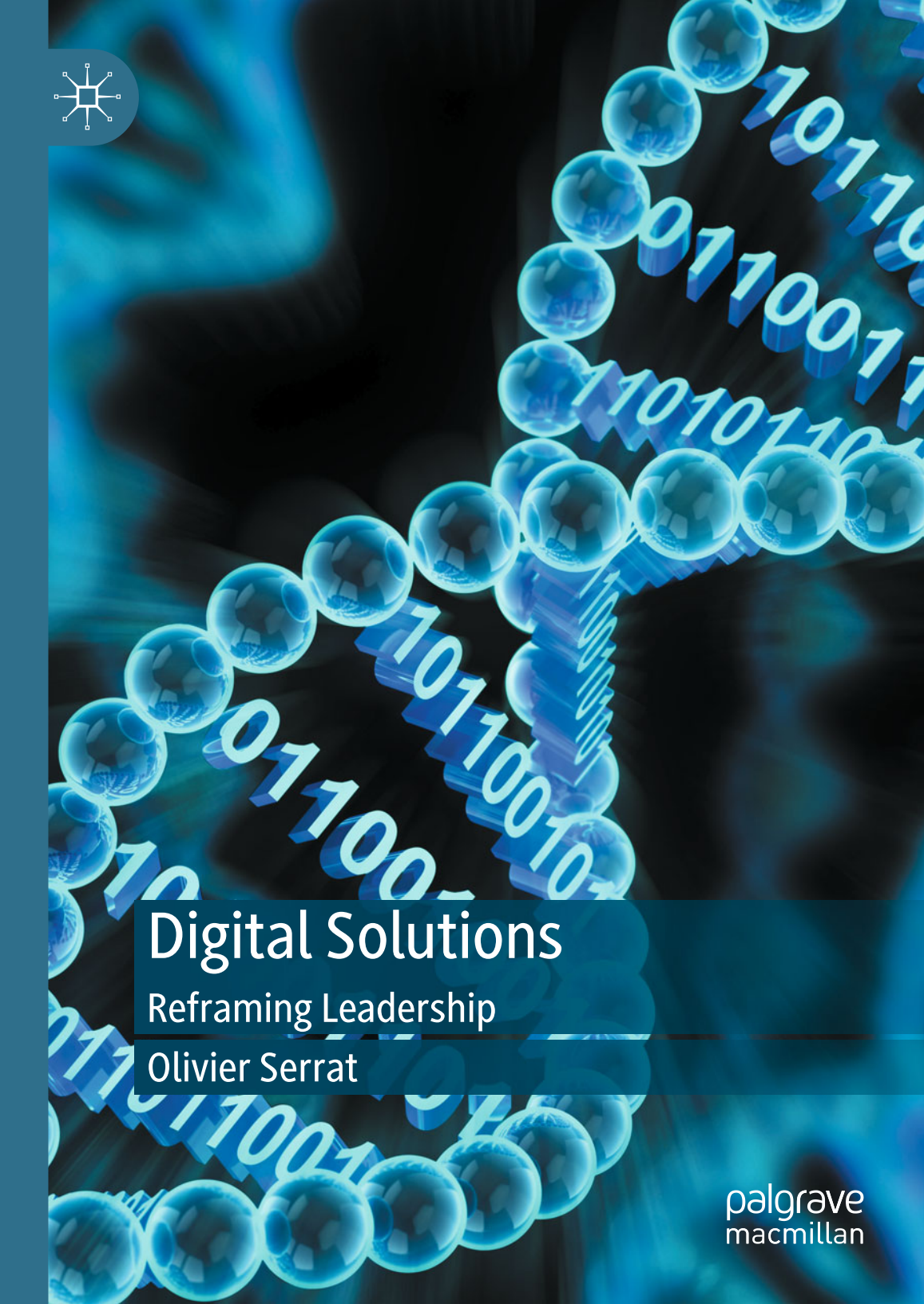

Digital Solutions

Reframing Leadership

Olivier Serrat

palgrave
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Foreword by Malgorzata Houshman

I came to know Olivier Serrat more than 20 years ago when the Harvard Business School launched a Global Knowledge Exchange Network to investigate the changing role of information in higher education, scholarly research, and business practice. The blog posts that Olivier penned for the network were always thought-provoking, little gems of insight into knowledge-intensive organizations, and changing modes of leadership.

Despite our different geographical locations, Olivier in Philippines at the Asian Development Bank and I in the United States, conducting research at the Berkman Center for Internet and Society at Harvard University and at the Phillips Academy Andover, I have frequently returned to Olivier's writings. Each time, I have been rewarded by a fresh insight or a quick compendium of knowledge—whether on organizations, leadership styles, strategy, or the role of information and communication technology (ICT)—and have come away enriched by his profound reflections on the changing world. Springer garnered Olivier's contributions to knowledge management under the title of *Knowledge Solutions: Tools, Methods, and Approaches to Drive Organizational Performance* (Serrat, 2017).

It is a great honor to introduce Olivier's new book, *Digital Solutions: Reframing Leadership*, which offers an unusually accessible, critical, and engaging take on the nexus of ICT, organization, and leadership in the digital world.

In this book, Olivier masterfully explains how globalization, shifting demographic trends, and ICT are reshaping societies, economies, and governments worldwide. The book offers cutting-edge research on digital strategies that will prove to be as necessary to professionals and practitioners as it will be to all premier business libraries.

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Foreword by Dr. Ann Romosz

I had the pleasure of getting to know Olivier Serrat as he embarked on his doctoral journey at The Chicago School of Professional Psychology in the Organizational Leadership program. I have been honored to collaborate with Olivier as he conducts research on leadership management systems to determine how organizations might meet challenges and reap opportunities in simple, complicated, complex, and chaotic contexts.

As I deepen my own research on organizational effectiveness, I am thrilled to introduce Olivier's new text, *Digital Solutions: Reframing Leadership*. Olivier takes the reader through the cultural history of how data and information have come to be an influence in all aspects of communication and decision-making. Then, Olivier weaves the importance of information and communication technology in organizations and considers its implications for leadership from a systems and strategy perspective. Finally, Olivier expertly discusses how to pragmatically implement digital strategies that align to an organization's mission. This full-spectrum analysis of how information and communication technology

came to be and what that means for organizational leadership is a great asset for scholars and practitioners alike.

Dr. Ann Romosz
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Preface

Machine-readable information, viz., digital data, underpins all fast-emerging digital technologies including inter alia, artificial intelligence, augmented virtual reality, Bitcoin and blockchain, cloud computing, cybersecurity and biometrics, data analytics, drones, 5G, the Internet of Things, natural language processing, "smart" homes, 3D printing, and of course Internet-based services. As if that were not enough there is more: in one fell swoop, the COVID-19 pandemic has accelerated digitalization processes because more and more people, all over the world, strive to continue their activities through online channels to buy and sell, communicate, play, study, or work.

Quickening digitalization of the economy, society, work, and the very act of organizing poses challenges that leaders in the private, public, and civil society sectors must see to; then again, every challenge is an opportunity to succeed. Certainly, scholars and practitioners have tried to understand the multifaceted phenomenon of digital disruption and many titles address the vital subjects of information and communication technology, organization, and leadership: however, most treat these subjects discretely from specialization-based perspectives. Findings, conclusions, and recommendations regarding the "new normal" of digital disruption accumulate in fragments across disciplines: they do not often separate the signal from the noise to the detriment of multidisciplinary synergy, insight, clear picture, and vision.

Hot new topics in any field summon primers that simplify core concepts, elucidate background and context, appreciate impacts, discern trends, explore implications, synthesize distinctive investigations, and link achievably to practice. Agility, behavior, business, clients, creativity, digital, digitalization, disruption, globalization, information and communication technology, innovation, Internet, leadership, millennials, organizational change, society, teams, trust, virtual, values, VUCA, workforce … As the sweep of its keywords demonstrates, this book represents a less common and more difficult attempt at cross-disciplinary fertilization aiming to share broad ideas in a concise and short volume.

This book is meant to be balanced and comprehensive as well as thought-provoking: it is aimed at both scholars and practitioners and will serve as a valuable quick-access resource on the challenges and opportunities that the digital age presents to organizational leadership. The substance of the book broadly follows a macro, meso, and micro approach to argumentation and is best read sequentially, meaning, from beginning to end. The book invites reference to the popular *Knowledge Solutions: Tools, Methods, and Approaches to Drive Organizational Performance* (Serrat, 2017) and the more recent *Leading Solutions: Essays in Business Psychology* (Serrat, 2021), which it both rests on and extends.

Washington, DC, USA Olivier Serrat

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Serrat, O. (2021). *Leading solutions: Essays in business psychology*. Singapore: Springer.

Preamble

We live in a digital age in which all manner of interaction—corporate, personal, social—takes place online (Serrat, 2016). Information and communication technology (ICT) enables us to seek, acquire, and share expertise, ideas, products, services, and other technologies locally, nationally, regionally, and around the world: this boosts efficiency and productivity; reduces barriers to entry into markets as well as risks and transaction costs; provides the means for sweeping reorganization of business; and by and large makes hierarchies, markets, and networks work better (Serrat, 2016). On the whole, ICT is reshaping societies, economies, and governments worldwide; therefore, it also fuels psychosocial and other concerns (e.g., addiction, blurred work–life boundaries, cybercrime, dehumanization, the demise of careers, job displacement and replacement, loss of privacy, polarization, shifting economic and power structures, social disconnection).

Especially through the melding of artificial intelligence and Big Data, ICT will continue to impact organizations, the subject of this book. To be future-ready, we should return to experience, make meaning, and transmute insights into strategies and actions. But, how? Reflective practice would have us move through three stages and ask in turn: "What?", "So what?", and "Now what?":

- **What?** E.g., What has happened? What impacts have we observed? What is on the horizon?

- **So what?** E.g., What broader issues have arisen? How important are these to us? What further consequences might there be?
- **Now what?** E.g., What needs to happen next? What new strategies does the situation demand? What actions can we take?

In succession, the five précis in the book follow the "What, So What, Now What" process. The first précis synopsizes the historical context of technological revolutions and reflects on pre-eminent first-order results from enhanced use of ICT in organizations. The second précis considers second-level impacts from ICT on economy, society, work, and the very act of organizing. The third précis maps out core concepts of agility that organizations can take on board, signifies principles that leaders should honor for reflective and effective organization design, touches on practical approaches to exploiting agility for advantage, and underscores the need to leverage ICT in newfound workforce ecosystems for creativity and innovation. The fourth précis showcases emerging leadership behaviors and mindsets and recommends leadership principles and skills to deliver digital transformation. The fifth précis specifies the good practice needed to plan and lead digital strategies that engage more closely with clients, audiences, and partners. Heeding President Harry S. Truman's adage that "Not all readers are leaders, but all leaders are readers", this is a short book for busy people.

Washington, DC, USA Olivier Serrat

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Planning and Driving a Digital Strategy

Information and Communication Technology in Organizations: An Evolutionary Perspective

About 45,000–35,000 years ago, genetically modern human beings—our ancestors—accomplished what Harris (1990) termed "cultural takeoff": cultural selection, that is, the mimetic transmission of a beneficial trait or ability, began to serve as a proxy for natural selection in many if not most dimensions of their social lives. The "cultural takeoff" that Harris (1990) discerned was almost certainly sparked by linguistic development. With speech (viz., vocal communication using language), community-based negotiation, customs, rules, decision-making, planning, and execution became possible (Axelrod, 1984). (*Homo sapiens*, the genus and species to which we belong, signifies "wise man" in Latin.) At long last, with the appearance of writing systems in Mesopotamia (ca. 3400–3200 BCE), Egypt (ca. 3200 BCE), the Indus region (ca. 2600–1700 BCE), China (ca. 1200 BCE), and Mesoamerica (ca. 900–600 BCE), our ancestors established the means for increasingly coordinated and extended action across larger groups of people, called for by the transition from hunter–gatherer to agricultural societies (Harris, 2013). Demonstrably, human beings have "managed" information from times immemorial. Even so, information and communication technology (ICT) pressed on from the

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mid-twentieth century and is picking up the pace (Campbell-Kelly et al., 2014). Remarkably, perhaps even unnervingly, human welfare in the twenty-first century is inextricably interlinked with ever more complex management of information.

Information: What's in a Word?

Data—the building blocks of information—can be primary, secondary, meta-, operational, or derivative (Floridi, 2010) but in every instance will be "discrete and objective facts, measurements, or observations that can be analysed" (Serrat, 2009, p. 1). Information, on the other hand, is "data that have been categorized, analyzed, summarized, and placed in context in a form that has structure and meaning" (Serrat, 2009, p. 1). Tellingly, the word "information" is derived from the Latin verb *informare*, specifically, to give form to, delineate, or shape and figuratively to educate, instruct, or train.

Our ancestors may have considered information chiefly as the resolution of uncertainty. However, past early recording systems (e.g., tokens, pictographs, logograms, the alphabet) (Schmandt-Besserat, 1996), people have near-miraculous means to impart or exchange information: across the information life cycle, per Floridi (2010), they can severally "create (generate), collect, record (store), process, distribute (transmit), consume (use), and recycle (erase)" information with a few keystrokes (p. 5). Before time, Naisbitt (1982) underscored the megashift from an industrial to an information society in which the production, manipulation, and distribution of information was fast becoming the premier economic and cultural activity. And now, every second of every hour, environmental, factual, or instructional information imbued with biological, economic, mathematical, physical, or semantic content washes over the world (Floridi, 2010). Our primary, secondary, and tertiary sources of information include abstracts, academic journals, books, brochures, conversations, databases, directories, electronic mail, encyclopedias, the Global Positioning System, indexes, journals, magazines and newspapers, podcasts, radio and television programs, Really Simple Syndication (RSS) feeds, sensors, statistics, technical manuals, texts, tweets, and much else.

Information pervades our reality because producing and distributing it is easy; distance no longer matters. (Until Gutenberg invented the printing press around 1436, the manuscripts in monastic libraries were secured to workspaces with a chain so they might be referred to but not

removed). But, the law of unintended consequences is always at work and the chickens have come home to roost: "information glut" is figurative language for the gigantic amount of content that overloads our brains. Although we have become better at capturing and storing information digitally, human capacity to process information is not cognitively unlimited. As a consequence of the superfluity of interpretations, we hesitate to draw conclusions and sidestep decisions. Ignoring the validity of content, we are susceptible to misinformation (or are swayed by "fake news"). Craving certainty, we may inadvertently or intentionally shut ourselves in information bubbles. Besides, are precious accomplishments, breakthroughs, or initiatives being discounted because vital information is entombed in the glut? (Serrat, 2010). Fifty years ago, Simon (1971) cautioned us:

> [I]n an information-rich world, the wealth of information means a dearth of something else: a scarcity of whatever it is that information consumes. What information consumes is rather obvious: it consumes the attention of its recipients. Hence a wealth of information creates a poverty of attention and a need to allocate that attention efficiently among the overabundance of information sources that might consume it. (pp. 40–41)

Echoing Simon (1971), Naisbitt (1982) declared that "We are drowning in information but starved for knowledge" (p. 24). "Uncontrolled and unorganized information is no longer a resource in an information society. Instead, it becomes the enemy of the information worker," Naisbitt (1982) continued (p. 24). These days, when global problems challenge sense-making, who will disagree that we must more proficiently discern between information and knowledge if we are to engage in intelligent behavior? Expressly, knowledge is:

> A combination of data and information, to which is added expert opinion, skills, and experience, resulting in a valuable asset that aids decision making. In organizational terms, knowledge is generally thought of as being know-how, applied information, information with judgment, or the capacity for effective action. Knowledge may be tacit, explicit, individual, and/or collective. It is intrinsically linked to people. (Serrat, 2009, p. 2)

Because ever-increasing amounts of data and information are exchanged per time unit, we must make it a habit to reflect on what (we think) we know and how we know it: this calls for higher-order thinking skills

(e.g., analyzing, synthesizing, evaluating) and education for the development thereof (Bloom et al., 1956). Per Scriven and Paul (1987), as cited in the Foundation for Critical Thinking (n.d.), "Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action" (para. 3). Toward this, we must also recognize the processes of development, adoption, use, and effects of ICT so we might leverage it astutely for reflective practice, a better life, and a better world.

Information and Communication Technology in the Scheme of Things

ICT is a broader term for information technology: it describes the varied set of tools and resources—including computer hardware and related peripherals, computer software, the Internet (e.g., blogs, electronic mail, websites), live broadcasting technologies (e.g., radio, television, webcasting), recorded broadcasting technologies (audio and video players, podcasting, storage devices), and telephony (e.g., fixed or mobile, satellite, video-conferencing)—used to handle information (United Nations Educational, Scientific, and Cultural Organization, n.d.).

ICT has a longer history than we appreciate. Computer hardware and software, in particular, only relatively recently marked the Information (or Third Industrial) Revolution (ca. 1980–2000) and the transition to an information-based economy. But, the invention of the electric telegraph (1837) and the telephone (1876) had earlier enabled near-instantaneous communication by wire over distances, an immense improvement over mail delivery services by runner, horse, rail, automobile, ship, or even air (Buchanan, n.d.). The wireless telegraph (1895), shortwave radio (1926), and high-frequency microwave radio (1946) followed presently (Buchanan, n.d.). The world's first electronic automatic computer was built in 1946 and mainframe computers came online in the late 1960s (Campbell-Kelly et al., 2014). But, it was after the invention of the microprocessor in 1971 that the first personal "kit" computers reached the general public. Wireless communications via the first mobile phone took place in 1973. Thereafter, transistor density on integrated circuits expanded exponentially, computing storage capacity expanded in response, and the speed of transmission followed suit. From the 1980s,

when the Information Revolution truly accelerated, improvements in computer software matched those in hardware: user-friendly interfaces and both standardized and specialized computer software greatly facilitated technology adoption. The IBM PC appeared in 1981 and the Apple Macintosh was unveiled to great fanfare in 1984 (Freiberger, n.d.). Berners-Lee published the first web site on the World Wide Web in 1990, with breathtaking implications for connectivity. In the 1990s, the Internet stopped being the preserve of universities and research institutions, moved to corporate headquarters and, later, became a functionality of individual homes (Karoly & Panis, 2004).

Ex nihilo nihil fit: in the vein of innovations, technological revolutions are more appropriately represented as waves, each following another since one creates some (but not all) of the conditions for the next (Šmihula, 2010). The hallmark of any technological revolution is also that it is a cluster of interrelated systems whose impact extends beyond the industries it propels. History is the means by which we explain—and in instances justify—the present. The Information Revolution had its offing in (a) the Scientific Revolution (ca. 1540–1730) that saw the birth of modern science with developments in astronomy, biology, chemistry, mathematics, and physics; (b) the Financial–Agricultural Revolution (ca. 1600–1740) that transformed agriculture, finance, and trade; (c) the Industrial Revolution (ca. 1760–1840) that advanced, for example, the coal, iron, railways, and textile sectors; (d) the Technological (or Second Industrial) Revolution (ca. 1870–1914) that witnessed innovations in, say, electrical, oil, and steel production, led to the first automobiles and airplanes, and fueled the Gilded Age; and (e) the Scientific–Technical Revolution (ca. 1940–1970) that powered astronautics, cybernetics, and synthetic materials; the aviation, nuclear, and oil industries; and the first computers (Šmihula, 2010; Vickers & Ziebarth, 2016). Today, in furtherance of the Information Revolution, the Digital Revolution (ca. 2000–) under way stands for the shift from mechanical and analog electronic technology to digital electronics (and the proliferation of digital tools and applications that accompanies it). To wit, the International Telecommunication Union (2021) estimated that 51% of the world's population (or 4 billion people) were using the Internet in 2019, with the proportion increasing to 69% for youth aged 15–24 years. In parallel, there is talk of a conjoined Fourth Industrial Revolution (ca. 2000–) that will automate traditional manufacturing and industrial practices with ICT: related breakthroughs have to

do with artificial intelligence (AI), biotechnology, "decentralized consensus", fully autonomous vehicles, the Internet of Things, nanotechnology, fifth-generation wireless technologies, 3D printing, quantum computing, and robotics (Schwab, 2016). The foregoing should not be taken to mean that progress is linear: rather, technological revolutions are undulatory, with each the upshot of alternative courses of action in the evolving macro-environment (e.g., demographic and sociocultural, ecological and physical, economic, political and legal, technological).

Perez (2002) detected four recurring phases in technological revolutions, each cycle taking 50–60 years: (a) irruption (beginning with a "big bang"); (b) frenzy (ending with a crash); (c) synergy (beginning with institutional adjustment); and (d) maturity (ending with the subsequent "big bang"). Going forward, some may dispute the time interval that Perez (2002) detected in each cycle but the growing inequality and political unrest we are witnessing indicate, in keeping with Perez's (2002) characterization, that the Information Revolution is at the synergy phase. And so, past the installation period (i.e., irruption and frenzy), we may be at the beginning of the deployment period (i.e., synergy and maturity), the turning point at which Perez (2002) argued we must rethink and reroute development to determine whether the revolutionary advances that pervade society deliver on their promises. Because social media platforms have outgrown their initial mission and constitute an unruly "public square", for instance, we hear frequent calls for their nationalization for the reason that elected legislators, not private sector interests, should set the rules that govern free speech. Lest we forget, it is also a fact that the state often plays an important upstream role in facilitating technological breakthroughs, notably with upstream investments (such as the Advanced Research Projects Agency Network—aka ARPANET—in the case of the Information Revolution) and with legal reforms: therefore, the private sector cannot claim all the credit either. An unstated truth in Perez (2002) is that ICT shapes but is in turn influenced by the evolving macro-environment: it does not—or rather need not—evolve blindly under forces beyond our control. Eventually, however fraught with controversy technological revolutions may be, their evolvement is always subject to people and values.

Information and Communication Technology in Organizations

Before the widespread adoption of personal computers and the Internet in the 1990s, organizations used information technology for bulk processing (with mainframe computers) of files and databases associated with day-to-day operations (e.g., book keeping, customer billing, inventory management, payroll). Not forgetting the staples of face-to-face interaction and in-person meetings, organizations relied on typewritten letters, interoffice memorandums, photocopiers, and telephone conversations. Telex—the first teleprinter service for which began operations in 1933—was the principal means for sending written messages electronically but its use declined when facsimile (or "fax") machines gained popularity in the 1980s (Buchanan, n.d.). From the 1990s, personal computers and the Internet became integral to organizational processes and ICT began to bear on the very nature of the workforce and the workplace.

From humble beginnings, the role that ICT has played in organizations has grown by leaps and bounds. Across the organizational landscape, Skyrme (1995) categorized the key impacts of ICT in the following areas: (a) organizational configuration, for example by stretching organizational boundaries and enabling networking in virtual teams; (b) organizational culture, for example by circumventing traditional top–down routines and both amplifying and accelerating the flow of data and information among personnel and between customers and suppliers to hasten the development of open cultures; (c) business strategy, for example by enabling new business models, condensing or eliding temporal and spatial distances, and enabling electronic commerce through the levers of portability, resequencing, reusability, simultaneity, and time extension; (d) management processes, for example by supporting unstructured decision-making and highly routinized business processes and providing effective ways to access information from multiple sources; (e) work, for example by multiplying the share of jobs requiring nonroutine cognitive (analytical) and interactive (communication) skills, shortening worker tenure, and asking each and every to ongoingly apply technology-mediated learning to research sources, access information, connect to experts, communicate ideas and results, and package knowledge assets for reuse; and (f) workplace, for example by allowing desk sharing, teleworking, and telecommuting. Skyrme (1995) articulated a workmanlike perspective on the role of ICT

in organizations but organizational components (and their interactions with the outside world) are gradually more interdependent because of it: hence, the foremost impact of ICT has been to hasten the development of organizations as dynamic open systems, begetting an exacting need to leverage Big Data and tend to information ecologies (Bertalanffy 1969; Davenport & Prusak, 1997).

And yet, ICT's furtherance of open systems suggests it would be incorrect to ascribe all manner of causal effects exclusively to it. Two other elemental forces it behooves policy to address have assuredly affected the workforce and the workplace: they are demographic patterns and globalization (Karoly & Panis, 2004). In a nutshell, the "Baby Boom" (1946–1964) was followed by an enduring "Baby Bust", with the Total Fertility Rate declining from 5.0 to 2.4 births per woman over the period 1965–2020 (United Nations Population Fund, 2020). Therefore, the rate of growth of the labor force declined from the 1970s (and is projected to slow even further). Pell-mell, after-effects are that women greatly increased their participation in the workforce, immigrants helped offset labor shortages, and the working population is becoming more diverse in terms of age (with Millennials born in 1981–1996 soon to comprise the largest generation in the labor force), ethnicity, gender, and race. From the 1990s, owing to economic reforms in the People's Republic of China (1976–1989) and the collapse of the Soviet Union (1989), political, economic, and technological developments quickened foreign direct investment and other capital flows, cross-border transactions of goods and services, technology transfer, and the movement of people. Globalization conditioned the size of the markets that industries produce for, the mix of products and services that people consume, and the nature of competition, with extensive side effects on the supply of and demand for labor.

Of course, right the way through, ICT underpinned rapid application of scientific advances in products, services, and processes; spurred innovation in organizations; and promoted the shift to knowledge-intensive industries and services. As regards organizations, but in coevolution with demographic patterns and globalization, it is also true that ICT dynamized work with job displacement and job instability; impacted the nature of organizations and how they operate; and generally heightened skills requirements among the workforce, expressly in sectors that involve high technology (Karoly & Panis, 2004).

Information and Communication Technology: What's Next?

As said by Taleb (2007), "A black swan is a highly improbable event with three principal characteristics: it is unpredictable; it carries a massive impact; and, after the fact, we concoct an explanation that makes it appear less random, and more predictable, than it was" (p. 1). Notwithstanding the fact that globalization and pandemics are closely intertwined, few could have foreseen the extent to which the "black swan" of COVID-19 triggered unprecedented reliance on ICT, especially social media, across the world's population. Never mind the information glut and "fake news": for sure, following the intercontinental spread of COVID-19 from January 2020, ICT helped maintain social order (Yang et al., 2020).

Just before the onset of the COVID-19 pandemic, Baldwin (2019) analyzed how the combined forces of ICT and globalization could shape societies and organizations in the years to come. According to Baldwin (2019), globalization is no longer simply the trade of, say, goods, ideas, and people across boundaries: collaborative platforms such as Slack, Microsoft Teams, and Trello are slashing the cost of face-to-face interaction and encouraging "telemigration"—a new form of work that allows workers with recognizable skills to live in one country and work in offices in another. Reminiscent of the industrial robots that began to replace blue-collar workers from the 1960s–1970s, a new phase of automation will also involve AI-based digital assistants, white-collar robots that will perform functions that only human beings could accomplish in former times (Baldwin, 2019). In the wake of the COVID-19 pandemic, the social distancing norms and lockdowns are prompting a surge in the use of ICT for work-from-home and gig work that can only hasten the advent of Baldwin's (2019) predictions.

A paradigm, or view of the world, endures until it no longer explains how something works: subsequently, a profound change in models or perceptions of events is needed (Kuhn, 1962). The old paradigm of the machine organization (bureaucracy)—or indeed any of the other six configurations that Mintzberg (1979, 1989) made out—is fast becoming outdated social technology. In any event, Millennials now power the workforce: they have traits and different values that machine organizations cannot oblige:

- Millennials believe all assets are equal;

- Millennials are everyday changemakers;
- Millennials believe in activism;
- Millennials are passionate about issues, not institutions;
- Millennials value collective action and networks;
- Millennials support the greater good, not partisan politicking;
- Millennials are sector agnostic;
- Millennials take an innovative approach to creating change;
- Millennials believe all actions matter—big and small; and
- Peer influence is key to Millennial engagement. (Feldmann, 2019, pp. 6–15)

Eighteen years ago, Karoly and Panis (2004) speculated that, from coevolution of demographic patterns, globalization, and technological change (including in ICT), the workers of the twenty-first century would have to live with changes in (a) the organization of production; (b) the nature of employer–employee relationships and work location; (c) safety, security, and privacy; (d) the nature of work and job skill requirements; (e) the size and composition of the workforce; and (f) compensation in the form of wages and benefits (pp. 185–186). But, there is more on the horizon: in relation to the role of technology in organizations, Karoly and Panis (2004) might have, say, prefigured the significance of the Millennials because of that generation's use of ICT (and immersion in social media), transcended the travails of the information society to elucidate the dynamics of the knowledge economy, and enquired into the ethical challenges of digital technologies. All the same, the conjectures that Karoly and Panis (2004) made were as clairvoyant as any. Incited by anxiety and the inability to envisage the future, predictions of social catastrophe attend every technological revolution: they cannot be counterbalanced by naïve policy-optimism. That is why, without succumbing to techno-pessimism, our organizations must deliberate what to do in respect of the inbound modus operandi, which will assuredly call for new leadership literacies. "Agile organizations" that putatively balance stability and dynamism are mooted as the new organizational paradigm: hence, how ICT might help deliver requisite organizational agility across people, processes, strategy, and structure deserves painstaking investigations.

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Information and Communication Technology in Organizations: Impacts and Implications

With increasing impetus from the 1980s, information and communication technology (ICT) has become a powerful driver of change: tellingly, it is expected to play a pronounced role in the accomplishment of the 17 Sustainable Development Goals that the General Assembly of the United Nations adopted on September 25, 2015 to address—by 2030—areas of vital importance to human beings and the planet (United Nations, 2015). Across the economic, social, and environmental dimensions of sustainable development, Serrat (2016a, 2016b, 2016c, 2016d) described what ICT can do for people, prosperity, planet, and peace and partnerships, respectively. However, technology is agnostic and all technological revolutions have side effects on economic and social organization (e.g., business models, employment, income equality, modes of life, rural–urban migration, trade) (Perez, 2002; Serrat, 2021a). Ever since the 1990s, there has been talk of the post-bureaucratic organization: this is a form typified by such ideal-type features as dialogue, persuasion, trust (and interdependence), mission (rather than job definitions and rules), information sharing, principles (rather than methods), problems or projects (rather than hierarchical chains of command), looser boundaries, peer evaluation and negotiated standards of performance, as well as expectations of constant change (Denning, 2019; Jaffee, 2001). Of late, the age-old functionality of the hierarchy and its "engineering" model as the most common approach to organizing has been challenged across the

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world by the "living systems" or "perpetual beta" perspective that ICT advances (Hamel & Zanini, 2018; Loukis et al., 2016). Machiavelli (ca. 1517/1998) invited those who desire constant success to change their conduct with the times. In conjunction with shifting demographic trends and globalization, digital disruption from ICT acts through emerging organizational paradigms to impact everything we do: how we communicate, learn, have fun, and work (Wilen, 2018). Of necessity, organizations must locate themselves in the turbulence of evolving ecosystems, where volatile, uncertain, complex, and ambiguous situations (aka VUCA) are the norm (Baran & Woznyj, 2020; Bennett & Lemoine, 2014). "How important is ICT to us?" and "What do we need to do?", organizations must ask to explore potential futures and, with more outside–in, refrain from technocratic approaches to future-proofing and idealizing (Ackoff, 1999; Serrat, 2021b).

Second-Level Impacts of Information and Communication Technology

Presumably, Millennials born in 1981–1996 cannot conceive that the organizations most of their Baby Boomer (1946–1964) or Generation X (1965–1980) parents worked in relied entirely on face-to-face interaction, in-person meetings, typewritten letters, interoffice memorandums, facsimile (or "fax") machines, photocopiers, and telephone conversations (Poe, 2011). Undeniably, even then, the quickening of ICT from the 1980s took many by surprise: notwithstanding indispensable contributions by Argyris, Beckhard, Bennis, Bridges, Burke, Kanter, Lewin, Quinn, Schein, Schön, Tushman, and Weick, among others, *Organization Change: A Comprehensive Reader* (Burke et al., 2009) made no mention of information, communication, or technology—even less ICT—in its subject index. Half of the 52 chapters in Burke et al. (2009) were written in the 1960s–1980s; however, the others appeared in the 1990s–2000s and their authors might therefore have pondered the impact of the Information Revolution (ca. 1980–2000) or prognosticated on the significance of the Digital Revolution (ca. 2000–) underway. Undeniably, organizations have a say in the use of ICT; nevertheless, the progression of influence can be stronger the other way round (Laudon & Laudon, 2019). By the mid-1990s, ICT had progressed so fast that observers such as Skyrme (1995) were able to categorize first-level impacts across organizational configuration, organizational culture, business strategy,

management processes, work, and workplace. A short year after Burke et al. (2009), Nye (2010) announced in another comprehensive reader that:

> The information revolution is affecting the structure of organizations. Hierarchies are becoming flatter and embedded in fluid networks of contacts. White-collar knowledge workers respond to different incentives and political appeals than do blue-collar industrial workers. Polls show people today are less deferential to authority in organizations. (pp. 321–322)

The dissimilar treatment of ICT in Burke et al. (2009) and Nye (2010) bears out that it can take time for a dominant paradigm (or "normal science") to be made obsolete by a new phenomenon (Kuhn, 1962). Irrespective, technology-minded practitioners such as Hammer and Mangurian (1987) had promptly noted that ICT compresses time, overcomes distance, and redefines relationships to promote efficiency, effectiveness, and innovation and deliver strategic, informational, and transactional benefits. As a result of sustained developments, a mere 20 years later, Baltzan (2017) was able to single out ICT-related contributions to achieving business success, exploring business intelligence, streamlining business operations, building innovation, and transforming organizations. Past the first-level impacts that Skyrme (1995) discerned initially, Serrat (2016e) then contended from a review of experience that the second-level impacts of ICT on organizations had been nothing short of astonishing:

> Ever faster and cheaper, ICT allows people to seek, acquire, and share expertise, ideas, services, and technologies locally, nationally, regionally, and around the world; boosts efficiency and productivity; reduces transaction costs and barriers to entry; provides the means for sweeping reorganization of business; and generally makes markets work better. (Serrat, 2016e)

ICT has revolutionized the financial services, media and entertainment, retail, and telecommunications sectors: together with shifting demographic trends and globalization, it now bears on societies, economies, and governments around the world (World Bank, 2016). Schwab (2016a) pointed to a second wave of global digital transformation, a Fourth Industrial Revolution (or Industry 4.0) deemed to have started out ca. 2000. The Fourth Industrial Revolution will be typified by the blending of

technologies across the biological, digital, and physical spheres (Schwab, 2016a). Schwab (2016b) expected breakthroughs in artificial intelligence (AI), autonomous vehicles, biotechnology, energy storage, the Internet of Things, materials science, nanotechnology, quantum computing, robotics, and 3-D printing, among others. The utopia of the Fourth Industrial Revolution is inhabited by intelligent products, intelligent factories, intelligent assets, and empowered people enjoying digital goods and services (Howells, 2020). In any event, beyond the early behavioral, economic, and organizational impacts that Hammer and Mangurian (1987) and Skyrme (1995) detected, what of ICT's second-level impacts on organizations per se?

Organization: What's in a Word?

"Technology is a useful servant but a dangerous master", said Lange (1921, para. 29) in his Nobel Peace Prize lecture about the advancements of technology in the twentieth century. Caveat emptor: forewarned by the ICT-fueled globalization of the ca. 1990s–2000s and the cross-cutting changes it drove in global supply chains, McAfee and Brynjolfsson (2014) cautioned that the Fourth Industrial Revolution could result in (even) greater income inequality from (further) disruption in labor markets. Elsewhere, Ferguson (2018) perceived that social media platforms (e.g., Facebook, Twitter) represent a new kind of power that poses a fundamental challenge to the traditional authority of the state and its institutions. In a similar vein, *The Economist* remarked that social media was envisioned to join people together: conversely, social media platforms are now often held to invade privacy, spread propaganda, and undermine democracy ("Pessimism v progress", 2019). *The Economist* might have clarified that it is the abuse of social media, and not a platform by itself, that amplifies division but research shows the upshot holds true (Hameleers & Schmuck, 2017; Moore, 2018; "Pessimism v progress", 2019; Rønn & Søe, 2019; Rudick & Dannels, 2019). Revealingly, Facebook's Chief Executive Officer (as cited in Frier & Chafkin, 2017) declared that the company's new mission was no longer just about "connecting the world"—meaning, Facebook's 2.8 billion monthly active users—but to "give people the power to build community and bring the world closer together" (para. 1). Moreover, *The Economist* recognized that e-commerce, the gig economy, and ride-hailing are convenient but identified one-to-one links with underpaid workers, income inequality,

and more traffic ("Pessimism v progress", 2019). With a Schumpeterian "gale of creative destruction", ICT is fast transforming economy, society, and work (Baldwin, 2019; Schumpeter, 1942). The reach of ICT across society is a reflection of the fact that about 4.6 billion people (or 59% of the global population) used the Internet actively as of October 2020 (Statista, 2021).

The foregoing exemplifies the broad sweep of ICT's impacts on the public, private and civil society sectors. But, how has ICT impacted organizations, that Merriam-Webster (n.d.) describes simply as administrative and functional structures. More than 40 years ago, Mintzberg (1979) distinguished entrepreneurial, machine (bureaucracy), diversified, professional, innovative, missionary, and political configurations. Because ICT impacts the external environment in which they operate, organizations have continued to look into how they might transform themselves into high-performing and adaptable enterprises by leveraging enablers of success (i.e., leadership support, stakeholder engagement, change readiness, communication and involvement, training) across organizational components (i.e., systems, structure, processes, performance measures, people, culture) (Stanford, 2015). Away from the prevailing idea of the organization as a machine, the organization of the twenty-first century is also changing routines to provide more engaging workplaces that trust personnel to be self-organizing (Denning, 2020). The course of redefinition, reconfiguration, and disaggregation of organizations has been accelerated by the social distancing norms and lockdowns associated with the COVID-19 pandemic, for which there is no precedent in the contemporary world (Kniffin et al., 2021). In light of the information intensity of products or services, the information intensity of their process or value chains, and the (perhaps temporarily) essential nature of the products or services, Seetharaman (2020) helped understand how some industries (e.g., banking and financial services, education, news or media) have continued to function while others (e.g., labor-intensive manufacturing, museums, theaters) have been forced to minimize operations or temporarily shut down, with ripple effects on unemployment and income inequality. Notwithstanding the COVID-19 pandemic, however, the World Bank (2019) declared that technological progress has on balance created more jobs than it has displaced over the last century. Still, the World Bank (2019) gave notice that technology disrupts the demand

for skills, with nonroutine cognitive (i.e., critical thinking, problem-solving) and sociobehavioral (i.e., creativity, curiosity) skills becoming more important in the present setting.

In point of fact, the very fabric of organizations is being stretched: Upwork (https://www.upwork.com/) is a freelance platform (or remote work marketplace) that lets enterprises and individuals connect to conduct business on demand. With Upwork (https://www.upwork.com/), all types of organizations sign up; post details of their project; review proposals to find the contractor (or agency) they need; engage the services; and use the platform's tools to communicate, collaborate, and securely pay for the project. Other freelance platforms are Fiverr (https://www.fiverr.com/), Freelancer (https://www.freelancer.com/), Guru (https://www.guru.com/), PeoplePerHour (https://www.peopleperhour.com/), and Toptal (https://www.toptal.com/), for example, some of which specialize in particular talent pools. The benefits to organizations that take advantage of freelancers include access to talent anywhere, lower overall costs, risk reduction, and smaller payrolls; to freelancers, there is the appeal of freedom, diversity of work, focus time, work–life balance, and merit-based systems that can raise profiles (Boudreau et al., 2015). To freelancers, some disadvantages of freelance platforms have to do with the precarity of gig work, competition leading to low rates, the short duration of many tasks, administrative busy-work, potentially vast commissions charged on earnings, and aloneness (with possible repercussions on health and well-being) (Sutherland et al., 2020). Baldwin (2019) wrote about "telemigration" but the term "home office" may also enter the lexicon. On the word of Lund et al. (2020), the hybrid models of remote work that have been put in place during the COVID-19 pandemic may persist for highly educated minorities—notably in financial services, the information industries, management, and professional services—and so make for a blended workforce. The COVID-19 pandemic has also accelerated the expansion of virtual teams, making new demands on virtual leadership and management (Kniffin et al., 2021). As the world moves online and more cultural, economic, societal, and technological changes take place, organizations must build engaged, innovative, and resilient business: in a word, they must become agile (Holbeche, 2018).

Leveraging Information and Communication Technology for Agility

With top–down hierarchy, bureaucracy, detailed instruction, and specialized silos, the machine organization outperformed all others over a century of management from 1911 (Aghina et al., 2018). Without doubt, Taylorism (or the scientific management of organizations) delivered results in stable industries and sectors that enjoyed known performance frameworks: however, it is at odds with the rapidly changing external environment, incessant introduction of disruptive technology, quickening digitization and democratization of data and information, and competition for talent that characterize the twenty-first century (Aghina et al., 2018). Today, organizational agility is acknowledged as the sine qua non to achieving sustained competitive advantage (Baškarada & Koronios, 2018). To the Agile Alliance, an open-source organization serving "people who explore and apply Agile values, principles, and practices" (Agile Alliance, 2021a, para. 1), "Agile is the ability to create and respond to change. It is a way of dealing with, and ultimately succeeding in, an uncertain and turbulent environment" (Agile Alliance, 2021b, para. 1). The agile organization—exemplified by the ability to adapt and manage change with speed and innovation—is set to enshrine a new dominant paradigm, namely, the organization as a living organism (Aghina et al., 2018; Holbeche, 2018). Certainly, there is as yet little consensus on how organizational agility might be assessed and improved (Baškarada & Koronios, 2018): even so, it is in the final analysis synonymous with the ability to quickly reconfigure organizational components to ongoingly produce customized rather than standardized product and service offerings (Stanford, 2015).

The roots of the agile organization lie in the Agile Manifesto for Software Development (2001). Comprising four foundational values and anchored in 12 principles, the Agile Manifesto was a 68-word declaration by 17 practitioners who met in Snowbird, Utah to formulate an alternative to documentation-driven processes of software development (Agile Alliance, 2021b):

> We are uncovering better ways of developing software by doing it and helping others do it. Through this work, we have come to value:
>
> - **Individuals and interactions** over processes and tools
> - **Working software** over comprehensive documentation

- **Customer collaboration** over contract negotiation
- **Responding to change** over following a plan.

That is, while there is value in the items on the right, we value the items on the left more. (Agile Manifesto, 2001)

The immediate intent of the Agile Manifesto (2001) was to have cross-functional and self-organizing teams of software developers collaborate with customers and end users to discover needs and cultivate solutions (Collier, 2011). From nowhere, however, the appeal of the Agile Manifesto (2001) grew and adaptive planning, evolutionary development, speedy delivery, timely improvement, and all-round accommodating responses to change came to form part of Agile management, the set of practices that with origins in software development now extends globally to supersede command and control, especially in VUCA situations (Denning, 2016). Brought about by shifting demographic trends, globalization, and technological change (including in ICT), and acting through the entrepreneurship and disruptive innovation these forces stimulate, VUCA situations are characterized by turbulent financial and commodities markets and geopolitical instabilities (Holbeche, 2018).

As expected, the technological mindset behind the four key values of agile development explains the preponderant role that ICT is expected to play in organizational agility: then again, the Agile organization is much more than tools and processes (Capeda & Arias-Pérez, 2019; Denning, 2016). In the agile organization, ICT is not a supporting capability: it is a human-driven ingredient of every organizational component that must be seamlessly integrated as a means to enable quick reactions and unlock value by and for people (Aghina et al., 2018). "Instead of power trickling down from the top, Agile recognizes that the future of a firm depends on inspiring those doing the work to accelerate innovation and add genuine value to customers" (Denning, 2016, para. 21).

Schwab (2016b) highlighted a few breakthroughs from the fusion of biological, digital, and physical technologies now taking place under the Fourth Industrial Revolution but the latest state of affairs is breathtaking. Leaving aside green, medical, materials, robotics, and space technology, for the sake of simplicity, the trends in ICT as stated by What's Next Consulting (https://www.whatsnext.fi/) relate to AI; augmented intelligence; Big Data; blockchain; brain–computer interface; cloud computing; cyber security; digital twins; digital workspaces; DNA computing; edge computing; 5G/6G; the Internet of Everything (or the intelligent

connection between things, processes, people, and data); intuitive haptic user interfaces; machine/deep learning; predictive algorithms; printed electronics; quantum computing; sensors and smart dust; virtual reality; and wearable computing (Hiltunen, 2021). If history is any guide, ICT will continue to mature and consolidate (Standage, 2005).

Evermore, agile organizations will have to employ ICT with efficiency, speed, and quality, taking into account their industries or sectors of interest. Salo (2017) confirmed that the financial services, media and entertainment, retail, and telecommunications sectors—mentioned earlier in connection with their sensitivity to ICT—are among the most unstable business environments deemed in need of agile transformation. Much as in other realms of human endeavor, adhering to a few precepts will help if organizational agility is to become an ethos with substance. Baškarada and Koronios (2018) proposed a high-level, dynamic capability framework for organizational agility: (a) sensing (viz., detecting opportunities and threats from the external environment; (b) searching (viz., identifying opportunities within the organization); (c) seizing (viz., making impartial decisions about transforming business models, capabilities, strategies, etc.); (d) shifting (viz., successfully implementing new business models, capabilities, strategies, etc.); and (e) shaping (viz., executing and scaling new capabilities to influence the external environment (p. 337). More operationally, Goodner (2020) forged 10 principles for organizations to follow: (a) make technology a strategic business objective, (b) commit to introducing disruptive technologies, (c) embrace the digitization and democratization of information, (d) enable access to information from anywhere, (e) standardize across the organization, (f) move the communications infrastructure to the cloud, (g) gain real-time visibility into data, (h) future proof your technology, (i) maintain a strong security posture, and (j) embrace agile development. In a similar vein, Chui and Hall (2020) recommended that organizations wishing to optimize the use of AI should (a) align AI with strategy; (b) ensure cross-functional collaboration; (c) invest in AI talent and training; (d) empower AI experts with standardized methodologies, protocols, and tools; (e) apply strong data practices; and (f) drive adoption and value. There is no shortage of advice to weave digital into the entire organization by raising aspirations, expanding toolkits, and delivering impact across the board: the inevitable keywords are “strategic” and “holistic” (Berutti et al., 2021).

Leading Agile Organizations

In the crucible of the Civil War, Lincoln (1862) declared that "The dogmas of the quiet past are inadequate to the stormy present. The occasion is piled high with difficulty, and we must rise with the occasion. As our case is new, so we must think anew and act anew" (pp. 273–274). Likewise, VUCA situations summon organizations to reconsider the leadership they need (Holbeche, 2018). To Yukl (2013), for instance, "Leadership the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives" (p. 7). Yukl's (2013) take on leadership is analogous to those of, say, Lussier and Achua (2015), Johnson and Hackman (2018), and Northouse (2018): it emphasizes "process", "influence", "others", and "shared objectives", sequentially, but falls short of suggesting what, exactly, leaders should do in uncharted situations.

The "others" that Yukl (2013) referred to are not the erstwhile Baby Boomer or Generation X men that management theories concentrated on post-Second World War (Serrat, 2021c): they are Millennials, a fast-growing number of whom are highly educated women (Flood, 2015). On the whole, Millennials are autonomous, diverse, informed, multitaskers, and tech-savvy (Kornelsen, 2019): therefore, they are not likely to be the easy subjects of "influence". What is more, the definition of "shared objectives", as well as the "process" whereby one is to make sense of and agree about what needs to be done and how, is evidently not in simple (meaning, clear) or complicated situations what it must be in complex or chaotic ones (Snowden et al., 2021). In uncertain situations, the elements of circumstances, viz., who, what, when, when, where, why, and how, are far less clear with respect to markets, people, practices, and workplaces.

Allowing for both individual and collective leadership functions, but with implications for formal leadership roles, Holbeche (2018) underscored values-based leadership (i.e., ethics and purpose, putting employees first) and shared leadership. To promote agile leadership by the collective, Morrison et al. (2019) wrote about the need to cultivate safe spaces for productive conversations; frame conversations with effective questions; identify assets, including those in hiding; link and leverage assets to reap new opportunities; look for the "Big Easy"; convert ideas to outcomes; start slowly to go fast; draft inclusive short-term action plans; set "30/30" meetings to evaluate, learn, and adjust; and at all

times nudge, connect, and promote to instill new habits. With the individual in mind, Johansen (2012) discerned a different set of leadership skills comprising "Maker Instinct […] Clarity […] Dilemma Flipping […] Immersive Learning Ability […] Bio-empathy […] Constructive Depolarizing […] Quiet Transparency […] Rapid Prototyping […] Smart-Mob Organizing [and] Commons Creating" (pp. 208–209). Foreseeing ever faster distribution of organizations, supply chains, and workforces, Johansen (2017) took the set of skills in Johansen (2012) and recast them in the form of leadership literacies: "Looking Backward from the Future […] Voluntary Fear Engagement […] Leadership for Shape-Shifting Organizations […] Being There When You Are Not There [and] Creating and Sustaining Positive Energy" (pp. 7–8). Rigid structures are giving way to more liquid arrangements and beckon researchers to identify and prioritize knowledge gaps in agile leadership: the inevitable keyword is "adaptibility" (Calarco, 2020). Commenting on the nature and function of leadership in agile organizations, for example, U. Thelen observed that Agile management practices fall in two camps: they continue to fly the flag of the growth-oriented economy and concentrate on new ways to improve performance; or, they champion more philosophical approaches to life and work and promote humanistic notions of purpose, well-being, etc. (personal communication, March 10, 2021). If so, leadership in new work environments is likely to be more distributed and diverse.

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Information and Communication Technology in Organizations: Powering Agile-Friendly Leadership

Seventeen years ago, Hatch et al. (2005) detected three "faces" of leadership from text analysis of the interviews of 30 chief executive officers (CEOs) who had won plaudits from the Harvard Business Review in the last decade of the twentieth century. Hatch et al. (2005) recognized (curious and independent) *artists*, (empathic and ethical) *priests*, and (disciplined and rational) *managers* in the CEOs they examined. Hatch et al. (2005) opined that the said CEOs had been using aesthetics—dramatizing, mythmaking, and storytelling—to lead their companies and concluded that "[…] although business acumen is glorified […] its celebration is increasingly taking on a distinctly artistic and moral tone" (p. 2). In 2021, however, work gets done in a pandemic world where lockdowns and work-from-home orders have forced organizations to rethink existing working modes (Nikolova, 2021; Wright & Ingilizian, 2020). A nascent body of literature affirms that technological disruption, especially in information and communication technology (ICT), has amplified the volatility, uncertainty, complexity, and ambiguity (aka VUCA) of situations in coevolution with demographic patterns and globalization (Bereznoy, 2017; Johansen & Euchner, 2013; Rimita et al., 2020); a second body of literature echoes the first with prescriptions for resilience, typically defined as "a capacity to undergo deep change without or prior to a crisis" (Hillmann & Guenther, 2021; Välikangas, 2010, p. 3). Latterly, the COVID-19 pandemic has noticeably fast-tracked the rise of

O. Serrat, *Digital Solutions*,
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the digital economy (International Telecommunication Union, 2020). A report of the National Intelligence Council (2021), which serves in the United States Intelligence Community as the center for mid- and long-term strategic analysis, declared "[t]he ongoing COVID-19 pandemic marks the most significant, singular global disruption since World War II, with health, economic, political, and security implications that will ripple for years to come" (p. 2). Usefully, Boudreau et al. (2015) captured the progressively more granular and customized world of work in which swelling numbers of operatives will be free agents in a "New Normal". For some time, it has been contended that the field of leadership is undergoing a paradigm shift in which hitherto predominant theories (e.g., leader–member exchange, trait theory, transformational leadership) are being challenged (Uhl-Bien & Marion, 2011). Hatch et al. (2005) underscored the aesthetic leadership practices of leaders—and of course the links to organizational change, culture, identity, values, and vision. Then again, organizational agility and agile-friendly leadership are ever more advocated in preference to heroic leaders, sometimes with explicit support for post-heroic (meaning, shared) leadership, a management style that rates enablement of agency and creativity above having a commanding personality at the helm (Collin et al., 2018; Denning, 2020a; Hayward, 2018; Rigby et al., 2020). On account of the COVID-19 pandemic, there is talk of the vanishing middle manager (Hancock & Schaninger, 2021). The future of work, and how one might lead organizations of the future, are increasingly thought-provoking topics (Serrat, 2021a).

Core Concepts of Organizational Agility

The foremost objective of twentieth century management, refined forevermore after Taylor pioneered scientific management in the 1880s–1890s, was relentless efficiency to maximize returns to shareholders (Denning, 2020b). In the public sector, the accent is on stakeholders but efficiency tops all too: relevance, coherence, effectiveness, impact, and sustainability have usually taken a back seat (Organisation for Economic Co-operation and Development, 2021). In a comparatively slow-moving world, coherence and consistency were held in the highest regard: "Leaders […] focused on increasing predictability for their subordinates and thus for the organization as a whole" (Stevenson & Moldoveanu, 1995, para. 5). But, in a VUCA world that is prey to continuous and

multifaced change, "The days when traditional management models—such as strategic planning based on extrapolations from the past—were enough to keep organizations ahead of the curve seem long gone" (Holbeche, 2018, p. 1). In a VUCA world, the formulaic modus operandi of delivering short-term profits to shareholders is not an option: instead, organizations must create more value for clients, audiences, and partners because profits are the result of value-creation, not the goal (Denning, 2020b). Paraphrasing Holbeche (2018), the business landscape transforms so fast these days that, regardless of their scope or size, organizations must add value if they are to survive: for that reason, they must become agile. Compellingly, a global survey by McKinsey & Company found that organizational agility is a top or top-three priority for 75% of senior managers (Salo, 2017).

The term "agility" is used most frequently in sport, where it has been described as "a rapid whole-body movement with change of velocity or direction in response to a stimulus" (Sheppard & Young, 2006, p. 922). In the world of organizations, agility has correspondingly come to connote with quick and nimble response to challenge: "Agility is the ability of an organization to renew itself, adapt, change quickly, and succeed in a rapidly changing, ambiguous, turbulent environment" (Aghina & De Smet, 2015, para. 2). Inspired by the Agile Manifesto for Software Development (2001), agile organizations embrace three principles:

- Work is focused directly on meeting customers' needs and interaction with the customer is central.
- Work is done by self-organizing teams, networks, and ecosystems that mobilize the full talents of those doing the work.
- Work proceeds in an iterative fashion and progress toward fulfilling the needs of customers is assessed at every stage (Denning, 2020a, p. 19).

Blurred boundaries and rapidly shifting dynamics might be associated with general uncertainty but Aghina et al. (2015) did not conclude that organizational agility is incompatible with stability. In organizations, paradoxically, true agility demands the stability (i.e., efficiency, reliability, resilience) that only dedicated structures, governance arrangements, and processes can bring about (Aghina et al., 2015). Synergizing with

dynamic capability, "It's this stable backbone that becomes a springboard for the company, an anchor point that doesn't change while a whole bunch of other things are changing constantly" (Aghina & De Smet, 2015, para. 3). And so, to master the paradox of dynamic capability and stability, agile organizations design—and as necessary redesign—structures, governance arrangements, and processes to square agility and stability.

Taking a rounded view of an organization's operating model across strategy, structure, process, people, and technology, and reflecting evenly on the dynamic and stable arrangements that must be in readiness to spark and power agility, Aghina et al. (2018) identified five trademarks of agile organizations and related agility practices that effectively harmonize the seemingly opposite forces discussed in Aghina and De Smet (2015):

- **Strategy**. *Trademark*: North Star embodied across the organization. *Organizational agility practices*: (a) shared purpose and vision; (b) sensing and seizing opportunities; (c) flexible resource allocation; and (d) actionable strategic guidance.
- **Structure**. *Trademark*: Network of empowered teams. *Organizational agility practices*: (a) clear, flat structure; (b) clear accountable roles; (c) hands-on governance; (d) robust communities of practice; (e) active partnerships and eco-system; (f) open physical and virtual environment; and (g) fit-for-purpose accountable cells.
- **Process**. *Trademark*: Rapid decision and learning cycles. *Organizational agility practices*: (a) rapid iteration and experimentation; (b) standardized ways of working; (c) performance orientation; (d) information transparency; (e) continuous learning; and (f) action-oriented decision making.
- **People**. *Trademark*: Dynamic people model that ignites passion. *Organizational agility practices*: (a) cohesive community; (b) shared and servant leadership; (c) entrepreneurial drive; and (d) role mobility
- **Technology**. *Trademark*: Next-generation enabling technology. *Organizational agility practices*: (a) evolving technology architecture, systems, and tools; and (b) next-generation technology development and delivery practices (Aghina et al., 2018, p. 7).

From the foregoing, it might seem logical to conclude with all-or-nothing thinking that every organization should strive to be agile everywhere and at all times. However, organizational agility is the ability to successfully navigate change over time: cultivating that ability is not easy and it helps to discern why, when, where, and how one should do so. In other words, "Systemic agility needs to be overlaid by 'local agility', analogous to sport-specific fitness, as this provides requisite ability for sub-units" (Francis, 2020, p. 17). Crucially, "Not all parts of an organization need to be equally agile and not all sub-units need to be agile in the same ways" (Francis, 2020, p. 19). It follows that the central role of agile-friendly leadership is to configure an organization so it might become and remain requisitely agile.

Leading the Agile Organization

Senge (1994) explained why organizational design is a neglected dimension of leadership in a chapter on the leader's new work:

> [L]ittle credit goes to the designer. The functions of design are rarely visible; they take place behind the scenes. The consequences that appear today are the result of work done long in the past, and work today will show its benefits far in the future. Those who aspire to lead out of a desire to control, or gain fame, or simply to be "at the center of the action" will find little to attract them to the quiet design work of leadership. (Chapter 15, p. 316)

Agreeing with Senge (1994), Stanford (2015) enunciated six principles that leaders should honor for reflective and effective organization design:

- Organization design is driven by the *business strategy* and the *operating context* […].
- Organization design means *holistic thinking* about the organization: its systems, structures, people, performance measures, processes and culture, and the way the whole operates in the environment.
- Designing for the *future* is a better bet than designing for now.
- Organization design happens as much through *social interactions* and *conversations* as through planning.
- Organization design is not to be taken lightly: it is *resource intensive* even when it is going well.

- Design is a fundamental, continuing *process*, not a repair job [emphasis added] (pp. 3–4).

But how, practically, might agile-friendly leadership heed the prescriptions in Aghina et al. (2018) and Stanford (2015)? At the level of the system, D. Francis contended that leaders should: (a) build an agile-friendly Top Management Team; (b) define the organization's agility ambition; (c) select the optimal types of agile management structures and processes; (d) embed effective integrating mechanisms; (e) adopt an agility-oriented organizational personality; (f) relentlessly unblock blockages; (g) promote optimistic discourse; (h) take fast go, no–go decisions; (i) sponsor a salon culture (to ensure that there is deep consideration of which opportunities to grasp); (j) acquire individuals with grit and talent; and (k) exploit multiple technologies (personal communication, March 11, 2021). Francis (2020) then made the case that with local seeking inwards, upwards, outwards, and forwards organizations can align strategic and local opportunism to make out where they should exploit their agility for greatest benefit in the potential six target areas of product, process, position, paradigm, platform, and provisioning agility. Toward this, Francis (2020) verbalized an "Exploiting Agility for Advantage" (EAfA) process to underpin reflection and action. The EAfA process entails:

- **Orientating**: What is known about achieving requisite agility?
- **Predicting**: How might we need to change in the future?
- **Diagnosing**: Do we have the capabilities to be agile?
- **Envisioning**: What will we be like when we are requisitely agile?
- **Scoping**: Where, when, and how do we need to be agile?
- **Customizing**: What types of agility do we need?
- **Delivering**: How can we make progress? (Francis, 2020, pp. 80, 127, 135, 169, 180, 187, 227).

D. Francis clarified that the EAfA process is not meant to be unduly linear: the seven steps serve as a team-based mission-essential integrating mechanism with which to facilitate intellectual coherence but a "pick-and-mix" approach can be used depending on extant ability and prevailing circumstances (personal communication, March 12, 2021). Concluding, D. Francis urged leaders in agile organizations to appreciate that (a) not

all organizations need to be equally agile; (b) being agile is not the only thing that organizations need to do; (c) leading an agile organization needs a distinctive set of competencies; (d) adopting the wrong type of agility can be dysfunctional; (e) the sub-units of an organization need distinctive pathways for operationalizing agility as "one size does not fit all"; (f) remaining requisitely agile is a continuous journey; and (g) agility can be lost as well as gained (personal communication, March 11, 2021).

Clear of processes such as the EAfA, it bears spelling out that the agile organization makes modernistic demands on leaders (Rigby et al., 2020). Levine (2020), for one, advised leaders to accept the primacy of people over process—or, more accurately, individuals and interactions over processes and tools—in harmony with the first foundational value of the Agile Manifesto (2001). Inspired by the Agile Manifesto (2001), Schlitz et al. (2021) framed the challenge of agile leadership in the guise of five learning journeys: (a) how to be agile; (b) how to manage in agile environments; (c) how to lead in an agile organization; (d) how to lead change and transformation; and (e) how to develop a coaching capability. In post-heroic fashion, Rigby et al. (2020) summoned leadership humility that shores up the confidence of each team member and facilitates learning. Expressly, Rigby et al. (2020) invited leaders to (a) get out of silos; (b) take the time to get it right; (c) learn to manage the transition to an agile organization as a continuous improvement program; (d) move from meetings to work sessions; (e) perform daily stand-ups; (f) become coaches; (g) introduce agile budgets (akin to the flexible, autonomous, and accountable budgets that venture capital firms make available to start-ups); (h) put agile metrics in place; (i) plan career paths and suitable reward systems; and (j) recruit the best staff. Johansen (2017) recast the leadership skills for an uncertain world that Johansen (2012) endorsed (viz., maker instinct, clarity, dilemma flipping, immersive learning ability, bio-empathy, constructive depolarizing, quiet transparency, rapid prototyping, smart-mob organizing, and commons creating) into leadership literacies. In a quite different vein, but meaning also to underscore the different leadership qualities needed to anticipate and initiate change, Joiner and Josephs (2006) had earlier identified five discrete levels in the mastery of leadership agility: (a) expert (solving key problems); (b) achiever (accomplishing desired outcomes); (c) catalyst (mobilizing breakout endeavors); (d) co-creator (realizing shared purpose); and (e) synergist (evoking unexpected possibilities). Because the agile organization is synonymous with shared leadership, there have also been calls for

organizations, in particular the human-resources leaders within them, to rethink their people model using craftmanship principles, and dynamically help workers flourish from novice to master in non-hierarchical cultures (Hancock et al., 2021).

Wielding Information and Communication Technology for Agility

The term "perpetual beta" refers to the commercialization of software at the development stage—specifically, before it is "feature-complete" because of stability or performance issues—with new features slipstreamed in monthly, weekly, and sometimes even daily (Constantinides & Fountain, 2008). Under perpetual beta, the definitive version of a piece of software never comes around: constant updates are the foundation of its usability (Constantinides & Fountain, 2008). In the twenty-first century, organizations could likewise come to operate in perpetual beta: from the shell of corporate selves, on a project-by-project basis, they can now crowdsource some (or nearly all) of their activities to freelancers, networks, and others in divergent paths and schedules (Hatch, 2011). Adner and Snow's (2010) "bold retreat" is not an option—if it ever was—but organizations should not scramble for technological fixes either (Kane et al., 2019). By making possible the remote work revolution in progress, ICT will underpin much of organizational life in perpetual beta (Neeley, 2021): therefore, how to leverage ICT for agility while putting people at the center of operations will be of the essence.

"When technological advancement can go up so exponentially I do think there's a risk of losing sight of the fact that tech should serve humanity, not the other way around," said Apple's Chief Executive Officer (as cited in Byrnes, 2017, para. 9). From a kindred anthropocentric perspective, Bailey et al. (2019) prognosticated that the company of the future, otherwise known as the "next-generation learning organization", can only compete in a VUCA world if it (a) learns on all timescales; (b) combines humans and machines optimally; (c) integrates economic activity beyond corporate boundaries; and (d) evolves its organization continuously. In Bailey et al. (2019), the term "human" appears 48 times over 8 pages of main text. To be precise, Bailey et al. (2019) argued that modernizing the organization for the 2020s turns on five imperatives:

- Integrate technologies for seamless learning.
- Migrate human cognition to new, higher-level activities.
- Redesign the relationship between machines and humans.
- Nurture broader ecosystems.
- Rethink management and leadership accordingly (para. 4).

Working through the traditional operating model of strategy, structure, process, people, and technology, Doz and Guadalupe (2021) also made much of human-designed and human-directed empowerment by ICT in their take on the ground rules for redeployment from matrix to agile. Doz and Guadalupe's (2021) advice was reminiscent of Aghina et al.'s (2018). Organizations must move (a) "from ambiguous strategic vision and conflict over resources to a shared purpose or North Star" (Strategy); (b) "from rigid hierarchy to empowered teams" (Structure); (c) "from complex coordination and slow decision making to rapid decision and learning cycles with strong team dynamics" (Process); (d) "from hierarchical management to self-management" (People); and (e) "from systems built for control to solutions that empower" (Technology) (Doz & Guadalupe, 2021, p. 2).

State-of-the-art recommendations for leveraging ICT for agility such as those of Bailey et al. (2019) and Doz and Guadalupe (2021) are borne out by surveys. In 2020, McKinsey & Company conducted a global survey on technology and the business, from which seven lessons were drawn that gave preponderance to synergies between people and technology:

- **Lesson #1**: Technology investments are creating significant business value.
- **Lesson #2**: People-focused plays result in the most value.
- **Lesson #3**: Talent remains the Holy Grail of technology transformations—valuable to pursue but difficult to execute.
- **Lesson #4**: The talent challenge has clear implications for sourcing.
- **Lesson #5**: The top performers execute more transformation plays than others.
- **Lesson #6**: The broader use of advanced technologies supports greater value creation.
- **Lesson #7**: Bridging the business–technology chasm is critical to outperformance (Dhasarathy et al., 2021, pp. 2, 4, 5, 6, 7).

Leading Virtual Teams

The first précis in this book cast an evolutionary perspective on the intensifying role of ICT in organizations and elucidated first-order, intra-organizational results from that. Past the immediate dynamism that ICT has brought to organizations, the second précis in this book considered second-level impacts on economy, society, work, and the very act of organizing before explaining that organizations must now learn to leverage ICT for agility with implications for individual and collective leadership. To power agile-friendly leadership, this précis has explained core concepts of organizational agility, promulgated new ways to lead the agile organization, and underscored that ICT for agility is, as you would have thought, best leveraged with a human touch. After all, information, communication, and technology are parts of what the literature terms a "Human Activity System", that Ackoff and Emery (1972) characterized as "a purposeful system whose members are purposeful individuals and who are intentionally coproducers of a common objective" (p. 213) and that Bánáthy (2002) saw as "an assembly of people and other resources organized into a whole in order to accomplish a purpose" (para. 2).

The need to represent and respect human values and experiences, and ensure well-being, has grown on a par with the progress of ICT: the COVID-19 pandemic has spurred the digital economy and virtual teams have multiplied as a conspicuous feature of that (International Telecommunication Union, 2020). Virtual teams are "geographically distributed collaborations that rely on technology to communicate and cooperate" (Morrison-Smith & Ruiz, 2020, p. 1096). Early forms of virtual teams appeared at least 25 years ago but are now omnipresent courtesy of video conferencing (e.g., FaceTime, Zoom), business communication platforms (e.g., Microsoft Teams, Slack), file transfer (e.g., Dropbox, Google Drive), and application sharing (e.g., Microsoft Exchange Server, OpenXchange). Contingent on goals and objectives, many different types of virtual teams have come to operate (e.g., action teams; management teams; networked teams; parallel teams; product development teams: production teams; and service teams (Corporate Finance Institute, 2021; Duarte & Snyder, 2006). Extrapolating the trend in virtual teaming, Vijayakumar (2021) wrote that "the post-COVID era will be shaped more definitively by technology than any other force in the global theatre today" (para. 1). Vijayakumar (2021) distinguished five themes in the ways people work and interact and organizations operate nowadays: (a)

work from anywhere; (b) work for all; (c) work at will; (d) work smarter; and (e) work for planet. What is more, in an ever-growing number of organizations, the members of today's virtual teams are no longer just employees but also contractors, crowdsourced contributors, gig workers (e.g., online platform workers, on-call workers, temporary workers), professional service providers, and others. And so, more non-employees are doing more work for organizations. If it is done right, virtual teaming of the best and lowest-cost global talent will boost an organization's competitive advantage through cost leadership, differentiation, and focus (Serrat, 2009): it will also afford team members the opportunity to achieve work–life balance and network with experts around the world (Ferrazzi, 2014).

However, developing cohesive virtual teams is a challenge (Serrat, 2021b): as early as 2000, Cascio identified the foremost hindrances to virtual working, seemingly none of which have been satisfactorily resolved despite 21 years of technological advancement since then: "The major disadvantages of virtual teams are the lack of physical interaction—with its associated verbal and non-verbal cues—and the synergies that often accompany face-to-face communication. These deficiencies raise issues of trust" (Cascio, 2000, p. 84). On the underlying theme of communication, Andres (2012) observed that "technology-mediated collaboration creates lags in information exchange, a greater occurrence of misunderstandings, a reduction in information seeking attempts, and more incoherent messages" (p. 65). Because virtual working depends entirely on ICT, misalignment or insufficient collaboration will impact trust, engagement, and consequently performance: Cascio (2000) concluded that, "instead of needing fewer managers, [virtual workplaces] require better supervisory skills among existing managers" (p. 81).

Simultaneously with Cascio (2000), broad notions of e-leadership came to be formulated: "E-leadership is defined as a social influence process mediated by [ICT] to produce a change in attitudes, feelings, thinking, behavior, and/or performance with individuals, groups, and/or organizations" (Avolio et al., 2000, p. 617). The gist of Avolio et al. (2000) was that organizations were using ICT without fully comprehending its impact on human dynamics. Tellingly, Avolio et al. (2000) highlighted the role of e-leadership in trust-building "because direct supervision, a common form of social control in traditional teams, is not feasible" (p. 652).

More than a year into the COVID-19 pandemic and work-from-home, the early insights of Avolio et al. (2000) and Cascio (2000) have been corroborated. As organizations increasingly use dispersed teams it is critical to understand leadership functioning in virtual teams (Liao, 2017). Similar to face-to-face leaders, e-leaders must, for instance, organize and motivate teams, monitor progress, and develop team members. However, the teams that e-leaders must manage with extra work from a distance are drawn from different cultures: separation in space and time calls for technical skills, increased flexibility, and better communication to clarify goals and guidelines (Cook, 2010). Better communication necessitates that e-leaders should establish closeness and trust with open dialogue, and make sure messages are not misinterpreted (Cook, 2010). Sensibly, Ferrazzi (2014) urged organizations to equip themselves with platforms that cater to all types of communication, such as conference calling, direct calling and text messaging, and discussion forums (or virtual team rooms).

Leading in Workforce Ecosystems

Frey (2019) showed that technological disruption of the labor market is usually painful. ICT can greatly benefit society but may possibly fragment social groups and embolden populism: much depends on how the short term is managed (Frey, 2019; Piketty, 2014). In consequence of digital transformation, virtual teams are here to stay but they cannot single-handedly navigate VUCA situations: in an era of context collapse, it is incumbent on e-leaders to help organizations face the present (Schrage et al., 2021). Apropos the current environment, Schrage et al. (2021) made the case that effective leadership must walk hand in hand with affective leadership to credibly and authentically establish purpose as the organizing principle.

The ongoing digital transformation challenges both leadership functioning and how e-leaders are seen, experienced, and understood by workforces. At the operational level, e-leaders must "re-ignite team purpose and clarify roles" to offset the afore-mentioned risks of misalignment or insufficient collaboration (Deloitte, 2021a, p. 3). For workers to feel included and supported, Deloitte (2021a) counseled that e-leaders should also "establish a new rhythm, track capacity and progress, leverage technology to collaborate, be visible and check-in frequently, strategically over-communicate, empower and promote self-leadership, and ensure well-being" (p. 3). At the strategic level, e-leaders must decipher how

the work environment operates and explain how work is to be organized, delivered, led and managed, and executed (Deloitte, 2021b). On that account, e-leaders should (a) keep in mind core concepts of organizational agility; (b) employ integrating mechanisms such as the EAfA process to facilitate intellectual coherence; (c) leverage ICT to synergize people and technology; (d) embrace the collective intelligence of virtual teams in a trust culture; and (e) encourage all to pose "why" and "how" questions that re-evaluate the organization's operating model to ongoingly inject requisite agility across the five layers of the ecosystem, the organization, the team, the leader, and the individual (Deloitte, 2021b).

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Leading in the Digital Age

Dickens (1844), a perceptive observer of the human condition, knew there is nothing stable in the world: "Change begets change. Nothing propagates so fast" (p. 225). The Information Revolution (ca. 1980–2000) conferred the gifts of the Internet and mobile devices to our kind, playthings we shortly could not do without, but the Digital Revolution (ca. 2000–) now reaches into every nook and cranny of our lives. "People born in the late 1970s are the last to have grown up without the Internet", McLaren (2019) reflected. In our homes, in our very bodies—courtesy of wearables and implants, the reach of information and communication technology (ICT) extends never-endingly: preferably, we shall heed the consequences of "playing God" in the vein of Shelley's (1818) Victor Frankenstein; in the augmented virtual reality of the metaverse, we may someday model ourselves on Pygmalion and Galatea. Notwithstanding, clear of speculative fiction, how can we lead—and not merely be the subjects of—digital change in the less manipulable real world?

Reframing Leadership in the Digital Age

The behavioral sciences aspire to understand how people react psychologically and respond behaviorally to environments, stimuli, and interventions. For example, beginning in the 1930s, the behavioral sciences—and

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applied industrial-organizational psychology in particular—have endeavored to advance our understanding of leadership (Serrat, 2021a). In the closed systems of yesteryear, however, attention was directed inward to organization design, staffing, and organizational culture: leadership was considered to be primarily about influencing people, including individual employees, teams, and groups; most organizations were run to minimize risk and became "sticky" for the reason that they were slow by design (Perkin & Abraham, 2017). Accordingly, the behavioral sciences suggested ways to co-opt attitudes, emotions, and personalities so employees might perform at their best in favor of such corporate objectives as efficiency and productivity.

Ions (1977) charged that the behavioral sciences are wedded to an outmoded positivism. From the 1950s, there were reservations about the relevance of the Hawthorne Studies to everyday working life (Carey, 1967; Serrat, 2021a). From the 1960s, interest in open systems grew (von Bertalanffy, 1969). In 1990, we were presented with the art and practice of the learning organization (Senge, 1990; Serrat, 2017a, 2021c). Then again, because there will always be change there will also always be resistance to change for cultural, economic, financial, political, psychological, and social reasons. The relatively recent P-O-L-K framework of Carpenter et al. (2009), for instance, connoted continuing predilection for closed systems: that framework reduces the principles of strategic management to planning, organizing, leading, and controlling, much as Fayol's (1916) five functions of management did. A mining engineer, Fayol had little time for futuristic thinking and subordinated the function of leading to commanding and coordinating. One hundred years later, leading remains on the word of Carpenter et al. (2009) about leadership and direction, motivation, and coordination and communication. In large organizations, the behavioral sciences retain pride of place. Organization theory and strategic management have encouraged more dynamic engagement with, say, business process management, core competences, scenario planning, or sense-making but this is technocracy in disguise: too often, leadership remains the privilege of elites bent on the harmony and similarities of integration, not the fruitful separation and tension of differentiation or—Heaven forbid!—the multiplicity and flux of fragmentation (Martin, 2002; Serrat, 2021b, 2021c). In a bibliometric analysis of publications on leadership from the Web of Science database that spanned the period

from 1923 to 2019, Samul (2020) showed that the subjects of leadership revolve around trait theory, behavioral theory, contingency theory, leadership and followers, and leadership as a process.

Plus ça change, plus c'est la même chose? No. ICT has irreversibly transformed the financial services, media, retail, and telecommunications sectors: through the globalization it concurrently feeds on and accelerates, spurred also by shifting demographic trends, digitalization is reshaping societies, economies, and governments worldwide (Serrat, 2016). Many equate digitalization with disruption, the word on everybody's lips. The term "disruptive innovation" was coined by Christensen (1997) to describe the process by which a product or service develops at the bottom of a market and subsequently moves upmarket to displace established businesses. The term "disruptive innovation" has now taken on a life of its own with essentially negative connotations closely associated with the rise of digital. Google Trends (https://trends.google.com/), a website by Google that analyzes the popularity of top search queries in Google Search, reveals that worldwide interest in disruptive innovation as a topic scored the maximum interest of 100 points as recently as April 2020 from 27 in January 2004, the first date for which that website makes results available for what is on the public's collective mind. Is it reasonable to think one can command and control digitalization when that is not even an option? Digitalization necessitates new leadership because it is better to disrupt than to be disrupted.

In their introduction to a special issue of *Leadership*, Sutherland et al. (2022) just called for "a critical reappraisal of assumptions around leadership theory, practice, and development", to "actively challenge the reverence in which 'leaders' and 'leadership' are often held", and "put leadership in its *place* [emphasis added]" (p. 1). Specifically, Sutherland et al. (2022) recognized the need to "move away from studies of *leaders* [emphasis in original] toward examining the underlying, relational, socially constructed process of leader*ship* [emphasis in original]—questioning the foundations of how leadership is conceptualized and instead seeing it as a socially constructed process which is embedded in context and culture" (p. 2). Hence, "leadership is inherently context-dependent and ultimately beyond the scope of any particular discipline or approach to fully explain" (p. 7). Refreshingly, Sutherland et al.'s (2022) invitation is to place leadership within workplaces and organizations, within cities and communities, within countries and societies, and within virtual and imagined environments. There is much food for

thought in Sutherland et al. (2022). Surely, given the volatility, uncertainty, complexity, and ambiguity of our times, we owe it to ourselves and to those who will come next to ponder whether the formulaic leadership styles of the past (e.g., autocratic, charismatic, laissez-faire, situational, transactional, transformational) apply in organizations that are ever more answerable to algorithms (Bennett & Lemoine, 2014).

A Leader's Playbook for the Digital Age

The fast-evolving digital age summons deepened humanity, not doubly Tayloristic environments fueled by artificial intelligence (Petriglieri, 2020). Taylorism needs to be turned upside down: as opposed to maximizing control, we should maximize flexibility and freedom to create high-trust, innovation-prone cultures that are based on values instead of rules (Serrat, 2009; Shapira, 2017, 2019). In 2019, Ready et al. (2020) surveyed 4,394 global leaders across more than 120 countries, conducted 27 executive interviews, and held focus-group exchanges with Next Generation emerging leaders worldwide. The survey data in Ready et al. (2020) made known that a mere 12% of respondents strongly agreed their leaders have the right mindsets going forward; only 40% of respondents agreed their organizations are building robust leadership pipelines to address the exigencies of the digital economy; and less than 10% of respondents strongly agreed their organization's leaders are equipped with the skills needed to thrive in the digital economy even though 82% of respondents considered that leadership must be digitally savvy (p. 2). Self-evidently, steering digitally savvy workforces puts pressure on legacy leaders to upgrade their own technical skills. Talking with R. Shapira (personal communication, March 15, 2022), "Leaders in the digital age have the power to inspire if they are phronetic, if they are vulnerably involved in expert subordinates' deliberations … [T]he amount of knowledge of all kinds used by digital age organizations is way beyond the capacity of anyone or even a small group of experts … so that only fully-trusted, highly moral leaders who risk authority by admitting their knowledge gaps can learn from … practitioners and use these resources to wisely lead the organization". Talking with Shapira (personal communication, March 16, 2022), Zand's (1972) work on trusting behavior and problem-solving effectiveness was noted. Zand (1972) hypothesized early that vulnerable involvement in the deliberations of subordinates

that courageously compliments their phronesis and know-how is a foremost way for a leader to create trust and acquire essential knowledge for problem solving. Consistent with the survey data and interviews, Ready et al. (2020) established that "Digitalization, upstart competitors, the need for breakneck speed and agility, and an increasingly diverse and demanding workforce require more from leaders than what most can offer" (p. 1). "A deficiency in digital savviness coupled with outdated mindsets"; "a series of blind spots that prevent them from seeing a clear path forward"; and "multiple embedded tensions that undermine strategic execution" are three fundamental reasons why leaders are not as prepared to lead in the digital age as they think they are, Ready et al. (2020) concluded (p. 4).

Our predilection for heroic leaders and the continuing omnipresence of the behavioral sciences in leadership studies guarantee we are not short of recommendations on the subject of desired leadership behaviors (Kofman & Senge, 1995). Owen (2018) commented that "followers expect their leaders to be a perfect cornucopia of contradictions: ambitious and humble; directive and empowering; visionary and practical; big on ideas and on people; coaching and controlling; inspiring, charismatic, authentic, and regular" (p. 12). Owen (2018) might have added that archetypal leadership behaviors are noticeably passé considering the rapidly changing digital landscape. With helpful contemporaneity, Ready et al.'s (2020) research distinguished eroding, enduring, and emerging leadership behaviors in the digital age:

- **Eroding Leadership Behaviors**. Asking for permission, having no-exception protocols, reinforcing command and control, managing top-down, avoiding transparency, micromanaging, creating rigid long-term plans, taking a one-size-fits-all approach.
- **Enduring Leadership Behaviors**. Creating a clear vision, focusing on performance, maintaining a profit orientation, being customer-centric, leading by example, demonstrating ethics and integrity, taking risks, leading change.
- **Emerging Leadership Behaviors**. Being purpose-driven, nurturing passion, making data-driven decisions, demonstrating authenticity, demonstrating empathy, employing an inclusive approach, showing humility, working across boundaries. (Ready et al., 2020, p. 8)

In the digital age, the emerging and enduring leadership behaviors listed in Ready et al. (2020) point to four interrelated mindsets as conditions for success:

- **Producer Mindset**. Producers are obsessed with customers, are digitally savvy, make disciplined decisions, and excel at executing.
- **Investor Mindset**. Investor pursue a higher purpose, operate sustainably, benefit the community, and develop continuously.
- **Connector Mindset**. Connectors create trusted partnerships, build relationships, develop networks, and create a sense of belonging.
- **Explorer Mindset**. Explorers are incurably curious; operate at the edge of chaos; test, try, learn, and repeat; and seek broad input. (Ready et al., 2020, p. 12)

From producer, investor, connector, and explorer mindsets an organization might launch any number of digitalization initiatives (e.g., centralizing customer data, creating automated workflows, using cloud computing to store and share documents). To note, digitization and digitalization are not like peas in a pod. Digitization, which began with the advent of computers in the mid-1950s, is about converting analog information (e.g., a text, a picture, a sound) into digital form so it might be processed, stored, and transmitted electronically (Gartner, 2022a). Digitalization is the use of ICT to change a business model, aiming to maximize value-producing opportunities and generate new revenue (Gartner, 2022b). At a higher level still, digital transformation is understood here to be the strategic aim of adapting an organization's strategy—thence, structure—to avail with improved presence and performance of opportunities enabled by ICT. It follows that—unlike digitation and digitalization—digital transformation is not something organizations can implement under a series of projects or in linear fashion. Fortunately, as Furr and Shipilov (2019) substantiated, digital transformation is more about adaptation than reinvention and does not have to be disruptive. Paraphrasing, digital transformation is not about overhauling the theory of the business but about using digital tools to power it; it is not about digital replacing physical but a case of both/and; it is not about buying starts-ups but about protecting one's own; it is not about technology but about the customer; and, it is not about getting rid of legacy systems but about modernizing step by step as needed (Furr & Shipilov, 2019).

Leading Digital Transformation

1. Scope

Our times defy long-range planning: we must deal with escalating economic, environmental, and political mega-challenges; organizations are enmeshed in planet-wide networks; and globalization means that stakeholders are more diverse yet interdependent (United Nations General Assembly, 2015, 2017). The COVID-19 pandemic has intensified our reliance on ICT and the twenty-first century is not the time for organizations to be digitally deaf (Stone, 2019). Addressing digital was important yesterday; today, it is essential. Organizations must understand their clients, audiences, and partners better: they must leverage more ways to interact with them with new products and services at new levels of engagement (Westerman et al., 2014). Siggelkow and Terwiesch (2019) explained that in the private sector, for instance, companies formerly interacted with customers episodically, meaning, when customers came to them; however, continuous connection means that companies can now do so the moment needs arise; indeed, predictive analytics from Big Data and business intelligence can help companies target and retain customers by discerning patterns and helping cultivate proactive and personalized experiences. Helpfully, Marr (2016) signposted more than 60 approaches to garner the insights behind data and ramp up performance.

Into the bargain, organizations face challenges beyond customer expectations. In 2020, Hill et al. (2022a) held 21 roundtable discussions with more than 175 executives around the world and surveyed over 1,500 senior executives from more than 90 countries: Hill et al. (2022a) detected three major shifts in the global economy, born of ICT but such that technology can no longer attend to without help. Reminiscent of the perfect storm of rapidly shifting competitive, consumer, and company contexts of change that Perkin and Abraham (2017) wrote about, Hill et al. (2022a) found that, along with new customer expectations, organizations face new employee expectations: nowadays, personnel resists command and control and the younger generations want to be judged on both their creativity and their expertise. Hill et al. (2022a) reported new societal expectations too: Millennials (born in 1981–1996) and Generation Z (born after 1997) seek values-based purpose and fulfillment from their work and believe that organizations should engage affectively with stakeholders, not just serve shareholders, to build a more equitable

and sustainable world. In this respect, Hill et al. (2022a) underscored the fact that customers now also have societal expectations. Expansively, Rogers (2016) identified the five domains of digital transformation to be customers, competition, data, innovation, and value: a reflex response might be to curb the scope of that outward ambition. On the other hand, the three major shifts in the global economy that Hill et al. (2022a) spotted imply that digital transformation should also work on the organization as such—including its boundaries, interactions, processes, roles, and structures—in a richer web of interconnected external and internal relationships (Cennamo et al., 2020). Manifestly, the many brick-and-mortar organizations that still make, market, sell, and service products do not have to become digital-born companies such as Netflix or Uber; all the same, the intrinsically broad canvas of digital transformation requires that each should plan and drive a digital strategy to promote autonomy, openness, speed, and impact.

2. Principles

"If you think about digital transformation as two words, we pay too much attention to the digital and not enough to transformation. It's not a technology challenge, it's a leadership one," remarked Westerman (as cited in Haff, 2020). Digital transformation is not about technology per se: it is about leveraging technology to gain insight and this is why organizations that put top talent, aka chief possibility officers, in key positions at all stages of their digital journey—nascent, progressing, or even stalled—are more likely to see success. Reaping further insight from the roundtable discussions and survey on which Hill et al. (2022a) was based, Hill et al. (2022b) offered up seven mutually-reinforcing guiding principles to lead in the digital age:

- Recognize the emotional side of digital transformation.
- Align around a customer-centric narrative.
- Build a data-informed culture by upskilling talent.
- Manage the power dynamics that come with data.
- Design for inclusive and agile problem-solving.
- Encourage an outside-in and collaborative ecosystem perspective.
- Safeguard ethics and take a proactive approach to governance and compliance. (Hill et al., 2022b)

Hill et al. (2022b) reasoned that adhering to the aforementioned principles would help leaders change hearts (why employees work), heads (how employees see their work), and hands (how employees perform their work) but conceded that this rarely happens owing to lack of conviction at the top and, consequently, flagging determination below. Our partiality for heroic leaders is hard to shake (Kofman & Senge, 1995): more than 50 years ago, "[Townsend] was … adamant that leaders can't motivate anyone—they can only create the environment where individuals motivate themselves" (Townsend, 2007, p. xvii). Ehin (2020) proposed a "We Space Theory" to nurture supportive relationships (e.g., mutuality of cognition, experience, and perception) and bring about greater organizational agility. Hill et al. (2022b) might have made more of the need to design jobs for knowledge behaviors, thus helping recruit people who are positive to start with, and to provide sociability, infrastructure, credibility, resources, and rewards to remove what obstacles stand in the way of top talent doing its best (Serrat, 2010a, 2012). Thenceforward, distributed leadership would advance in networks of teams of equals what Raelin (2003) termed "leaderful" organizations and the emerging leadership behaviors that Ready et al. (2020) promoted would then find widespread applicability (Serrat, 2010b). Of course, leadership in the digital age needs to go beyond digital: a mind biased by digital can only be blind to next steps. Thus, because principles derive from values and because values do not have to change with every technological revolution, we should remind ourselves of (and proactively explicit) what it is we hold dear. Talking with F. Socorro Márquez (personal communication, March 13, 2022), our values in the digital age are "… nothing a 'bronze-age' leader wouldn't require". Accountability, commitment, effectiveness, equality of condition and opportunity, ethics, inclusiveness, innovation, integrity, learning, purpose, sustainability, trust, unity …: the list could go on—with each organization free to concentrate on certain areas—but it should be specified and enacted every day.

3. Skills

Medice, cura te ipsum. "Physician, heal thyself" (King James Bible, 1769/n.d., Luke 4:23) alludes to the need to attend to one's own defects before those in others. Hill et al. (2022c) underscored that those who set

out to transform their organizations in the digital age must first measurably transform themselves. In stark contrast with the eroding leadership behaviors that Ready et al. (2020) singled out, based on the roundtable discussions and survey that underpinned Hill et al. (2022a, 2020b), Hill et al. (2022c) deemed the leadership traits of adaptability, curiosity, creativity, and comfort with ambiguity, in that order, most critical to the success of digital transformation. Adaptability, creativity, and curiosity, along with collaboration and empathy, are "softer" qualities that feature regularly in short lists of what is now desired from leaders—a high degree of emotional intelligence conduces these (Serrat, 2017b): this is a far cry from onetime requirements to have a strong commercial focus or to be action-oriented, clear-minded, inspiring, and visionary (Perkin & Abraham, 2017). Granted, adaptability, creativity, and curiosity are what brought us scientific and other advances but they have been the property of a relative few and need more common expression if we are to take bold steps across the five critical dimensions of people, prosperity, planet, partnership, and peace (United Nations General Assembly, 2015, 2017). To that intent, I would popularize for democratic uptake and the building of digital-ready cultures Hill et al.'s (2022c) advice to leaders that they should hone six skills so they might recalibrate for digital transformation:

- Be a catalyst, not a planner.
- Trust and let go.
- Be an explorer.
- Be courageous.
- Be present.
- Live values with conviction. (Hill et al., 2022c)

Deus Ex Machina

Ubiquitous ICT is flattening organizations to change how they operate: logically, it can be expected to also alter how organizations are led. Since the boundaries that hitherto separated home and work, individuals and institutions, and shareholders and stakeholders (including employees) have blurred or collapsed, the digital age requires more—not less—leadership of the socially constructed and high-trust kind (Schrage et al., 2021; Sutherland et al., 2022). Leading in the digital age invites aspirational behaviors as well as mindsets that anchor, inform, and advance these

(Ready et al., 2020). Reinforcing command and control, for example, is an eroding type of behavior mentioned above; demonstrating ethics and integrity, for instance, is an enduring type of behavior; employing an inclusive approach is one emerging type of behavior (Ready et al., 2020). Producer, investor, connector, and explorer mindsets can encourage enduring and emerging types of behavior to create communities of leaders (Ready et al., 2020). With values-based principles and the "softer" skills that ICT has unexpectedly invited, leading in the digital age can help meet customer, employee, and societal expectations.

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Planning and Driving a Digital Strategy

There is now overwhelming evidence—with more accumulating every day—that information and communication technology is a critical determinant of an organization's success (Serrat, 2015). Digital, viz., content or communication that is delivered through the Internet whether the user is on a desktop, laptop, or tablet computer, a smartphone, or another device not yet invented, is no longer optional: in the Internet of Things, that is to say, the networking capability that links billions of devices via the Internet,[1] organizations must embrace the digital world if they are to survive and, preferably, thrive.

Previously published in Serrat, O. (2021). *Leading solutions: Essays in business psychology*. Singapore: Springer.

[1] Hung (2017) reckoned that about 20 billion devices would be connected to the Internet by 2020: one third of them were to be computers, smartphones, tablets, and TVs; the rest were to be imbedded technology (e.g., actuators, sensors, and intelligent devices) that would monitor, and help enhance performance. Many sources predict Internet of Things connections will reach 50 billion by 2030.

O. Serrat, *Digital Solutions*,
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Quid Digital Transformation?

Digitization is the process of converting information into a computer-readable format, digitalization is the use of information and communication technology (ICT) to change business models, and digital transformation is the strategy of leveraging new, fast, and frequently changing ICT to create opportunity and gain strategic advantage.

Regardless of the "arena" an organization finds itself in, digital transformation enables fundamentally different ways in which to think about clients, audiences, and partners and, vitally, to engage them. Digital transformation helps answer questions such as:

- What are the expressed and latent needs of clients, audiences, and partners (not forgetting relationships and behaviors)?
- How does one build products and services to better meet these needs?
- How does one integrate these products and services into a digital strategy? (Needless to say, how might a digital strategy conduce new, value-adding products and services?)
- What are the organizational, directional, process-based, and ICT-related changes required to make the transition happen? (Serrat, 2015).

The Nature of Digital Strategies

We live in a volatile, uncertain, complex, and ambiguous world but our thinking, attitudes, and decision-making do not automatically agree with that reality: across the public, private, and civil society sectors, many organizations continue to scan the environment and tweak their offerings in

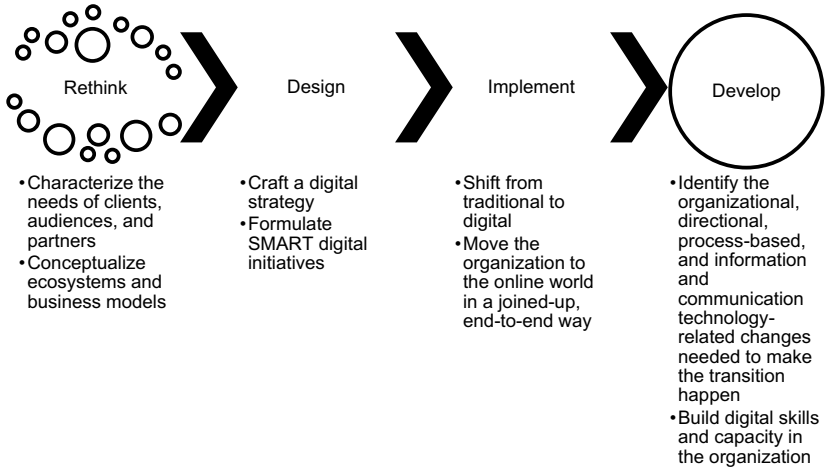

Fig. 1 Planning and driving a digital strategy

response. Ever more, however, meeting customer desires calls for experimentation and learning.[2] To fulfil stakeholder needs, as shown in Fig. 1, digital strategies must involve:

- **Rethinking**. Organizations can no longer make the needs of clients, audiences, and partners match existing arrangements with outdated one-size-fits-all approaches: on the contrary, they should characterize demand and build products and services around requirements. In the digital world, value-added springs from conceptualizing ecosystems and business models that redefine and upgrade organizational performance to meet demand. The key is to identify what value means to clients, audiences, and partners, and to deliver just that.

[2] This is not to say that digital strategies happen out of the blue: rather, they must both advance and sharpen what Drucker (1994) termed the "theory of the business". In that spirit, Henderson and Venkatraman (1999) emphasized the need for strategic fit and functional integration across (a) long-term strategy, (b) digital strategy, (c) organization infrastructure and business processes, and (d) ICT infrastructure and business processes. Contemporary business model development approaches have also highlighted the role that digital transformation can play in aid of organizational performance (Schallmo & Williams, 2018).

- **Designing**. Organizations that deploy SMART[3] digital strategies do not just address the needs of clients, audiences, and partners: with design thinking, they make out unarticulated wants and deliberately imagine, envision, and spawn futures (Serrat, 2010a); with digital engagement, they can co-opt stakeholders and—at the peak of a continuum of involvement (i.e., reached, interested, involved, and activated)—entice them to co-create for bottom-up change that adds value on the organization's behalf.
- **Implementing**. The Internet, together with the social media and mobile applications that leverage it and boost it, has changed the way we search, connect, and collect. (Mobile applications, which materialized in 2008, are increasingly prevalent across smartphone users.) ICT has also dramatically transformed the way organizations build brands. But, developing a digital strategy often requires that offline and online operations be integrated end-to-end; for this to happen, personnel too must migrate to the online world.
- **Developing**. In organizations, new digital skills and capacity are needed to successfully make the transition to the digital world. Organizational, directional, process-based, and ICT-related changes must be effected to make the transition happen. (Serrat, 2015)

Terms of Reference for a Digital Strategy

"A good hockey player plays where the puck is. A great hockey player plays where the puck is going to be," Wayne Gretzky is alleged to have said. In organizations, Gretzky's *bon mot* has been degraded to trite cliché. We can take Gretzky at his word but, recognizing the world of work is not all fun and games, how might organizations—rather than individuals—move from good to great when greatness is not defined by personal ability but very much by strategic choice and discipline? To rethink, design, implement, and develop digital nous, a high-level—but not necessarily linear—methodology is to:

- Identify key business challenges and needs, locate them in the digital space, and translate objectives into actionable recommendations.

[3] SMART is an acronym (and mnemonic) for five criteria with which to set the objectives of an initiative, viz., Specific, Measurable, Assignable, Realistic, and Timebound.

- Evaluate digital products and services against requirements and develop new digital initiatives to improve user experiences and drive value.
- Collaborate with cross-functional teams to plan, deliver, and execute digital campaigns.
- Educate and inspire personnel on digital opportunities, latest technologies, and best practices.
- Ensure alignment between the digital strategy and the organization's theory of the business, including its knowledge management strategy.

Of course, there is more, much more. With a view to rethinking, designing, implementing, and developing a digital strategy, preliminary, supporting, or follow-up steps would be to:

- **Research the Market**. Identify, exactly, the organization's clients, audiences, and partners. How might the organization develop a 360-degree view of them?
- **Appreciate Change**. Ask what is different now. What has changed? What assumptions do people make that are no longer true? Why does everything feel as if it is speeding up? Staggering amounts of structured, semi-structured, and unstructured data, aka Big Data, can be mined for information; mobile devices reach everyone, everywhere, anytime; and cloud computing puts a supercomputer in people's pockets. Organizations can no longer get away with middle-of-the-road products and services: power has shifted from companies to consumers, who—when online—demand "intuitive interfaces, around-the-clock availability, real-time fulfillment, personalized treatment, global consistency, and zero errors" (Markovitch & Willmott, 2014). Especially where ICT impacts, incremental organizational improvements are guaranteed to become obsolete in no time. Within organizations, "creatives" can now have a massive impact (Serrat, 2010b). Organizational boundaries are more porous and silos are coming under pressure.
- **Diagnose the Organization**. With respect to the mission, vision, and long-term strategy of the organization, assess the level of technical and cultural maturity, since this will one way or another determine the scope and depth of the digital strategy. What does

work? Is the organization, burdened with sunk costs and legacy systems, slow by design? Is its digital culture agile, user-centered, innovative, and responsive? Does it have soul and passion? Is it open-minded? What is known about stocks and flows of knowledge? What are the main social networks? Where does automation potential lie? Where might decision-making be informed by ICT? Have surveys and other investigations (e.g., knowledge audits, modelling of business processes) been conducted that shed light (Serrat, 2008a, 2009, 2011)?

- **Verbalize Expectations**. Identify or clarify through semi-structured interviews the expectations of senior management vis-à-vis the digital strategy. Where do they see the value of digital?
- **Formulate the Mess**. Conduct an "as-is" analysis of what the organization is currently doing, thence, identify gaps in, say, organization (including functions), direction, business processes, and ICT (Serrat, 2021b). It is, in particular, possible to use a capability maturity model to assess the ability of business processes to perform their functions. The consultative quality and value of a digital strategy can also be enhanced by means of action research, for example using communities of practice, and/or action learning, this to uncover aspects not envisaged at the outset while simultaneously gaining political and organizational buy-in as the digital strategy develops.
- **Define the Desired End-State**. What could be true in the future? Pick a date, say, 2030, and make a bet on that. Envision how units/offices/departments across the organization might by then be using ICT to conduct their work. One can paint these cases in a detailed way and then play them back into the business of the organization. Where they resonate, one would then have a future state to aim for: one would know where the organization is going, that is, the objective, and one would then have to figure out how to get there, meaning, the digital strategy. A clear vision can help find common ground for action and enlist commitment in support of that. Future Search is a related system-wide strategic planning tool for such purposes (Serrat, 2012a). As a rule of thumb, investments should be proportional to the value at stake.
- **Form a Coalition**. Profile senior management to best locate and sustain support for a digital strategy. Because the success or failure of digital programs owe to managerial factors, aka lack of urgency,

not technical considerations, more and more Chief Executive Officers/Presidents choose to lead their organization's digital transformation themselves. Make the case for digital transformation. (Does ICT in the organization reflect its mission, vision, and long-term strategy? What are the inherent risks and impediments to change embedded in the organization's ICT? What does a viable portfolio of ICT capabilities look like?) Constitute a team of champions to advance and fortify SMART digital initiatives, pursuant perhaps to review and challenge by a digital advisory panel. (What should be the overall governance set-up for the digital strategy?)

- **Use Metrics and Scorecards**. Use the balanced scorecard approach—which structures learning and growth, business process, customer, and financial perspectives—to qualify, quantify, monitor, and evaluate desired results. A three-year rolling plan—driven by stand-alone, preparatory, or mutually reinforcing digital initiatives across, say, 4–6 (internal and external) strategic thrusts—might constitute a practicable roadmap.
- **Define Success**. Define success, including a reporting framework comprising specific activity indicators and useful results indicators (not forgetting targets and sources of verification). What typology and examples of returns on investment, not necessarily financial, might one identify and expect? Assess whether the digital strategy is being delivered successfully by means of after-action reviews and retrospects (Serrat, 2008b).
- **Build Digital Skills and Capacity**. Digital skills are in short supply and successful digital strategies emphasize the need to build in-house capabilities, beginning with assessments of existing capacity (e.g., novice, beginner, competent, proficient, expert). It helps also to create a center of excellence with skilled personnel (e.g., data scientists, digital marketers, brand experts, mobile application designers, etc.). In addition, a governance model adapted to decentralized digital responsibilities should underpin a digital strategy: five models that describe how organizations are internally structured to embrace new ICT, along a decreasing continuum of control and coordination, are centralized, decentralized, hub and spoke, multiple hub-and-spoke (dandelion), and holistic. (Half the time, hub-and-spoke is the most common governance model, at least for social media.) Each model exhibits distinct advantages and disadvantages. Conceivably, a temporary decentralization model that pulls experts

from distinct arms of the organization—each with different knowledge and expertise but with specific skills relevant to the digital strategy that cannot be solved by a single unit/office/department, by senior management, or by a center of excellence alone—might be envisaged.

Framing Digital Engagement

Anchored in digital strategy, digital engagement outreaches an organization's tangible and intangible assets to clients, audiences, and partners to promote engagement and co-creation of value. Figure 2 shows how—framed by an organization's mission, vision, strategy, and trends and driven through channels in two-way communications via business processes and metrics—digital engagement serves to maximize value. Figure 3 particularizes the scope of an organization's investigations and actions for digital engagement. Summing up, Fig. 4 underscores the primordial role that effective communications play in the digitalization of business processes for higher engagement of clients, audiences, and partners.[4]

Driving Digital Transformation

Once begun, digital transformation must be driven (and continually assessed). Helpfully, Westerman et al. (2014) itemized questions and related actions with which to gauge the evolving state of affairs. Westerman et al.'s (2014) comprehensive formula for digital transformation relates to:

- **Framing**. How well has the organization framed the digital challenge? The steps are to (a) build awareness; (b) know the starting point; and (c) craft a vision and align the top team (Westerman et al., 2014, pp. 175–188).

[4] Communication is the process by which relationships are instituted, sustained, altered, and ended: comprehensive engagement requires that communications adhere to such principles as continuity, credibility, dialogue, integration, precision, results-orientation, ubiquity, and understanding (Serrat, 2012b).

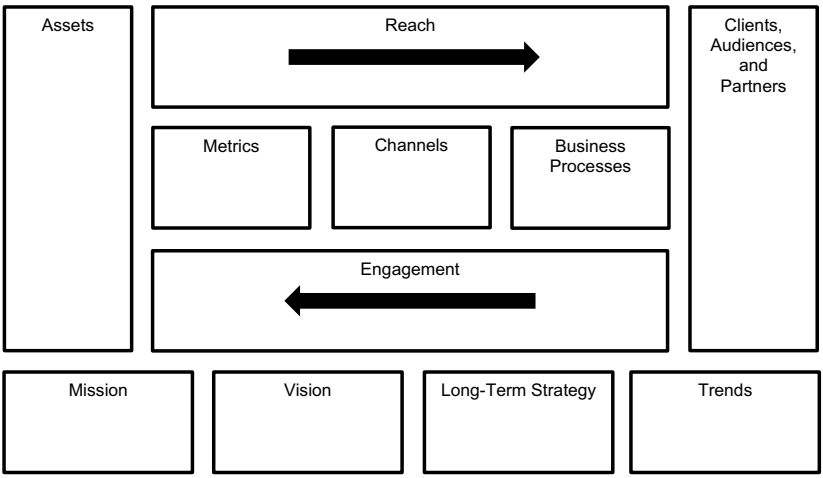

Fig. 2 Framing digital engagement

- **Focusing**. How well has the organization focused its investment? The steps are to (a) translate the vision into action, (b) build governance, and (c) fund the transformation (Westerman et al., 2014, pp. 189–207).
- **Mobilizing**. How well has the organization been mobilized? The steps are to (a) signal ambitions; (b) earn the right to engage; and (c) set new behaviors and evolve culture (Westerman et al., 2014, pp. 209–223).
- **Sustaining**. How well is the organization sustaining digital transformation? The steps are to (a) build foundation skills; (b) align incentives and rewards; and (c) measure, monitor, and iterate (Westerman et al., 2014, pp. 225–243).

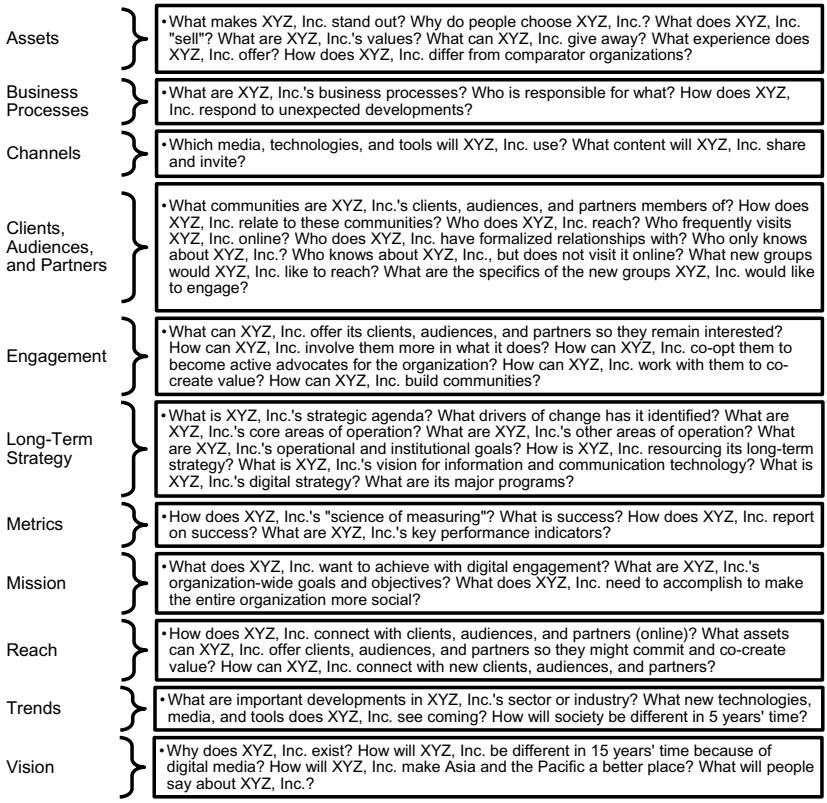

Fig. 3 Particularizing digital engagement (*Note* Assets = XYZ, Inc.'s financial [i.e., monetary and physical] and intellectual capital [i.e., human, relational, and structural]; Channels = ICT that enables XYZ, Inc. to share content and reach and engage people; Clients, Audiences, and Partners = The people XYZ, Inc. exists for, both those it reaches and those it does not reach yet, including in-house; Engagement = The relationships between XYZ, Inc. and its clients, audiences, and partners—only reached clients, audiences, and partners will engage; Guidelines = The instructions that tell XYZ, Inc. how it will work; Metrics = The key performance indicators that help monitor progress and measure success; Mission = The final aim of XYZ, Inc., the justification for its existence that characterizes it as different from other organizations; Reach = The ways in which XYZ, Inc. connects to existing or new clients, audiences, and partners and aim to interest, involve, and activate them; Strategy = XYZ, Inc.'s long-term strategic framework; Trends = Descriptions of developments that affect XYZ, Inc., including its clients, audiences, and partners, assets, and vision; Vision = What XYZ, Inc. believes its future looks like)

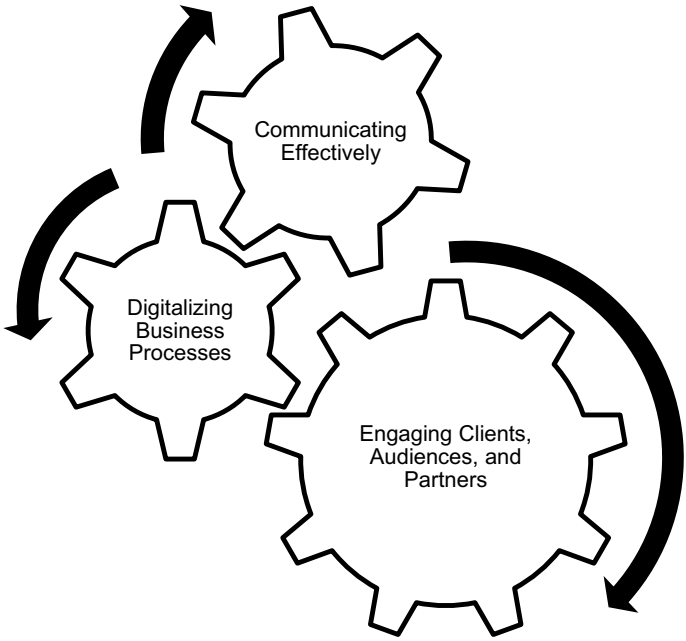

Fig. 4 Going digital: Effective communications for action

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Afterword

This book took shape in 2021 when I was researching the role of technology in organizations at The Chicago School of Professional Psychology to better contextualize a dissertation proposal on the topic of leading organizations of the future (Serrat, 2021, 2022). I defended the proposal in early 2022. I argued that until the late 2000s it had been conventional to frame organizations as ideal types: hierarchy, market, and network. I contended that in the volatile, uncertain, complex, and ambiguous world of the twenty-first century organizations engage in triadic forms of organizing; therefore, organizations should not be framed by single modes of governance that rely on styles of leadership (e.g., autocratic, charismatic, laissez-faire, situational, transactional, transformational) (Serrat, 2022). I proposed to close the gap in knowledge of what context-specific modes of leadership (i.e., administrative/operational, adaptive/entrepreneurial, generative) can help manage organizations (Serrat, 2022). The research question my study means to address from the worldview of social constructivism is: What *leadership management framework* for sense-making and decision-making can help organizations meet challenges and reap opportunities in simple, complicated, complex, and chaotic contexts? (Serrat, 2022). In mid-2022, I began to ground the research question with 45–60-min-long, semi-structured expert interviews of subject-matter specialists in metagovernance, complexity leadership, and sense-making. Presently, I will interpret findings from the expert

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interviews, draw conclusions, and make recommendations. I trust that my knowledge claim vis-à-vis organizations of the future will round out this book, especially the emphasis it places on wielding information and communication technology for agility, to further help reframe leadership in the twenty-first century.

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