

Introducing a sustainable career ecosystem: Theoretical perspectives, conceptualization, and future research agenda

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ABSTRACT

Our paper advances the embryonic interest of combining the theoretical frameworks of sustainable career and career ecosystem into a sustainable career ecosystem theory by introducing Artificial Intelligence (AI) as a new actor, spotlighting the need for liminality of the relationship between an individual and career practitioner, and presenting a new conceptual model. We begin by providing a brief overview of sustainable career and career ecosystem theories, culminating in a recently proposed definition of a sustainable career ecosystem. Second, using this as our point of departure, we consider the theoretical perspectives for understanding a sustainable career ecosystem through (a) introducing AI as a new actor with the potential to disrupt and transform the (future) labor market and (b) making a case for the liminality of the individual and career practitioner relationship. Third, we consider various dimensions for analyzing a sustainable career ecosystem to offer a new conceptual model. We conclude with a future research agenda.

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1. Introduction

The Journal of Vocational Behavior is uniquely positioned with its focus on career choice, career development, and work adjustment across the lifespan (Kong et al., 2023; Lent et al., 2023; Van der Heijden et al., 2020). Such a focus takes on increased significance as the field of career research is complex and fragmented (Baruch & Sullivan, 2022). The fragmented nature of the field was initially observed by Arthur et al. (1989) and has subsequently been supported via various empirical bibliometric analyses (e.g., Byington et al., 2019; Lee et al., 2014). Additionally, labor markets are increasingly characterized as volatile and uncertain (cf. VUCA; Bennett & Lemoine, 2014; Mack et al., 2015), driven by the increased prevalence of chance events and associated career shocks (Akkermans et al., 2018; Donald & Mouratidou, 2022). Subsequently, there is a need to integrate the roles of additional actors in scholarly work on careers, as well as contextual and temporal factors, to move beyond an overemphasis on agency (Delva et al., 2021; Fugate et al., 2021). Two emerging theories to address such concerns include sustainable career theory (De Vos et al., 2020; De Vos &

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Van der Heijden, 2015) and career ecosystem theory (Baruch, 2015; Baruch & Rousseau, 2019). However, despite their complementary nature, up until now, these theories have tended to develop in parallel with little integration.

Consequently, this paper aims to advance the initial interest by Donald (2023a) in connecting these two independently developed theories by introducing Artificial Intelligence (AI) as a new actor, spotlighting the need for liminality of the relationship between an individual and career practitioner, and presenting a new conceptual model. We achieve this aim via a four-stage process. We begin by providing a brief overview of sustainable career and career ecosystem theories culminating in Donald's (2023a) definition of a sustainable career ecosystem. Second, using this as our point of departure, we consider the theoretical perspectives for understanding a sustainable career ecosystem through (a) introducing AI as a new actor with the potential to disrupt and transform the (future) labor market, and (b) making a case for the liminality of the individual and career practitioner relationship. Third, we consider various dimensions for analyzing a sustainable career ecosystem, to offer a new conceptual model. We conclude by offering a future research agenda emphasizing the role of AI and career practitioners operating within a sustainable career ecosystem.

2. Theoretical framework

2.1. Sustainable career theory

The sustainable career theory (De Vos et al., 2020; De Vos & Van der Heijden, 2015) adds the perspective of 'sustainability' to contemporary career concepts and herewith contributes a fresh perspective on careers that recognizes the complexity of the career concept, thereby elaborating these contemporary concepts. The concept of a sustainable career is defined as "the sequence of an individual's different career experiences, reflected through a variety of patterns of continuity over time, crossing several social spaces, and characterized by individual agency, herewith providing meaning to the individual" (Van der Heijden & De Vos, 2015, p. 7).

As regards the first dimension, i.e., *Time*, a career is dynamic and entails a cycle of events and decisions that determine the work that people are doing, the changes they make when moving from one job to another (within or across organizations), or transitions between paid work and other statuses (for example, non-paid work, unemployment, temporary leave, and retirement). As regards the second dimension, i.e., social space or *Context*, careers are enacted within and across diverse types of contexts (work, home, friends, leisure) (Greenhaus & Kossek, 2014), and influences of actors and factors in one's social spaces, as well as the choices individuals make regarding (the combination of) the different social spaces they live in, may impact the sustainability of their careers. Third, individual agency, i.e., the *Person* dimension, refers to how a career develops over time, resulting from many choices the individual owner makes. Yet, these choices must be aligned with the organizational (employer) objectives and cannot be separated from their broader life context (ibid., p. 7–8).

In the sustainable career theory (De Vos et al., 2020; De Vos & Van der Heijden, 2015), three groups of indicators are distinguished: health, happiness, and productivity (Van der Heijden, 2005). These characteristics are perceived to be critical to one's prosperity while also forming the main building blocks for the welfare of one's family and peers, the organization wherein one works, and society as a whole (De Vos et al., 2020, p. 4).

2.2. Career ecosystem theory

A separate theory that has developed parallel to sustainable career theory is the career ecosystem theory (Baruch, 2015; Baruch & Rousseau, 2019), which expands the concept of an ecosystem to career studies. The ecosystem theory refers to "a system that contains a large number of loosely coupled (interconnected) actors who depend on each other to ensure the overall effectiveness of the system" (Iansiti & Levien, 2004, p. 5). A career ecosystem is a social system of employment, career-related development, and opportunity that emerges from interdependencies among actors (Baruch & Rousseau, 2019). These actors have traditionally been framed as individuals, organizations, and societies (Baruch, 2015) who interact with each other and are interconnected and interdependent.

The system is in continuous flux. Individuals make constant decisions on whether to stay, move, change, or alter their careers (Guan et al., 2019), with an individual agency of self-focused perspectives, such as the protean career (Hall, 1976, 2004). Organizations plan and manage their workforce careers, applying HRM practices and policies (Bagdadli & Gianecchini, 2019). Societal actors, mainly at the national level, regulate and apply rules to both individuals' and organizations' careers (Kaše et al., 2020), bringing together collective beliefs, norms and values leading to intentions and actions.

A career ecosystem is typically initiated and influenced by both top-down and bottom-up processes (Gribbling & Duberley, 2021). As a result, career structures are created, building on the inputs and actions of the actors and what they receive in return. Developing I-deals and the role of future opportunities with current employers are indicative of such bottom-up processes (Baruch & Rousseau, 2019). Conversely, top-down processes occur as societal actors introduce regulations, laws, and norms to the system, shaping the structuring of career activities. Such top-down processes can be initiated by countries, societies, and organizations when trying to influence the actions of individuals, such as legal systems or devising pay structures to reflect the value of personal competencies.

2.3. Sustainable career ecosystem theory

Sustainable career ecosystem theory (Donald, 2023a; Donald & Jackson, 2023) seeks to integrate sustainable career theory (De Vos et al., 2020; De Vos & Van der Heijden, 2015) and career ecosystem theory (Baruch, 2015; Baruch & Rousseau, 2019) by recognizing overlapping and complementary dimensions. Such an approach offers applicability for career transitions, ranging from education into the labor market to bridging work and retirement. A sustainable career ecosystem refers to:

“a variety of *interconnected* and *interdependent* actors across higher education institutions [educational] and workplace contexts, whereby the lives and careers of *individuals* evolve and play out over *time* with an emphasis on *sustainable outcomes* for the individual, organizations, and broader society”.

(Donald, 2023a, p. xxvii, *emphasis added*)

Specifically, sustainable career theory (and by extension, sustainable career ecosystem theory) has the potential to address calls to bridge different literature streams, such as graduate employability and worker employability (Akkermans et al., 2024) and employability and career development (Healy et al., 2022). Furthermore, such an approach acknowledges the need to move beyond an overly agentic focus by integrating various actors and contextual factors into worker employability research (Delva et al., 2021).

Using this as our point of departure, we now turn our attention to introducing AI as a new actor and making a case for the liminality of the individual and career practitioner relationship.

3. Theoretical perspectives for understanding a sustainable career ecosystem

3.1. Artificial Intelligence (AI) as a new actor

Part of the ‘Fourth Industrial Revolution’ (Schwab, 2017) is accompanied by the introduction of a new actor, i.e., Artificial Intelligence (AI). It is already recognized as a disruptive force with a high potential to change the shape of the labor market and career ecosystem (Hirschi, 2018; Huynh et al., 2020; Xu et al., 2018). AI can add value to individuals collaborating with it, add efficiency to organizations and improve firm performance (Enholtm et al., 2022), and contribute to national competitiveness at the aggregate level. Current progress in AI poses a threat but also introduces new opportunities to careers in all industrial sectors. The current wave of AI is taking over an increasing share of the labor markets at a faster rate and broader scale than previous waves (Goralski & Tan, 2020). For example, projections show how introducing CAVs (Controlled Autonomous Vehicles) can eliminate the need for over 47 % of the US’s workforce in the transport and logistics industry (Frey & Osborne, 2017). This entry into the labor market is not restricted to low-skilled employment. High-skilled jobs like coding and programming are conducted by AI at an increasing pace (Ramalho et al., 2020).

The introduction of AI to new labor market segments depends on the readiness and willingness of employees and organizational leadership to endorse AI. While there is still a significant surge in AI discussion and utilization (Kong et al., 2021; Liang & Lee, 2017), there are developments indicating how employees can effectively collaborate with AI (Kong et al., 2023). The volume and scale of roles and positions that can be or have already been replaced by AI means finding solutions to occupy and allocate resources for individuals when a large share of the existing workforce will no longer be needed in its current form. Responding to this ecological succession will require reskilling, upskilling, alternative employment, or other innovative ideas to overcome threats to career sustainability.

If the scale of replacing humans with AI and robotics continues at the current pace, there is a major threat that a significant segment of the labor market will not be needed in the (near) future (Baruch, 2022). The implications will go beyond specific industries or sectors to the societal level. If our predictions materialize, the taking over of a significant share of the labor market by AI within a short time frame will imply that a large part of the workforce will not have a job. Those who will still work will have the capacity to produce all the necessities of people – both food, production, and services. Thus, a new social status may emerge for people whose work will no longer be needed. This new social status will comprise people without employment, as it is not required by society any longer (Baruch, 2022). They may be engaged in other activities, voluntary, or will need to offer some services to society, but not in a position of being employees. To sustain their career, which will not be a work-related career, society may have to rely on solutions such as the Universal Basic Income (UBI). The UBI, as a socio-economic mechanism, was suggested as a potential ‘buffer’ or a social safety net (Perkins et al., 2022).

The three main traditional actors in a career ecosystem are the individual, the organization, and the country. Individuals and organizations negotiate and agree on their legal and psychological contracts, while government agencies and other national and sometimes international bodies regulate and intervene in the labor market. AI is a new career actor in the wider global career ecosystem (Baruch, 2022) and will cause many careers to be less sustainable. Another type of disruption it brings is the North-South divide, where AI is more applicable and applied in OECD countries, especially in large-scale economies, whereas it is almost non-existent in low-income economies (Kitsara, 2022). Presenting AI as a new career actor is one novelty we claim. Technology was mentioned in the career literature in many ways, as a game-changer, as a tool, as a work environment where careers take place, etc. – but not as a ‘career actor’. For example, technology was a tool that helped people in their careers, such as using Word software to type their CVs. Now, people use AI to help them write their CVs. This is a meaningful difference. In particular, earlier technology was functional and became more complex and sophisticated, but it was not ‘thinking’ – AI has the capacity to use intelligence and work alongside humans.

Furthermore, AI dramatically changes the labor market’s balance because it is efficient and effective. However, it also threatens a significant share of the labor market, with no known alternative employment available for those who will be displaced from their jobs. These jobs are not restricted to low-skills level jobs, like driving, but also to cerebral-based work, like coding and programing. For this reason, AI is a disruptive and transformative new actor of a different kind. Given its scale and significance of potential consequences, it is an important future concern, even at the heart of human identity (Jenkins, 2003). We posit that a better understanding of AI’s possible impact and challenges for the future of work will help us protect the individual career holder’s career sustainability over time (cf. Howard, 2019).

3.2. The case for liminality of the relationship between an individual and career practitioner

The Career Development Institute (2023) defined a career practitioner as an individual who helps people “to make decisions about their education, training and future jobs and careers” (Paragraph One, Online). Newly released estimates by the Career Development Policy Group and the University of Derby make a compelling case for the UK government to invest in career guidance initiatives (Hooley et al., 2023). Their empirical findings showed that the return on investment of offering career guidance in *schools* was between £1.20 and £4.10 for every £1.00 spent, with an average return of £2.50. For *unemployed adults*, the return on investment of offering career guidance programs ranged from £1.90 to £6.70 per £1.00 spent, with an average return of £3.20. This evidence of a return on investment in offering career guidance supports previous findings that employability is malleable and that investment in improving employability by employers can pay off (Rodrigues et al., 2020).

However, while the case for return on investment in career support is likely to be strongest during education and periods of unemployment, career support should not solely be limited to preparing or navigating career transitions (Hooley et al., 2023), including the transition from the workplace to retirement. Instead, per sustainable career and career ecosystem theories, career support also has a critical role in the liminal space (i.e., the transitional period between such career transitions) in times of employment. Analogously, Donald and Manville (2023) already advocated for such an approach (albeit from a coaching perspective) to acknowledge the shifting nature of goals across one's lifespan and the increasing need to navigate ambiguity and happenstance throughout one's career (Hallpike et al., 2023).

The role of the career practitioner has significantly evolved over the last decade. The demand for career support has risen at the university level since the COVID-19 pandemic (per empirical research by Donald et al., 2022), while career practitioners must ensure that their knowledge remains relevant to evolving workplaces and practices (Thambar & Hughes, 2023). Projected return on investment of career support has also been shown to be the highest when targeted at students and those who are unemployed (Hooley et al., 2023).

However, as captured by the definition of a career practitioner, their role involves facilitating individuals to make decisions regarding their (i) education, (ii) training, and (iii) future jobs and careers (Career Development Institute, 2023). Consequently, providing career support should not be considered valuable solely at crucial transition points in one's career (Hooley et al., 2023) but rather as a function with ongoing value, herewith acknowledging liminality. Such an approach recognizes that employability is malleable, that investment in improving employability is worthwhile (Rodrigues et al., 2020; Van der Heijden et al., 2016), and that individuals' goals, priorities, and aspirations continually evolve over time (Donald & Manville, 2023).

Additionally, career support across the lifespan takes on increased significance with the rise of non-standard work arrangements, acknowledging the differing needs between individuals when managing their careers. For instance, the focus of career support may vary from an emphasis on thriving in the gig economy (Ashford et al., 2018), flexible employment relationships during global chance events such as the pandemic (Spurk & Straub, 2020), flexible work arrangements and employee health (Shifrin & Michel, 2022), and adopting a sustainable career perspective of contingent work (Retkowsky et al., 2023). Supporting the needs of individuals to manage their careers acknowledges the interconnected and interdependent nature of actors operating within a career ecosystem (Baruch, 2015). It can help to achieve sustainable outcomes for all actors.

4. Dimensions for analyzing a sustainable career ecosystem

Our attention now shifts to systematically considering (i) actors, (ii) contexts, (iii) inputs, (iv) time and chance events, and (v) (un) desirable outcomes to offer a model to conceptualize a sustainable career ecosystem. For the purpose of this paper, we define sustainability as the ability of actors operating within a career ecosystem to navigate various contexts with the aim of utilizing various input resources to achieve mutually desirable outcomes that can be maintained over time.

4.1. Actors

In addition to AI and career practitioners, we posit that a sustainable career ecosystem comprises four traditional actors: individuals, organizations, governments, and professional associations.

4.1.1. Individual (local level)

Individuals are the central actors in any career ecosystem, serving as its foundation because people have careers, whereas other actors form the landscape wherein careers are developed (Baruch, 2015). These individuals shape their careers based on values, beliefs, and intentions, whether employed by an organization, being self-employed, or involved in volunteering and philanthropy (Donald, 2023b; Donald & Manville, 2023). An example of contemporary career orientation for individuals is the protean career (Hall, 1976, 2004). Individuals holding a protean career attitude will find the boundaryless career concept applicable and more open to their approach than traditional career orientation (Baruch, 2014). Complying with such a contemporary career orientation, individuals acquire forms of employability capital and negotiate their future careers as a set of psychological contracts with other actors (Donald et al., 2020, 2024). One's career may also include periods of underemployment, unemployment, or career breaks. Consequently, people undertake a series of career transitions over time, initially from education into the workforce (Baruch et al., 2023; Blokker et al., 2023), possibly concluding with bridgework (e.g., Veth et al., 2018), and finally, the transition into retirement (e.g., Froidevaux et al., 2018).

4.1.2. Organization (local level)

Larger organizations employ the vast majority of people to benefit from their human capital, a significant firm resource (Becker, 1964) and the enabler of firm performance (Huselid, 1995; Tzabbar et al., 2017). In doing so, they apply career management systems aimed at optimizing their staff's career success (Bagdadli & Gianecchini, 2019; Baruch & Peiperl, 2000). While the career is the 'property' of individuals, organizations must strategically plan and manage it, ideally via shared responsibility through close interaction with their individual employees (Rousseau, 1995). In small entrepreneurship ventures, sometimes with a single self-employed individual only, the latter negotiates with the self to form career direction and progress. Significantly, negotiating careers is not bound to a two-way contract (legal and psychological) between the employer and the employee: many other actors also participate directly and indirectly (Baruch & Rousseau, 2019). By integrating sustainable career theory and career ecosystem theory, we capture the interrelatedness and interdependent nature of a broader set of actors, over and above the individual and organization only, herewith doing justice to the ever-increasing complexity of careers and the variety in which it takes shape.

4.1.3. Government (national/global levels)

Governments are significant actors in the career ecosystem where individuals' careers play out. These actors can operate at the national level (e.g., through the governance of a specific country) or multinational or global levels (e.g., the European Union or via a trading block). Governments carry the primary responsibility for economic progress and stability so that their citizens will benefit from well-established livelihoods (and be able to pay taxes to keep economic stability). Governments are also in charge of legal systems (including human rights or work permits for foreign nationals) and their enforcement of the educational system, to name a few of their roles that are relevant to careers. Besides, national governance is responsible for and can influence norms of behavior and the economy. National culture also influences other norms, like social status ascribed to certain professions. Additionally, in most countries, the government is the largest single employer, thus setting a benchmark for other industries. Governments influence employment vs. unemployment, the quality of and investment in education and physical infrastructure, as well as national and personal security, and internal migration, for example, to cities (Guo & Baruch, 2020).

4.1.4. Professional associations (national/global levels)

Donald (2023b) applied career ecosystem theory to the field of project management, positioning professional associations as bridges between individuals and organizations. The Science Council (2019) defined a professional body as "an organisation with individual members practicing a profession or occupation in which the organisation maintains an oversight of the knowledge, skills, conduct and practice of that profession or occupation" (Online, Paragraph One). Membership benefits to the individual include access to job advertisements, networking, and opportunities for continued personal development. Accreditation is often determined through a combination of academic and practical components of assessment (Lester, 2009). From an organizational perspective, professional associations can aid organizational sustainability by setting conducts and standards through engagement with various actors within the career ecosystem and by facilitating resource management strategies (Larsson & Larsson, 2020). Such an approach can help organizations to navigate dealing with complexity and chance events, as shown during the COVID-19 pandemic (Arnold et al., 2021). We argue that the standards and best practices set by professional bodies evolve over time in recognition of the ecological succession of a career ecosystem and the interdependencies of various actors (Donald, 2023b). Consequently, individuals and organizations can play a pivotal role in helping professional associations understand their respective needs (Arnold et al., 2021), which are then communicated to other actors in the career ecosystem, including national governments (Donald, 2023b).

4.2. Contexts

A sustainable career ecosystem distinguishes between three distinct levels of context: local, national, and global.

4.2.1. Local

The local level, encompassing an individual's workplace, team, and personal life, presents opportunities and challenges that may help and/or hinder the protection and enhancement of one's career sustainability across the lifespan. To illustrate, the opportunities provided by one's employer, as depicted in the organizational HR policies and procedures, and with a specific role for one's direct supervisor, have a substantial impact on the individual workers' career sustainability (Fugate et al., 2021; Van der Heijden & De Vos, 2015). Coping with fluctuating workplace demands and resources (Bakker et al., 2023; Demerouti & Bakker, 2023) underscores the significance of constructive social support systems within workgroups. Norms governing career progress (e.g., El-Far et al., 2021; Lyons et al., 2015) and inclusivity in diverse work climates (e.g., Rudolph & Zacher, 2021; Zanoni et al., 2010) further influence individual career sustainability. Crucially, one's private life, involving children, parents, relatives, and friends affect and are affected by the individual career holder's career decisions and patterns of development (Donald et al., 2024; Hirschi et al., 2020; Van der Heijden et al., 2020).

4.2.2. National

At the national level, the institutional context and the occupational sector, wherein the individual's job is positioned, significantly influence career sustainability (De Vos et al., 2020). Norms, values, and regulatory frameworks manifested in labor market legislations, in both the national context and the occupational sector to which actors are subjected, impact the opportunities and challenges they face regarding their career sustainability. This starts with the policies, rules, and practices in the nation's educational systems at lower, middle, and higher levels. Further, the political system or orientation can influence career structures (Mouratidou et al., 2024). That is

to say, depending on the specific system or orientation, the career context can be shaped very differently. For example, the career prestige of working in the public vs. private sectors would vary in different countries. In communist countries, belonging to the party is a critical factor for promotion, whereas in capitalist countries, this will not be the case. Additional aspects include the national health security system to protect national populations from external health threats and determine whether and how health insurance is arranged (Donald, 2020), and the official retirement age service as a critical factor that can substantially impact one's career decisions in the late career phase (Böckerman & Ilmakunnas, 2020; Gati & Kulcsar, 2021).

4.2.3. Global

At the global level, the overarching aim is to reach full employment across different segments of the labor force and to increase the labor market qualifications of disadvantaged/vulnerable groups. This includes migrant workers, ethnic minorities, older workers, workers lacking skills or qualifications, the long-term unemployed, and disabled workers (Burgess et al., 2013). However, global labor market dynamics, influenced by emerging technologies, globalization, and economic fluctuations, significantly affect opportunities for employment and the preservation of career sustainability (Fugate et al., 2021). Consequently, the emergence of a new psychological contract shifts responsibility for career sustainability from the organization to the individual worker (Baruch & Rousseau, 2019; Rousseau, 1995), although these transformations in the career ecosystem also influence employment practices. In addition, depending on the amount of unionism (Kochan, 2006), wage inequality, and access to health care (Levenson, 2006), to mention but a few influential factors, the extent to which employment patterns portray stable versus unstable employment (Arthur & Rousseau, 1996; Baruch, 2004) differs across the globe (Baruch & Rousseau, 2019). Analogously, three types of career ecosystems are differentiated (i. e., fragile, robust, anti-fragile) depending on the extent to which organizations and workers alike can maintain resilience and, through this, their sustainability (see Baruch & Rousseau, 2019 for more details).

4.3. Inputs

The three prominent traditional actors (or stakeholders) in the career ecosystem, be it the local, national, or global context, are the individual, the organization, and the country. They interact with each other (e.g., when forming work relationships), are interrelated, and depend on each other. Moreover, in a robust career ecosystem, how they perform leads to a sustainable career, economy, and a positive prospect future for all actors involved (Baruch & Rousseau, 2019).

Individuals bring their various forms of employability capital, for example, social capital, cultural capital, psychological capital, personal identity capital, health capital, scholastic capital, market-value capital, career identity capital, and economic capital (for a systematic literature view and development of the Employability Capital Growth Model, see Donald et al., 2024). Organizations provide economic and financial arrangements (with more or less winners and losers, though not necessarily in a zero-sum game). Beyond this somewhat narrow view, organizations can also provide social (support) networks and, if aligned with personal values, organizational values can be a source of purpose. Nations and global institutions form the regulatory, legal, and cultural systems according to which 'rules' and practices are applied. In order to enhance the individual's career sustainability, the sustainability of the economy, and to strive for a positive prospect future for all actors involved, it is important to guarantee the provision of inputs, such as the ones mentioned above, that are needed for assuring growth and continuity in one's career (De Lange et al., 2015).

However, a sustainable career, a sustainable economy, and a positive prospective future for all actors also require processes of both preservation and generation of resources for all parties involved [cf. Conservation of Resources Theory (COR); Hobfoll, 1989] across the career span. In particular, COR theory is based on the notion that people are motivated to protect their existing resources (conservation) and acquire new ones (acquisition). Resources are defined as objects, states, conditions, and other things that people value, and their specific value varies among individuals as this is tied to their personal experiences and situations.

Two principles of COR theory are important in this regard. The first principle, i.e., the primacy of resource loss, states that "it is psychologically more harmful for individuals to lose resources than it is helpful for them to gain the resources that they lost" (Halbesleben et al., 2014, p. 1335). The second principle of COR theory states that people invest resources for three reasons: (1) to protect against resource loss; (2) to recover from resource loss; and (3) to gain resources in their own right (Hobfoll, 2001).

Ample empirical evidence has covered the central claims of COR theory. For instance, Ng and Feldman (2014), in their exemplary meta-analysis, wherein COR theory was used as the theoretical foundation stating that career hurdles decrease employees' resource acquisition capacity, found that multiple career hurdles contribute to lower salary. Similarly, Kauffeld and Spurk (2022) built on COR theory and found that career-specific resources mediate the relationship between psychological capital, on the one hand, and objective and subjective career success, on the other. Their findings imply that personal key resources can lead to attaining and accumulating other important resources, a phenomenon that Hobfoll et al. (2018) labelled 'resource caravans'.

Next to the preservation and generation of resources by the career actors, another important strategy for fostering career sustainability is to portray proactive behavior and individual growth to fulfil three innate psychological needs, i.e., the need for autonomy, competence, and relatedness [cf. Self-Determination Theory (SDT); Ryan & Deci, 2000]. SDT is a macro theory of human motivation that has been successfully applied across domains, including the fields of work and careers (Deci et al., 2017).

Earlier work and career research has either focused on the perspective of the employee or that of the organization (employer) (ibid.) (cf. Fugate et al., 2021). However, for both parties to flourish, SDT provides a useful theoretical framework stressing the need to promote both employee wellbeing and high-quality performance (cf. the three indicators 'happiness, health, and productivity', as distinguished by Van der Heijden, 2005). Specifically, career holders should aim to act proactively to master internal and external forces instead of being passively controlled by those and strive for growth, development, and integrated functioning. To be successful in this regard, they need a supportive environment (Ryan & Deci, 2000) that provides resources (referred to as 'nutriments' in SDT)

that help them to foster their health, happiness, and productivity, a sustainable economy, and a positive prospect future for all actors.

Indeed, earlier research has found empirical support for the added value of adopting an SDT lens in work and career research. For instance, [Parker \(2014\)](#), who focused on employee outcomes of learning and development, health and wellbeing, and flexibility, found that all of these outcomes are more likely when employees are more autonomously motivated and experience greater satisfaction of the needs for autonomy, competence, and relatedness. Another example of empirical evidence can be found in the work by [Dahling and Lauricella \(2017\)](#), who built on SDT and demonstrated how job design choices contribute to subjective career success. From their study, it became clear that designing jobs in ways that satisfy innate psychological needs indeed boosts work motivation and encourages workers to ‘keep on going’ in their current career field.

4.4. Time and chance events

A critical yet under-researched career phenomenon is the occurrence of chance events and their impact on relationships at and around work, work itself, organizational forms, practices, and processes ([Baruch et al., 2016](#)). Chance events are likely to impact how people’s work experiences unfold, the environments (professions, industries, type of employer) where they work, the way they view work (their motivation to work, attitudes towards their employer, interactions with their colleagues), but also the way their personal and work lives interact.

Table 1
Desirable and undesirable outcomes.

Context	Actor	Examples of desirable outcomes (and undesirable outcomes)	Sources
Local	Individual	<ul style="list-style-type: none"> • Health/<i>illness</i> • Happiness/<i>unhappiness</i> • Productive/<i>unproductive</i> • Employment/<i>unemployment/underemployment</i> 	De Vos et al. (2020) ; Donald (2023a) ; Fugate et al. (2021) ; Nimmi et al. (2021; 2022) ; Van der Heijden (2005) ; Van der Heijden and De Vos (2015) ; Thijssen et al. (2008) .
	Organization	<ul style="list-style-type: none"> • Financial security/<i>insecurity</i>. • Innovation/<i>stagnation</i>. • Competitive advantage/<i>disadvantage</i>. • Strong/<i>weak</i> financial performance • Productive/<i>unproductive</i>. 	Bagdadli and Gianecchini (2019) ; Baruch and Peiperl (2000) ; Donald et al. (2020) ; Tzabbar et al. (2017) ; Ybema et al. (2020) .
	Career Practitioner	<ul style="list-style-type: none"> • Accredited/<i>non-accredited</i> career practitioner. • Committed/<i>not committed</i> to personal development. • Tailored/<i>generic</i> career support. • Increase/<i>no change</i> to client’s employability. • Capacity/<i>lack of capacity</i> to provide career support. 	Career Development Institute (2023) ; Donald and Manville (2023) ; Donald et al. (2022) ; Hooley et al. (2023) ; Rodrigues et al. (2020) .
National/Global	Government	<ul style="list-style-type: none"> • Brain circulation/<i>drain</i>. • Best/<i>ineffective</i> use of human capital. • Increased tax revenue/<i>reduced tax revenue</i>. • Increased/<i>reduced</i> Gross Domestic Product (GDP). • Increased living standards/<i>reduced living standards</i>. • Wellbeing/<i>illbeing</i>. • Employment/<i>unemployment</i>. 	Baruch et al. (2007) ; Becker (1964) ; Donald et al. (2020; 2023a) ; Guo and Baruch (2020) ; Hooley et al. (2023) ; Levenson (2006) ; Saxenian (2005) .
	Professional Associations	<ul style="list-style-type: none"> • Advocacy/<i>lack of advocacy</i> for individuals. • Advocacy/<i>lack of advocacy</i> for organizations. • Evolving/<i>stagnant</i> standards and best practices. • Facilitate/<i>hinder</i> resource management. 	Arnold et al. (2021) ; Donald (2023b) ; Larsson and Larsson (2020) ; Lester (2009) ; Science Council (2019) .
Local/National/Global	Artificial Intelligence	<ul style="list-style-type: none"> • Process optimization/<i>waste</i> • Increased/<i>decreased</i> living standards. • Address/<i>ignore</i> global challenges. • Employment/<i>unemployment/underemployment</i> • Job enrichment/<i>function erosion</i> 	Hansson et al. (2021) ; Hirschi (2018) ; Ho (2023) ; Huynh et al. (2020) ; Xu et al. (2018) .

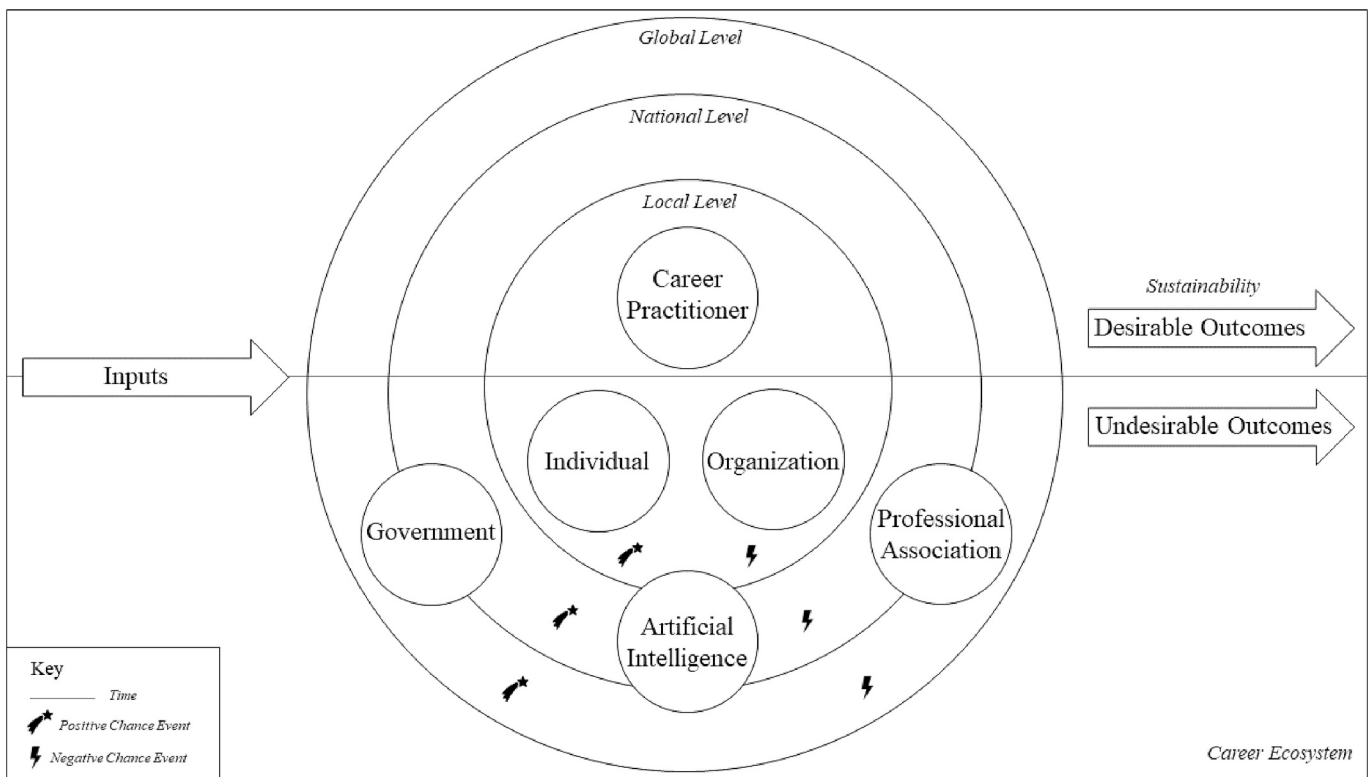


Fig. 1. Conceptualizing a sustainable career ecosystem.

These domains are directly connected to the realm of people management/HRM and the related field of careers. For example, chance events may lead to career shocks (i.e., people forced to reconsider their occupation or profession or their relationship with their employer; Akkermans et al., 2018), with potentially significant consequences for their employers and colleagues. Though previous scholars have pointed out the importance of chance events for an individual's career, the relevant literature remains piecemeal and needs systematic development.

Furthermore, humanity has recently experienced a significant chance event, COVID-19, that has profoundly impacted the social relationships of work and, indeed, the very nature of work itself (Akkermans et al., 2020; Hite & McDonald, 2020). This impact is neither evenly distributed nor uniformly negative (Donald, 2020). How individuals, groups, organizations, and governments have experienced, been impacted by, and responded to the COVID-19 career shock has been varied and complex (e.g., Mousa, 2024).

4.5. (Un)desirable outcomes

The final phase of conceptualizing a sustainable career ecosystem necessitates a focus on outcomes that are either desirable or undesirable. Table 1 provides a summary of relevant outcomes in this regard.

Although the outcomes presented in Table 1 are grouped by context and actor, the interconnected and interdependent nature of the actors operating within a career ecosystem is evident.

To illustrate, indicators of career sustainability at the individual level include health, happiness, productivity, employment, and financial security (De Vos et al., 2020; Van der Heijden, 2005; Van der Heijden & De Vos, 2015). However, agentic factors do not exclusively determine the sustainable nature of these outputs. Instead, they also rely on the interplay with other actors, just like the other actors rely on the interplay with each other and with individuals, too. To give an example, when an individual (*person* dimension from the sustainable career theory) suffers from health problems related to being overweight and decides to do more exercises, an organizational culture (*context* dimension) wherein structural overwork is prevented is needed to enable them to spend time in the gym. Moreover, in order to persist in changing their lifestyle, a career practitioner (*context* dimension) might be needed to help the employee prioritize their health optimization instead of falling back into old habits over time. Similarly, governments (*context* dimension) should stimulate lifelong learning and development programs to guarantee that individuals who lose their jobs enhance their employability capital and become attractive for alternative positions in the labor market. It goes without saying that the individual (*person* dimension) themselves should also take responsibility to protect and enhance their employability throughout the lifespan (*time* dimension) (Fugate et al., 2021).

Consequently, the sustainable career *person*, *context*, and *time* dimensions (De Vos et al., 2020) play out within a career ecosystem (Baruch, 2015), wherein the individual closely interacts with their surroundings and actors shape their career sustainability, whereby the determinant of desirable or undesirable outcomes is the ecosystem's equilibrium. Our conceptualization of a sustainable career ecosystem (building on that of Donald, 2023a) thus acknowledges the need to move beyond an over-emphasis on agentic factors and instead seriously consider the impact of actors and contextual factors in career research as well (cf. Delva et al., 2021, who advocated this in the context of employability research). It also recognizes variances between national contexts, as evidenced in a recent empirical work comparing workers in India and Italy under a framework of sustainable careers and career ecosystems (Nimmi & Petruzzello, 2023) and in another research contrasting performance management systems in the UK and France (Gribbling & Duberley, 2021).

4.6. Conceptual model

Fig. 1 portrays our conceptual model.

5. Future research agenda

We answer calls for further studying careers in a comprehensive manner (Baruch & Sullivan, 2022) by proposing a conceptual model of a Sustainable Career Ecosystem. The model integrates Sustainable Career and Career Ecosystem theories. We call for future studies to go beyond single-career actor studies, to explore the relationship between and the collective impact of multiple career players, and to identify the achievement of a sustainable career as a desired state of career success (Spurk et al., 2019). In particular, we wish to point out two actors that need scholarly attention – AI and career practitioners.

5.1. Considering the implications of artificial intelligence

AI is a new actor that is anticipated to impact the labor market significantly. In the same way that the Industrial Revolution moved most of the working force from agriculture to production work and that the knowledge economy moved production workers to services, the implementation of AI offers numerous advantages to individuals collaborating with it (Kong et al., 2023), to organizations which utilize it (Enholm et al., 2022), and to society. Yet, AI at a large scale will 'release' a significant share of the workforce from their current jobs. Unlike the past, this process is rapid and will not take generations to materialize. Baruch (2022) argued that this might mean the creation of a new social status for people – those unemployed permanently because their work is no longer needed. Following our sustainable career ecosystem conceptual model, society will need to identify for those people what to do in their released time to have a meaningful life and how they will survive financially. Ideas like the 'Universal Basic Income' come to mind as a possible means to cope with the growing category of permanently unemployed (Perkins et al., 2022).

5.2. Exploring the role of career practitioners

Empirical studies exploring the role of career practitioners have tended to focus on a snapshot-in-time analysis anchored around a specific career transition. For example, Donald et al. (2022) conducted 36 semi-structured interviews with career advisors and graduate recruiters during the COVID-19 pandemic in the context of preparing university students for the university-to-work transition. However, empirical studies capturing the liminality dimension of the role of career practitioners remain lacking. Addressing this research gap takes on increased significance given the combination of a snapshot in time and liminality policy aims to which the OECD believes career guidance can contribute. These include (i) supporting re-skilling, (ii) supporting up-skilling, (iii) combating unemployment, (iv) youth unemployment, (v) effective skills training, (vi) labor market efficiency, (vii) job retention, (viii) supporting employment mobility, (ix) effective skills utilization, and (x) employee engagement (OECD, 2022). How can theory and empirical evidence help to inform such approaches? Particularly since the advancement of AI will require increased emphasis on reskilling and upskilling (Ho, 2023).

A core task involves supporting clients in developing and effectively utilizing personal resources. In doing so, career practitioners can build on the valuable insights obtained from COR theory (Hobfoll, 1989, 2001) and from SDT (Ryan & Deci, 2000). Specifically, those clients with greater personal resources are less vulnerable to resource loss and more capable of acquiring additional personal resources, that is, resource gain (see the notion of resource gain spirals in Hobfoll et al., 2018) (cf. the Matthew effect: the rich get richer, and the poor get poorer per Rigney, 2010). Regarding SDT, career practitioners should be aware that people are more strongly motivated to invest in further development of their career sustainability if the three basic psychological needs (i.e., the need for autonomy, competence, and relatedness) are fulfilled.

Consequently, future research could benefit from longitudinal studies capturing the interaction between individuals and career practitioners, responding to calls by De Vos et al. (2020) for additional research to consider the temporal dimension of sustainable careers. Such an approach could test various interventions to assess effectiveness against a control group to inform best practices. It could also acknowledge how employability profiles can change over time, such as three profiles illustrating heterogeneity during the university-to-work transition. Specifically, Grosemans et al. (2023) found: (i) a high-slightly increasing profile, (ii) a medium-increasing profile, and (iii) a low-stable profile, whereby these profiles were replicated and validated in 1467 participants across three cohorts.

There is also a need to acknowledge the interlinked nature of career support, well-being, and a sense of belonging, enabling individuals to navigate complex landscapes (Hughes & Thambar, 2023). Consequently, studies exploring partnership interventions between career practitioners and mental health practitioners may offer interesting insights into fruitful ways to shape the role of career practitioners. However, such approaches will need buy-in from actors across the ecosystem. For instance, government funding would be required to train career practitioners and mental health workers. There is also a need to ensure the accreditation of career practitioners to promote quality standards (Career Development Institute, 2023).

Additionally, while making the case for a significant return on investment from career support to students and the unemployed is essential to increase government funding for career practitioners (Hooley et al., 2023), there may be hidden returns on investments from adopting a liminality approach to career support, which may not be immediately visible. For instance, as preluded above, when the relevance of COR theorizing was stressed (Hobfoll, 1989, 2001), the notion of gain and loss cycles over time (Donald & Manville, 2023) and the ecological condition for resource caravan passageways (Hobfoll et al., 2018) are represented within a sustainable career ecosystem (Donald & Jackson, 2023) as well. Put differently, career practitioners can provide individuals with ongoing and cumulative gains by supporting them in acquiring new resources, safeguarding against the loss of existing resources, and finding environments for the optimal deployment of such resources. Such an approach is particularly valuable since the implications of AI go beyond simply technological impact. It has substantial consequences for the sustainability of careers, be it for the individual career choice and trajectory, organizational HRM (Vrontis et al., 2022) or national competitiveness (Ulnicane, 2022).

6. Conclusion

Our paper advances the embryonic interest of combining sustainable career theory and career ecosystem theory into sustainable career theory by introducing Artificial Intelligence (AI) as a new actor, spotlighting the need for liminality of the relationship between an individual and career practitioner, and presenting a new conceptual model. We began by providing a brief overview of sustainable career and career ecosystem theories, culminating in a recently proposed definition of a sustainable career ecosystem. Second, using this as our point of departure, we consider the theoretical perspectives for understanding a sustainable career ecosystem through: (a) introducing AI as a new actor with the potential to disrupt and transform the (future) labor market, and (b) making a case for the liminality of the individual and career practitioner relationship. Third, we consider various dimensions for analyzing a sustainable career ecosystem to offer a new conceptual model. To delineate between a sustainable and an unsustainable career ecosystem, we defined sustainability as the ability of actors operating within a career ecosystem to navigate various contexts with the aim of utilizing various input resources to achieve mutually desirable outcomes that can be maintained over time. Our suggestions for a future research agenda concluded the paper, offering a potential avenue for research aimed at gaining more insights into the challenges related to and implications of AI as well as for empirical exploration of the role of career practitioners.

CRedit authorship contribution statement

William E. Donald: Writing – review & editing, Writing – original draft, Resources, Project administration, Conceptualization.

Beatrice I.J.M. Van der Heijden: Writing – review & editing, Writing – original draft, Resources, Project administration, Conceptualization. **Yehuda Baruch:** Writing – review & editing, Writing – original draft, Resources, Project administration, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

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