominent paradigms of quality in OM and two in HCS from a thorough relevant search of their respective academic literature in two languages (English and French). Strengths, challenges, gaps and cross-curricular learnings of each perspective were discussed. It proposes an original quality as a lever definition that academics and practitioners could use alike. Four further research and development ideas were presented. Facilitating innovation for the ultimate goal of contributing to improvements in healthcare quality and quality of other service domains is hoped since quality, for all's sake, can only benefit from fresh ideas and actions now.

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