#### **Organizational Cultures: An International Journal**

ISSN: 2327-8013 (Print), ISSN: 2327-932X (Online) Volume #, Issue #, 20## https://doi.org/10.18848/2327-8013/CGP



## **Original Research**

# **Characterizing the Culture of Teal Organizations**

Muriel Davies, CESI LINEACT, France Stéphanie Buisine, CESI LINEACT, France

Received: 09/19/2023; Accepted: 02/27/2024; Published: 11/11/1111

**Abstract:** Teal organizations arose around the world in the last decades and were recently described as potentially announcing a new stage of evolution for human organizations. They are characterized by three defining features: Self-management, Wholeness, and Evolutionary purpose. As the emergence of such organizations echoes other signs of change in the workplace and in society, we examine the underlying concepts with regard to scholarly literature on national and organizational culture. Our findings particularly emphasize the role and importance of the Evolutionary purpose of Teal organizations, which is not currently accounted for in existing models. This leads us to discuss the relations between culture and values, as well as the implicit or explicit nature of culture.

Keywords: Culture, Organizational Culture, Teal, Purpose

### **Introducing Teal Organizations**

In 2014 Frederic Laloux released a book entitled *Reinventing Organizations*, which describes an emergent kind of organization implementing inspiring ways of working. Teal organizations (labelled as such in reference to several developmental theories) embody an enthusiastic way of working together, pursuing ambitious goals higher than economic profit, based on altruism and human accomplishment. In psychological terms, Teal organizations seem to bring together the most desirable drivers of well-being at work: powerful prosocial and sustainable values, intrinsically motivating goals in the sense of self-determination theory (Deci and Ryan 2000), and all the ingredients of eudaemonic well-being in the sense of positive emotions, engagement, positive relationships, meaningfulness, and accomplishment (PERMA) theory (Seligman 2011; Kern et al. 2015).

The three organizational characteristics of the Teal approach are Self-management, Wholeness, and Evolutionary purpose. Self-management corresponds to a peer-to-peer functioning, which requires new ways to make decisions. For example, the "advice process" is distinct from both hierarchical and consensus decisions: anyone is allowed to decide on behalf of the organization, provided that people impacted by the decision and experts on the topic are identified and consulted beforehand. The advice process emerged similarly in a few pioneer companies around the world, unrelated to one another, for example, in a US energy



company (AES) in 1995 that disseminated it in all its power plants around the world (Bakke 2006, 2013). In case of diverging views, the conflict resolution process generally consists in trying to reach an agreement between the parties, then to involve a mediator or create a committee when necessary. Self-management may also apply to work organization and schedule, or to the definition of fair salaries.

The second organizational specificity of Teal organizations is called Wholeness and means that people can come to work as they really are, do not have to withhold their private self if they wish so, and can express their feelings safely. It requires open-mindedness, benevolence, and a protective work environment. For example, in some Teal organizations, the members' relatives or pets are welcome in the premises, and personal situations can be taken into account temporarily or permanently in task or salary allocation.

Last but not least, the third pillar of a Teal organization is its Evolutionary purpose. The company is viewed as a living being with a self-determined societal purpose. This means that survival and growth of the company are not central concerns in the Teal stage; instead, everyone's only priority is to pursue the mission. This mindset dramatically impacts the strategy and the relations with stakeholders, as other organizations pursuing the same purpose necessarily become allies, not competitors. It also enables Teal organizations to adapt to complex environments and exhibit high resilience.

On the one hand, in terms of working climate and meaningfulness, Teal organizations resemble undreamed-of companies anyone would like to belong to. On the other hand, because they seem to be disconnected from economic concerns and market competition, they may also be viewed as utopian and unworthy of attention. Most of the population, in particular contemporary executives, may believe that such enterprises will not survive in today's capitalistic world, or would be condemned to marginality. However, consistent with a developmental approach, we may expect that Teal organizations, although marginal today, represent the future of the workplace.

## A Developmental Approach to Human Organizations

The Teal paradigm comes from an analogy between the development of individuals' consciousness along the lifetime (psychogenesis) and the development of societies' consciousness along the history of mankind (sociogenesis). Both processes are seen as building on successive value systems and worldviews that arise in response to solving problems of the previous system. For example, several theories of human development (Graves 1970; Beck and Cowan 1996; Wilber 2000) model individual psychological growth during lifetime through the alternation of individualistic and collectivist stages progressing from the satisfaction of physiological needs in early childhood (e.g., survival, security...) toward the satisfaction of the highest psychological needs in late life (e.g., fulfilment, holistic

view). The key insight is to use a similar developmental framework to analyze the evolution of human societies. Table 1 provides an overview of the main organizational paradigms (named Amber, Orange, Green, and Teal; Laloux 2014) and their correspondence with technological revolutions and with the main motivational drivers that can be derived from each stage.

Table 1: Correspondence between the Development of Technologies, Organizational Stages, and Human Motivations

Technological Revolution	Organizational Development	Individual Motivation	
Agriculture	Amber Stage	Security (physiological needs)	
	Collectivism	Social determinism	
	Hierarchy	(each one has a defined role)	
	Long-term stability		
	Self-sufficiency		
Industrial Revolution	Orange Stage	Extrinsic motivations:	
	Individualism	Social promotion	
	Innovation	Financial rewards	
	Market competition		
	Profit		
Digital Revolution	Green Stage	Identified motivations:	
	Collectivism	Values	
	Involvement of stakeholders	Meaning	
	Participation		
Emerging	Teal Stage	Intrinsic motivations:	
	Individualism	Self-accomplishment	
	Evolutionary purpose	Self-transcendence	
	Resilience		

The Amber stage arose about 11,000 years ago with the agricultural revolution. It is a collectivist stage that invented hierarchy and processes, allowing the transmission of knowledge to large populations. The Amber stage led to the development of enormous organizations embracing long-term endeavors such as building pyramids or cathedrals. Such organizations were characterized by centralized decision-making, with little or no room for individual initiative. Likewise, individuals had a predetermined role that was difficult or impossible to change (which is termed social determinism). Today, the Amber stage is still represented in large and stable organizations that operate outside of regulated and centralized markets and provide security of employment, like public administrations or military organizations.

The subsequent stage emerged from the Renaissance and the industrial revolution. It is a more individualistic and materialistic stage labelled Orange, in which good and evil are not absolute, efficiency replaces morality, and the aim is to achieve social recognition or economic rewards. This stage invented responsibility, meritocracy, and innovation. Where the Amber stage valued stability, the Orange stage values change: individual empowerment, social promotion, scientific progress, and technical innovation. It is still the dominant paradigm in profit organizations and multinationals, which emphasize economic growth as their reason for being. Consistently, they support extrinsic motivation at the individual level, providing social and financial incentives to their valuable members. This stage led to an unprecedented world-prosperity (e.g., famine decrease, life expectancy increase), enabled individuals to gain freedom with regard to traditions and religious authorities, and generated incommensurable wealth. However, it may have reached its limits today with excessive financialization, increased inequality, and climate change. As these challenges may not be solvable in the paradigm that created them, human organizations may switch to a new stage(s).

The Green stage appeared about fifty years ago with the digital revolution and is characterized by a deeper focus on values, a more systematic involvement of stakeholders, and the invention of participatory decision-making. The emphasis on values and the search for meaning beyond profit correspond to identified motivation in the self-determination sense (Deci and Ryan 2000). Some examples of Green organizations can be found in the social sector, but this stage was acknowledged as unstable to face economic challenges (Laloux 2014) and is much less documented than the Teal stage.

Finally, the Teal stage implements the highest levels of self-determination: Teal organizations enable individuals to meet the fundamental psychological needs of autonomy and competence, making hierarchy pointless (Self-management); thereby, they also support intrinsic motivation for each individual (Wholeness) as well as self-transcendence through working for a meaningful cause with a positive impact on the world (Evolutionary purpose). The Teal philosophy is not only inspiring in itself, it also echoes popular stereotypical ideas regarding generational differences in work satisfaction (Jones, Murray, and Tapp 2018; Mehra and Nickerson 2019; Mahmoud et al. 2020). For example, generations Y and Z are viewed as giving more prominence to well-being at work and intrinsically motivating jobs matching their personal values. Younger generations also tend to reject hierarchical silos and are acknowledged as more difficult to manage. However, the very concept of generation is still firmly questioned by scholars, and large-scale analyses support the hypothesis of the context impacting similarly all age cohorts as more likely than the hypothesis of a differential impact on cohorts (Andrade and Westover 2018; Cucina et al. 2018; Heyns and Kerr 2018; Rudolph et al. 2021; Saba 2021). Hence, the tendency to expect an intrinsically motivating life, and work, may concern the entire contemporary workforce, and not only the younger ones.

This global and massive evolution is in line with Inglehart's seminal work on cultural, economic, and political change in postindustrial democracies (Inglehart 1971, 1990) and all around the world, through a process called modernization and post modernization (Inglehart 2020; Inglehart and Baker 2000): when economic security is satisfied, basic political priorities may naturally shift toward post materialism (e.g., increasingly rational, tolerant, trusting, and participatory values) and the fulfilment of individual and psychological needs (e.g., well-being, intellectual life, relatedness, aesthetics). Globalized societies are viewed as climbing the "freedom ladder" (Welzel 2014) up to individual empowerment, education, and emancipation. The evolutionary theory of emancipation (Welzel 2014) models this transformation as a universalist self-driven automatism by which the human mind adjusts to its existential conditions (Beugelsdijk and Welzel 2018). Hence, the ideal company of the future may resemble more of a Teal organization (with its Evolutionary purpose, Wholeness, and Self-management) than an Orange one (with profit, competition, and power seen as ends in themselves).

For all these reasons, Laloux's (2014) developmental model of organizations seems highly heuristic: it provides insights to understand the current problems of societies, to understand the transformation of employees' worldviews, and to gain awareness on the possible path to follow in the future. However, this model was drawn on developmental psychology literature (which addresses psychogenesis, sociogenesis, but not organizational culture). Conversely, scholarly models of organizational culture usually do not follow a developmental or evolutionary approach but may, nonetheless, have already formalized these insights in different terms. The aim of this article is to bridge the gap between Laloux's model and the existing literature on organizational culture. Thereby, we aim to provide a comprehensive overview of the topic, position the Teal paradigm with regard to alternative models, and analyze its validity and value-added.

## What Organizational Culture Is and Is Not

The very concept of organizational culture became a scholarly topic at the end of the 1970s (Chatman and O'Reilly 2016), building mainly on two earlier lines of thought. The first stems from the Human Relations framework, which highlighted the existence of influential factors beyond the structure of organizations (Fortado and Fadil 2012), also described as an informal organization symbiotically intertwined with the formal organization. This informal organization may refer to culture, although it was not named as such at that time.

Second, the study of organizations from a cultural viewpoint was strongly stimulated by research on national cultures or "software of the mind" (Hofstede, Hofstede, and Minkov 2010), which have been conducted from the late 1960s. Culture is defined as "the collective programming of the mind that distinguishes the members of one group or category of people from others" (Hofstede, Hofstede, and Minkov 2010, 6). Culture is neither human nature,

which is universal and innate, nor personality, which is individual and both innate and acquired. Culture is acquired, relative to a group, and gathers "the unwritten rules of the social game" (Hofstede, Hofstede, and Minkov 2010).

Applied to an organization, the notion of culture contributes to explaining why people behave as they do and how they achieve organizational stated or unstated goals (Chatman and O'Reilly 2016). It is a powerful management tool allowing members of the organization to act autonomously and consistently (Christensen 1997). Building on an anthropological and sociological viewpoint, Pettigrew defined organizational culture as a system of "publicly and collectively accepted meanings operating for a given group at a given time" (Pettigrew 1979, 574). Organizational culture is implemented through symbols, language, ideology, beliefs, rituals, and myths (Pettigrew 1979). In this seminal view, organizational culture was mainly considered as explicit; later scholars completed the picture by highlighting the implicit nature of some cultural processes. For example, Schein (2004) considers organizational culture as holding three levels:

- 1. Artifacts: These are visible organizational structures and processes, easy to observe but difficult to decipher or interpret. Artifacts include architecture of physical environment, language, technologies and products, clothing, manners of address, myths, published list of values, rituals and ceremonies, processes, and formal descriptions of organization.
- 2. Espoused beliefs and values: These are the strategies, goals, and philosophies adopted and justified.
- 3. Underlying assumptions: These are unconscious and taken-for-granted beliefs, thoughts, and feelings. Assumptions can also be defined as nonnegotiable values, inner pattern values that drive acts, decisions, processes, and behavior. "Culture change, in the sense of changing basic assumptions, is, therefore, difficult, time consuming, and highly-anxiety provoking" (Schein 2004, 36).

Although organizational culture has been widely studied by scholars, it is still recognized as not clearly defined (Cameron and Ettington 1988; Chatman and O'Reilly 2016). For example, many efforts have been made to disentangle the notions of organizational climate and organizational culture. Both concepts arose quite at the same time to analyze the same phenomena but were developed by separate communities: industrial—organizational psychologists for climate studies, using mainly quantitative surveys (Schneider et al. 2017), and business literature for cultural studies, mainly with a qualitative approach. Both climate and culture deal with shared meanings explaining psychological and behavioral phenomena, but culture is a collective, long-term (prescriptive) concept relying on unobservable beliefs,

while climate builds on an aggregation of short-term (descriptive) individual perceptions of the work environment. Nowadays both concepts are frequently studied together (Ehrhart and Kuenzi 2017; Madan and Jain 2017; Mearns and Flin 1999; Mehra 2020), with organizational culture considered as a precursor of climate and climate as an outcome of culture (Chatman and O'Reilly 2016).

#### The Relation between Organizational Culture and Values

The concept of human values is central to social sciences (Cheng and Fleischmann 2010; Rokeach 1973; Schwartz 2012), but the respective weight of values and practices in organizational culture is a controversial issue. Rokeach (1973) defines a human value as an "enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable" (Rokeach 1973). Values are a valid concept in different cultures (Schwartz 1994), and they hold six characteristics (Schwartz 2012): they are inextricably linked to affect; they refer to desirable goals that motivate action; they transcend specific actions and situations; they serve as standards or criteria; they are ordered by importance relative to one another; and this relative importance guides action. In his seminal work, Rokeach (1973) defines two kinds of values (Braithwaite and Law 1985; Cheng and Fleischmann 2010): Terminal values, which are the preferred end-states (e.g., Sense of accomplishment, World of peace, Freedom, Wisdom), and Instrumental values, which are the preferred means to achieve end-states (e.g., ambitious, courageous, helpful, honest, imaginative, logical, obedient, self-controlled). Some authors suggest that this list of values may no longer be relevant for our time (Tuulik et al. 2016).

In Hofstede's (1998) view, values are a relevant concept at the national and individual level, but not at the organizational one. He came to this statement after studying how the culture of a given company is implemented in several countries, regardless of the national and individual values of its members. Conversely, companies implanted in the same country can exhibit different cultures. People who gather for work come with their own values rooted in their personal history, their nationality, family, age, gender, study level, and so on (Hofstede et al. 1990). Values can hardly be changed when someone switches from a company to another one. However, people can adopt common symbols, heroes, and rituals within a given organization. Their socialization process at work is carried out through learning common practices, which can also be called "conventions," "customs," "habits," or "usages." Organizational culture is real for organizational members and stakeholders, including customers and suppliers. It is holistic, socially constructed, and reflects organization history; hence, it is difficult to change.

Contrary to Hofstede's view, many American scholars consider that values are essential constituents of organizational culture (e.g., Cameron and Quinn 2011; Cooke and Szumal 2000; O'Reilly III, Chatman, and Caldwell 1991; Schein 2004, 2016). American management

literature describes organizational culture through the statements of corporate heroes, often founders and leaders of the organization. As previously mentioned, one may distinguish between espoused values, which are "the articulated, public announced principles and values that the group claims to be trying to achieve, such as product quality, price leadership, or safety" (Schein 2016, 4), and alternative, underlying values, which are often contradictory and can only be perceived through observations (Schein 2016). To discover these hidden values, newcomers may, for example, note how leaders react to critical incidents or how they allocate reward and status (Schein 2016).

### **Models of (Organizational) Culture**

More than seventy instruments were designed to assess organizational culture (Jung et al. 2009). We discuss, hereafter, four cultural models in relation to Teal culture: Hofstede, Hofstede, and Minkov's (2010) seminal model of national cultures, or Software of the Mind; Cameron and Quinn's (2011) Competing Values Framework, which was used to characterize more than 10,000 organizations; Cooke and Szumal's (2000) Organizational Culture Inventory, which seems closer to a Teal philosophy; and O'Reilly III, Chatman, and Caldwell's (1991) Organizational Culture Profile, a model based solely on salient values.

#### Software of the Mind

Before examining the Teal paradigm in light of scholarly models of organizational cultures, we first analyze it on the basis of Hofstede's model of national cultures, at least for two reasons: first, because of the importance of this model in the study of culture in general, including organizational culture, and second, because one may wonder whether Laloux's (2014) vision of the society is culturally biased. Indeed, based on his first insights regarding a change in paradigm to overcome the limits of our era, Laloux looked eagerly for such new types of organization. He found companies corresponding to the evolution he had imagined, chose a dozen of them, and studied them carefully to formalize their common traits. All these Teal organizations happen to operate in Western countries (seven from the United States, two from the Netherlands, two from Germany, and one from France). Hence, we find it interesting to cross the Teal paradigm with a cultural rating system.

As previously emphasized, national cultures in Hofstede's view deeply rely on a set of core values acquired during childhood through family transmission. These values are implicit and not conscious until confronted with another culture. According to Hofstede, Hofstede and Minkov (2010), each culture embeds answers to six main questions, which leads to six cultural dimensions (Table 2): Power Distance, Uncertainty Avoidance, Individualism vs. Collectivism, Masculinity vs. Femininity, Long- vs. Short-term Orientation, Indulgence vs. Restraint.

Table 2. The Six Questions and Associated Cultural Dimensions		
Question	Dimension's Description	
How much (in)equality should there be among us?	Power distance	
How afraid are we of unknown people, ideas, and	Uncertainty avoidance	
objects?		
How dependent are we on our (extended) family?	Individualism vs. Collectivism	
How should a man feel, how a woman?	Masculinity vs. Femininity	
Do we focus on the future, the present, or the past?	Long- vs. Short-Term Orientation	
May we have fun or is life a serious matter?	Indulgence vs. Restraint	

Table 2: The Six Questions and Associated Cultural Dimensions

On a conceptual viewpoint, one may expect a Teal organization to show low power distance (consistent with Self-management), low uncertainty avoidance (consistent with its resilience capacities), high individualism (consistent with the underlying developmental model), a rather feminist profile (no gender bias in role taking, consistent with Wholeness and Self-management), a long-term orientation (consistent with its Evolutionary purpose), and an indulgent profile (consistent with Wholeness). Browsing culture data available for sixty-six countries and last updated in 2015 (Culture Factor Group, n.d.), Sweden appears to be the only country combining low power distance (thirty-one), low uncertainty avoidance (twenty-nine), high individualism (seventy-one), low masculinity (five), a long-term orientation (fifty-three), and high indulgence (seventy-eight). This analysis suggests that the Swedish culture may be particularly prone to let Teal organizations flourish, even if no Swedish organization was studied by Laloux. Now considering the sample of companies examined to set out the Teal paradigm (seven from the United States, two from the Netherlands, two from Germany, and one from France), their weighted cultural profile shows a middle-to-low power distance (41.25), a very high individualism (83.5) typical of advanced postindustrial democracies (Beugelsdijk and Welzel 2018), intermediate femininity (53.1), middle-to-short-term orientation (45.42), and high indulgence (61.75).

Examining the Teal paradigm through a cultural analysis drew our attention to two particular points. First, the cultural profiles closest to a Teal way of working all highlight an individualistic dimension that is highly consistent with the psycho-developmental models underpinning Laloux's evolutionary model, with an alternation of individualist and collectivist stages (Amber being collectivist, Orange individualist, Green collectivist, and Teal individualist). The second insight concerns long-term vs. short-term orientation. From a conceptual viewpoint, a long-term orientation, fostering perseverance and frugality, seems to match quite well to Teal organizations, but this was rather acknowledged as an oriental way of living in reference to Confucian ethics (Hofstede, Hofstede, and Minkov 2010). Besides, it appears clear that a short-term-oriented culture, such as US culture, does not seem to prevent

the development of Teal companies. Therefore, we may conclude that short-term vs. long-term orientation is not an essential dimension for Teal philosophy.

In summary, from a cultural viewpoint, Teal organizations are mainly characterized by high individualism, high indulgence, and low power distance. These traits account well for Self-management and Wholeness, but not for Evolutionary purpose. We will now examine several models of organizational culture to understand their capacity to capture Teal specificities.

#### The Competing Values Framework

Cameron and Quinn (2011) define organizational culture as reflecting the prevalent ideology among employees. Organizational culture contributes to their identity and provides non-written and non-spoken guidance on proper behaviors in the organization. It includes implicit, shared interpretations about how things are going around. It helps in stabilizing the social system and acts as social glue in the organization. However, people do not realize it until confronted with a new organization.

The Competing Values Framework (Cameron and Quinn 2011) is an organizational culture model built on two axes. The first deals with flexibility and discretion (room for manoeuvre) on one end and stability and control on the other end. The second dimension characterizes internal vs. external orientation: on one side organizations centered on themselves, and on the other side, organizations oriented toward external relations, differentiation, and competition. These two axes define four cultures—Hierarchy (stability and control, internal orientation), Market (stability and control, external orientation), Clan (flexibility and internal orientation), and Adhocracy (flexibility and external orientation)—as shown in Figure 1.

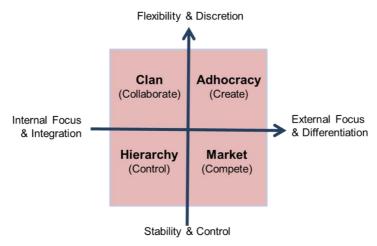


Figure 1: The Competing Values Framework

Source: Cameron and Quinn 2011

Each culture promotes specific features, such as leadership styles, driving values, or effectiveness domains (Table 3).

Table 3 Leadership Types, Values and Effectives of Each Culture Type

	Hierarchy	Market	Clan	Adhocracy
Orientation	Controlling	Competing	Collaborative	Creative
Leader	Coordinator	Competitor	Facilitator	Innovator
	Organizer	Producer	Mentor	Entrepreneur
	Organizer	Troducci	Team builder	Visionary
Values	Efficiency Consistency Uniformity	Market Goal achievement	Commitment Communication Development	Innovative output Transformation Agility
Effectiveness	Control efficiency Capable process	Aggressively competing Customer focus	Human development and participation	Innovativeness Vision New resources

In this framework, a Teal organization may score high on the Clan culture, which would mainly account for Wholeness (including mutual trust, commitment, openness, sharing a lot of oneself). One may also expect a Teal organization to exhibit traits related to innovation and vision, but the current diagnosis tool of the Competing Values Framework (OCAI questionnaire, Cameron and Quinn 2011) may actually prevent Teal companies from scoring high on Adhocracy, because it values innovation for its own sake or for the sake of growth, which does not leave any room for the Evolutionary purpose of Teal organizations. Finally, Self-management is not accounted for in any culture of the Competing Values Framework, as all of them consider the role of leaders and managers as essential to the culture.

In our view, Cameron and Quinn's (2011) model covers organizations operating in three different stages of Laloux's (2014) model: the Hierarchy culture matches best the Amber stage, Market and Adhocracy both exemplify the Orange stage, and the Clan culture best fits the Green paradigm. To date, the Competing Values Framework cannot account for the Teal paradigm, either for Self-management or for the notion of Evolutionary purpose.

### The Organizational Culture Inventory

This model of organizational culture (Cooke and Szumal 2000) draws on twelve thinking styles (Lafferty 1973) that were initially meant to analyze individual behaviors. They reveal organizational culture through aggregating individual assessments (Chatman and O'Reilly 2016). Organizational culture is considered here as a set of behavioral norms and expectations. The twelve cultural styles are clustered into three groups: Constructive styles (Achievement,

Self-actualizing, Humanistic-encouraging, and Affiliative norms), Passive/Defensive styles (Avoidance, Dependent, Conventional, and Approval norms), and Aggressive/Defensive styles (Perfectionistic, Competitive, Power, and Oppositional norms). Correlational research has shown the positive impact of Constructive styles and the negative impact of Defensive styles on individual and organizational performance (Balthazard, Cooke, and Potter 2006).

At first sight, Passive/Defensive recalls the Amber paradigm, Aggressive/Defensive the Orange one, and Constructive may correspond to the Teal paradigm. However, a closer look at each style's definition raises a small discrepancy between the Achievement norm ("Members are expected to set challenging but realistic goals, establish plans to reach those goals, and pursue them with enthusiasm") and the Teal philosophy. The notion of "challenging but realistic goal" could hardly account for the Evolutionary purpose, which is undoubtedly challenging, but is so high that it can somehow be considered as unattainable (like changing the world), in particular by a single person. Furthermore, regarding the way each one contributes to serving the purpose, Teal organizations reached a point where they overcame the need for setting plans and strategies, and rather built upon each member's personal way of thinking and acting, including instinct. In Teal organizations, there is no prescription for how to achieve goals and contribute to the purpose: a "sense and respond" approach replaces the Orange "predict and control" process.

Besides, Constructive styles may account mainly for Wholeness (through the Humanistic-encouraging and the Affiliative norms). The Evolutionary purpose may show up only indirectly through the Self-actualizing norm ("Members are expected to enjoy their work, develop themselves, and take on new and interesting tasks") and only at the individual (not the collective) level. Finally, the Self-management component of the Teal paradigm cannot be inferred from any cultural style included in the Organizational Culture Inventory. Hence, this model also fails to fully account for the Teal culture, in particular for Self-management and Evolutionary purpose.

## The Organizational Culture Profile

This instrument was designed to support recruitment (Chatman and O'Reilly 2016). Both organizational and individual cultures are measured and compared to predict employee—company compatibility. The Organizational Culture Profile focuses on key values (O'Reilly III, Chatman, and Caldwell 1991) that can be structured along seven factors (Sarros et al. 2005): Competitiveness, Social responsibility, Supportiveness, Innovation, Emphasis on rewards, Performance orientation, and Stability. The relation between a subset of twenty-three values and the Competing Values Framework (Cameron and Quinn 2011) was also studied (Marchand, Haines, and Dextras-Gauthier 2013), as shown in Table 4. Importantly, Marchand, Haines, and Dextras-Gauthier (2013) crossed organizational culture with several

psychological variables (employee depression, well-being, psychological distress, emotional exhaustion, and health outcome). The results mainly emphasize that the Clan culture is associated with positive individual impacts and the Market culture with negative psychological impacts (Marchand, Haines, and Dextras-Gauthier 2013). Hierarchy and Adhocracy appear more neutral.

Table 4: Correspondence between Competing Values Framework and Organizational Culture Profile

	Competing Values Framework			
	Clan	Hierarchy	Adhocracy	Market
file	1. Fairness	1. Being careful	1. Action oriented	1. Being competitive
Pro	2. Respect for the	2. Paying attention	2. Willingness to	2. Achievement
ure	individual's rights	to details	experiment	orientation
Cult	3. Tolerance	3. Being precise	3. Being quick to	3. Having high
ıal (	4. Being socially	4. Being rule	take advantage of	expectations to
tion	responsible	oriented	opportunities	performance
ııza	5. Being people	5. Security of	4. Being innovative	4. Being results
rgai	oriented	employment	5. Risk taking	oriented
<i>e</i> 0	6. Being team	6. Stability		5. Being analytical
n th	oriented			
fron	7. Working in			
Values from the Organizational Culture Profile	collaboration with			
Val	others			

Source: Cameron and Quinn 2011; Marchand, Haines, and Dextras-Gauthier 2013

Using the Q-sort method, we tried to position Teal organizations with regard to the latter set of twenty-three values. In our view, the most rewarded values in Teal organizations may be Being socially responsible, Fairness, and Working in collaboration with others, and the least rewarded Being competitive, Being rule oriented, and Being results oriented (see Table 5). By computing an index combining each value's rating in the four types of organizations from the Competing Values Framework, we obtained results consistent with our previous analysis based on the OCAI questionnaire (Cameron and Quinn 2011): Teal organizations mainly fall within the Clan category, Amber ones within the Hierarchy category, and Orange ones may score high both on Market and Adhocracy.

Table 5: Sorting of Values from the Organizational Culture Profile for a Teal Organization (Our Assessment Following the Q-Sort Method)

	Number of Values	Values of a Teal Organization (Our Sorting)
	N = 1  (Top 1)	Being socially responsible
	N=2	Fairness
		Working in collaboration with others
	N = 5	Achievement orientation
		Tolerance
ues		Willingness to experiment
Val		Being team oriented
Least (Bottom) to Most (Top) Rewarded Values		Being innovative
war	<i>N</i> = 7	Being people oriented
Re		Respect for individual's rights
(ob)		Being careful
st (1		Paying attention to details
Mo		Being precise
) to		Risk taking
tom		Action oriented
Boti	<i>N</i> = 5	Having high expectations to performance
ıst (		Being analytical
Lea		Stability
		Security of employment
		Being quick to take advantage of opportunities
	<i>N</i> = 2	Being rule oriented
		Being results oriented
	N = 1 (Last 1)	Being competitive

Consistent with the analysis we performed with the Competing Values Framework (Cameron and Quinn 2011), the present analysis, based on the Organizational Culture Profile, fails to fully account for the specificities of a Teal organization. The best represented trait remains Wholeness, which is well rendered through the values associated with Clan culture. Regarding the Evolutionary purpose, one may mention that the exercise of highlighting the strongest value of the organization (here: Being socially responsible higher ordered than anything else) better acknowledges this trait than Cameron and Quinn's (2011) cultural dimensions. However, the Self-management trait is still missing from the picture.

All in all, none of the reviewed models of organizational culture seemed to fully account for the culture of a Teal organization. However, as we will discuss, this endeavor revealed a lot about this research field and its future prospects.

#### **Discussion**

Teal organizations are a subject of attention and sometimes controversy: between enthusiasm to realize that humanistic and altruistic companies do exist and can flourish in today's world and skepticism with regard to their long-term survival and/or their true or hidden motivations. In Laloux's (2014) model of organizations, they are characterized by three defining features: Self-management as a disruptive way of making decisions, distinct both from hierarchical channels and participatory management; Wholeness regarding social and affective processes at work among company members; and a self-determined Evolutionary purpose transcending economic concerns to guide all activities toward a positive impact on the world. Because this organizational paradigm seems highly heuristic and consistent with several other signs of change (e.g., shift in employees' motivations, search for meaningfulness, spreading of post-materialistic values), the aim of this article was to examine the extent to which this kind of organization is really "new" or already accounted for in scholarly models of organizational culture. To this aim, we reviewed the corresponding literature and examined more particularly four cultural models: Software of the mind (Hofstede, Hofstede, and Minkov 2010), Competing Values Framework (Cameron and Quinn 2011), Organizational Culture Inventory (Cooke and Szumal 2000), and Organizational Culture Profile (O'Reilly III, Chatman, and Caldwell 1991).

### **Main Findings**

Challenging the compatibility of the aforementioned cultural models with the Teal paradigm resulted in two main findings. The first suggests that Wholeness and Self-management are not real organizational innovations attributable to Teal culture, as they are already accounted for in the literature. In particular, Wholeness can be found in all models: through indulgence and femininity dimensions (Hofstede, Hofstede, and Minkov 2010), in the Clan culture (Cameron and Quinn 2011), through the Humanistic-encouraging and the Affiliative norms of Constructive cultures (Cooke and Szumal 2000), and through many values listed in the Organizational Culture Profile (O'Reilly III, Chatman, and Caldwell 1991).

Self-management is a trait that is more difficult to find in the literature, as most models and theories of organizational culture put a strong emphasis on the role of leadership and management. We failed to find any insight related to an absence of managerial structure in any of the organizational models we investigated. The only concept related to Self-management was found in the model of national cultures, through the dimension of power distance—a low power distance being consistent with Self-management practices. Self-management may, thus, be transferred from a private rather than a corporate way of living.

The second finding resulting from our analyses highlights that the real organizational innovation of the Teal stage is the concept of a higher-order Evolutionary purpose. The

importance and/or nature of this organizational purpose is not accounted for in any model we studied. The only way of approaching the concept of a Teal purpose was to emphasize certain kinds of values from the Organizational Culture Profile (Marchand, Haines, and Dextras-Gauthier 2013). This observation has two implications, which we discuss next: it emphasizes the role of values in organizational culture, and it questions the implicit or explicit nature of culture.

### **Theoretical Implications**

As previously explained, major theorists in the field disagree on the role of values in organizational culture: some consider that organizational culture includes values, while others restrict it to practices. Regarding Teal organizations, and reviewing the story underlying their creation (Laloux 2014), we are inclined to think that a conflict of values was at the origin of most of them. In many cases, their founders or the persons who transformed them into Teal had strong values and beliefs and did so in reaction to dominant values surrounding their business sector (e.g., profitability, productivity, dehumanization, authoritarianism). They were driven by the willingness to work differently, purposefully, and congruently to their own personal values. This may support the view that values are an integral part of organizational culture. The main rationale against this position relies on the observation that people with different values can gather for work and accommodate the same organizational culture (Hofstede et al. 1990). This may still be true in most companies. However, consistent with global changes in values related to post modernization (Inglehart and Baker 2000; Inglehart 2020), and consistent with the development of consciousness, we believe that people may more and more seek to work in a company matching their personal values. Hence, the diversity of values among employees in a given company may tend to decrease in the future and the congruency between individual and organizational values may increase accordingly. For all these reasons, we now consider that values contribute to defining the organizational culture, in particular for Teal organizations.

However, electing the most prominent values of an organization may seem anecdotal with regard to the self-defining power of an Evolutionary purpose. In particular, we feel that trying to reduce the Evolutionary purpose to the values of the organization questions one of the central assumptions of the field, namely, the implicit nature of culture. Contrary to cultural traits and values, which can be considered implicit, informal, or unconscious (Hofstede, Hofstede, and Minkov 2010; Cameron and Quinn 2011), the Evolutionary purpose is a highly explicit trait that is shared and valued by all members of the organization (Laloux 2014). It can even be considered as pervasive in the everyday life and activities of a Teal organization, from recruitment, onboarding, training of members, to daily operations, minor to major decision- making at all levels. As the emergence of Teal organizations is

hypothesized to be linked to the development of human consciousness, we may consider that in such organizations, and contrary to organizations operating in other stages (e.g., Amber, Orange), culture becomes explicit. In the history of the concept, culture first existed without being studied (up to the twentieth century), then it was conceptualized as implicit and made explicit by scholars, and in the future, it may become an explicit dimension of social and psychological life. Accordingly, the definition of culture may evolve in the future, and this explicitness/conscientization may foster cultural change both in organizations and in society.

### **Practical Implications**

The development of human consciousness and self-determination may accelerate cultural transformation in the future. As previously emphasized, several developmental models focusing on individual, organizational, and cultural change are congruent in suggesting that human aspirations evolve over time toward higher-ordered motivational needs (e.g., purpose, meaningfulness) and post-materialistic values (e.g., autonomy, sustainability, social and environmental responsibility). Furthermore, self-determination levels empower individuals to take an active part toward transforming organizations and society. In this respect, all cultural models discussed in this article provide a valuable framework for understanding an organization's culture, thereby supporting self-awareness as a first step for change. Developmental models also help understand which transformations are within the reach of an organization in the short or the midterm.

Second, cultural models may also highlight possible paths for change (Cameron and Quinn 2011). Culture is one of the most difficult things to change (Schein 2016), and it may somehow seem easier to create a brand-new organization with already-convinced people than to engage in a costly persuasion process with people reluctant to change. Alternative ways to change can also be found through a commitment process (Kiesler and Sakumura 1966): unlike persuasion, which focuses on changing values in order to transform behavior, commitment focuses on changing behaviors in order to transform values. Cultural transformation can then follow the progressive adoption of new practices (Hofstede, Hofstede, and Minkov 2010; Cameron and Quinn 2011) through an internalization process. About thirty specific practices were observed in Teal organizations (Laloux 2014) regarding, for example, decision-making, onboarding processes, work–life balance adjustments, and so on (Davies and Buisine 2023) that can inspire CEOs to start a cultural shift toward Teal. The envelope manufacturer Pocheco is a good example of a company that changed its production practices one after the other over twenty-five years to meet its zero-impact goal and reach carbon and water neutrality (Druon, Dorval, and Davidson 2021).

Finally, our analysis of the Teal paradigm highlighted the Evolutionary purpose as a key characteristic of such organizations, powerfully driving all practices, everyday climate, and deep philosophy of thought and action in the long run. The role, nature, and importance of

evolutionary purpose cannot currently be captured by any model of organizational culture nor any existing measurement tool. Hence, the refinement of models and methods to analyze the Evolutionary purpose constitutes a major avenue for future research on organizational culture (Davies and Buisine 2023). This may enable researchers to formalize the rise of the Teal stage in our societies, fostering action at the individual, organizational, and societal level toward a positive impact on the world.

### **AI Acknowledgment**

Generative AI or AI-assisted technologies were not used in any way to prepare, write, or complete essential authoring tasks in this manuscript.

#### **Conflict of Interest**

The authors declare that there is no conflict of interest.

#### **REFERENCES**

- Andrade, Maureen Snow, and Jonathan H. Westover. 2018. "Generational Differences in Work Quality Characteristics and Job Satisfaction." *Evidence-Based HRM: A Global Forum for Empirical Scholarship* 6:287.
- Bakke, Dennis. 2006. Joy at Work. Seattle, WA: PVG.
- Bakke, Dennis. 2013. Decision Maker. Seattle, WA: Pear Press.
- Balthazard, Pierre A., Robert A. Cooke, and Richard E. Potter. 2006. "Dysfunctional Culture, Dysfunctional Organization: Capturing the Behavioral Norms That Form Organizational Culture and Drive Performance." *Journal of Managerial Psychology* 21 (8): 709–732. https://doi.org/10.1108/02683940610713253.
- Beck, Don Edward, and Christopher Cowan. 1996. Spiral Dynamics: Mastering Values, Leadership and Change. Malden, MA: Blackwell Publishers.
- Beugelsdijk, Sjoerd, and Chris Welzel. 2018. "Dimensions and Dynamics of National Culture: Synthesizing Hofstede with Inglehart." *Journal of Cross-Cultural Psychology* 49 (10): 1469–1505. https://doi.org/10.1177/0022022118798505.
- Braithwaite, Valerie A., and H. G. Law. 1985. "Structure of Human Values: Testing the Adequacy of the Rokeach Value Survey." *Journal of Personality and Social Psychology* 49 (1): 250. https://doi.org/10.1037/0022-3514.49.1.250.
- Cameron, Kim S., and Debaorah R. Ettington. 1988. "The Conceptual Foundation of Organizational Culture." In *Higher Education: Handbook of Theory and Research*, vol. 4, edited by John C. Smart, 429–447. New York: Agathon Press.

- Cameron, Kim S., and Robert E. Quinn. 2011. *Diagnosing and Changing Organizational Culture: Based on the Competing Values Framework*. 3rd ed. San Francisco: John Wiley & Sons.
- Chatman, Jennifer A., and Charles A. O'Reilly. 2016. "Paradigm Lost: Reinvigorating the Study of Organizational Culture." *Research in Organizational Behavior* 36:199–224. https://doi.org/10.1016/j.riob.2016.11.004.
- Cheng, An-Shou, and Kenneth R. Fleischmann. 2010. "Developing a Meta-Inventory of Human Values." *Proceedings of the American Society for Information Science and Technology* 47 (1): 1–10. https://doi.org/10.1002/meet.14504701232.
- Christensen, Clayton. 1997. The Innovator's Dilemma: The Revolutionary Book That Will Change the Way You Do Business. New York: HarperBusiness.
- Cooke, Robert A., and Janet L. Szumal. 2000. "Using the Organizational Culture Inventory to Understand the Operating Cultures of Organizations." In *Handbook of Organizational Culture and Climate*, edited by Neal M. Ashkanasy, Celeste P. M. Wilderom, and Mark F. Petersen, 147–162. Thousand Oaks, CA: Sage.
- Cucina, Jeffrey M., Kevin A. Byle, Nicholas R. Martin, Sharron T. Peyton, and Ilene F. Gast. 2018. "Generational Differences in Workplace Attitudes and Job Satisfaction: Lack of Sizable Differences across Cohorts." *Journal of Managerial Psychology* 33 (3): 246–264. https://doi.org/10.1108/JMP-03-2017-0115.
- Culture Factor Group. n.d. "Country Comparison Tool." Accessed October 20, 2022. https://www.hofstede-insights.com/fi/product/compare-countries/.
- Davies, Muriel, and Stéphanie Buisine. 2023. "Can Teal Practices Increase Employees' Work Engagement?" *European Conference on Management Leadership and Governance* 19 (1): 96–105. https://doi.org/10.34190/ecmlg.19.1.1662.
- Deci, Edward L., and Richard M. Ryan. 2000. "The 'What' and 'Why' of Goal Pursuits: Human Needs and the Self-Determination of Behavior." *Psychological Inquiry* 11 (4): 227–268. https://doi.org/10.1207/S15327965PLI1104 01.
- Druon, Emmanuel, Réjean Dorval, and Lisa Davidson. 2021. *Ecolonomy: One Hundred Companies Join the Transition Economy*. Arles, France: Actes Sud.
- Ehrhart, Mark G., and Maribeth Kuenzi. 2017. "The Impact of Organizational Climate and Culture on Employee Turnover." In *The Wiley Blackwell Handbook of the Psychology of Recruitment, Selection and Employee Retention*, edited by Harold W. Goldstein, Elaine D. Pulakos, Jonathan Passmore, and Carla Semedo, 494–512. New York: Wiley.
- Fortado, Bruce, and Paul Fadil. 2012. "The Four Faces of Organizational Culture." *Competitiveness Review: An International Business Journal* 22 (4): 283–298. https://doi.org/10.1108/10595421211247132.
- Graves, Clare W. 1970. "Levels of Existence: An Open System Theory of Values." *Journal of Humanistic Psychology* 10 (2): 131–155. https://doi.org/10.1177/002216787001000205.

- Heyns, Marita M., and Marilyn D. Kerr. 2018. "Generational Differences in Workplace Motivation." SA Journal of Human Resource Management 16 (1): 1–10.
- Hofstede, Geert. 1998. "Attitudes, Values and Organizational Culture: Disentangling the Concepts." *Organization Studies* 19 (3): 477–493. https://doi.org/10.1177/017084069801900305.
- Hofstede, Geert, Gert Jan Hofstede, and Michael Minkov. 2010. *Cultures and Organizations: Software of the Mind*. 3rd ed. New York: McGraw-Hill Professional.
- Hofstede, Geert, Bram Neuijen, Denise Daval Ohayv, and Geert Sanders. 1990. "Measuring Organizational Cultures: A Qualitative and Quantitative Study across Twenty Cases." *Administrative Science Quarterly* 35 (2): 286–316. https://doi.org/10.2307/2393392.
- Inglehart, Ronald. 1971. "The Silent Revolution in Europe: Intergenerational Change in Post-Industrial Societies." *American Political Science Review* 65 (4): 991–1017. https://doi.org/10.2307/1953494.
- Inglehart, Ronald. 1990 *Culture Shift in Advanced Industrial Society*. Princeton, NJ: Princeton University Press.
- Inglehart, Ronald. 2020. Modernization and Postmodernization: Cultural, Economic, and Political Change in 43 Societies. Princeton, NJ: Princeton University Press.
- Inglehart, Ronald, and Wayne E. Baker. 2000. "Modernization, Cultural Change, and the Persistence of Traditional Values." *American Sociological Review* 65 (1): 19–51. https://doi.org/10.1177/000312240006500103.
- Jones, Janet S., Samantha R. Murray, and Shelley R. Tapp. 2018. "Generational Differences in the Workplace." *Journal of Business Diversity* 18 (2): 88–97.
- Jung, Tobias, Tim Scott, Huw T. O. Davies, Peter Bower, Diane Whalley, Rosalind McNally, and Russell Mannion. 2009. "Instruments for Exploring Organizational Culture: A Review of the Literature." *Public Administration Review* 69 (6): 1087–1096. https://doi.org/10.1111/j.1540-6210.2009.02066.x.
- Kern, Margaret L., Lea E. Waters, Alejandro Adler, and Mathew A. White. 2015. "A Multidimensional Approach to Measuring Well-Being in Students: Application of the PERMA Framework." *Journal of Positive Psychology* 10 (3): 262–271. https://doi.org/10.1080/17439760.2014.936962.
- Kiesler, Charles A., and Joseph Sakumura. 1966. "A Test of a Model for Commitment." *Journal of Personality and Social Psychology* 3 (3): 349–353. https://doi.org/10.1037/h0022943.
- Lafferty, J. C. 1973. *Human Synergistics System Level I: Life Styles*. Plymouth, MI: Human Synergistics.
- Laloux, Frederic. 2014. Reinventing Organizations: A Guide to Creating Organizations Inspired by the Next Stage in Human Consciousness. 1st ed. Brussels: Nelson Parker.

- Madan, Manish, and Esha Jain. 2017. "Impact of Organizational Culture & Climate on Managerial Effectiveness: An Empirical Study." *Delhi Business Review* 16 (2): 47–57.
- Mahmoud, Ali B., Leonora Fuxman, Iris Mohr, William D. Reisel, and Nicholas Grigoriou. 2020. "'We Aren't Your Reincarnation!' Workplace Motivation across X, Y and Z Generations." *International Journal of Manpower* 42 (1): 193–209. https://doi.org/10.1108/IJM-09-2019-0448
- Marchand, Alain, Victor Y. Haines, and Julie Dextras-Gauthier. 2013. "Quantitative Analysis of Organizational Culture in Occupational Health Research: A Theory-Based Validation in 30 Workplaces of the Organizational Culture Profile Instrument." *BMC Public Health* 13 (1): 1–11. https://doi.org/10.1186/1471-2458-13-443.
- Mearns, Kathryn J., and Rhona Flin. 1999. "Assessing the State of Organizational Safety—Culture or Climate?" *Current Psychology* 18 (1): 5–17. https://doi.org/10.1007/s12144-999-1013-3.
- Mehra, Payal, and Catherine Nickerson. 2019. "Organizational Communication and Job Satisfaction: What Role Do Generational Differences Play?" *International Journal of Organizational Analysis* 27 (3): 524–547. https://doi.org/10.1108/IJOA-12-2017-1297.
- Mehra, Srishty. 2020. "Organizational Culture, Climate, and Workplace Deviance." In *Analyzing Workplace Deviance in Modern Organizations*, edited by Naman Sharma, 66–78. Hershey, PA: IGI Global.
- O'Reilly, Charles A., III, Jennifer Chatman, and David F. Caldwell. 1991. "People and Organizational Culture: A Profile Comparison Approach to Assessing Person-Organization Fit." *Academy of Management Journal* 34 (3): 487–516. https://doi.org/10.5465/256404.
- Pettigrew, Andrew M. 1979. "On Studying Organizational Cultures." *Administrative Science Quarterly* 24 (4): 570–581. https://doi.org/10.2307/2392363.
- Rokeach, Milton. 1973. The Nature of Human Values. New York: Free Press.
- Rudolph, Cort W., Rachel S. Rauvola, David P. Costanza, and Hannes Zacher. 2021. "Generations and Generational Differences: Debunking Myths in Organizational Science and Practice and Paving New Paths Forward." *Journal of Business and Psychology* 36 (6): 945–967. https://doi.org/10.1007/s10869-020-09715-2.
- Saba, Tania. 2021. Understanding Generational Differences in the Workplace: Findings and Conclusions. Kingston, ON: Queen's Industrial Relations Centre. .
- Sarros, James C., Judy Gray, Iain L. Densten, and Brian Cooper. 2005. "The Organizational Culture Profile Revisited and Revised: An Australian Perspective." *Australian Journal of Management* 30 (1): 159–182. https://doi.org/10.1177/031289620503000109.
- Schein, Edgar H. 2004. Organizational Culture and Leadership. 3rd ed. San Francisco: Jossey-Bass.
- Schein, Edgar H. 2016. Organizational Culture and Leadership. 5th ed. Hoboken, NJ: Wiley.
- Schneider, Benjamin, Vicente González-Romá, Cheri Ostroff, and Michael A. West. 2017. "Organizational Climate and Culture: Reflections on the History of the Constructs

- in the Journal of Applied Psychology." *Journal of Applied Psychology* 102 (3): 468. https://doi.org/10.1037/apl0000090.
- Schwartz, Shalom H. 1994. "Are There Universal Aspects in the Structure and Contents of Human Values?" *Journal of Social Issues* 50 (4): 19–45. https://doi.org/10.1111/j.1540-4560.1994.tb01196.x.
- Schwartz, Shalom H. 2012. "An Overview of the Schwartz Theory of Basic Values." *Online Readings in Psychology and Culture* 2 (1): 1–20.
- Seligman, Martin E. P. 2011. Flourish: A Visionary New Understanding of Happiness and Well-Being. New York: Free Press.
- Tuulik, Krista, Tauno Õunapuu, Karin Kuimet, and Eneken Titov. 2016. "Rokeach's Instrumental and Terminal Values as Descriptors of Modern Organisation Values." International Journal of Organizational Leadership 5:151–161.
- Welzel, Christian. 2014. "Evolution, Empowerment, and Emancipation: How Societies Climb the Freedom Ladder." *World Development* 64:33–51. https://doi.org/10.1016/j.worlddev.2014.05.016.
- Wilber, Ken. 2000. A Theory of Everything: An Integral Vision for Business, Politics, Science and Spirituality. Boston: Shambhala.

#### **ABOUT THE AUTHORS**

**Muriel Davies**: Researcher Lecturer, CESI LINEACT, Paris-Nanterre, Ile de France, France

Corresponding Author's Email: mdavies@cesi.fr

**Stéphanie Buisine**: Research Director, CESI LINEACT, Paris-Nanterre, Ile de France, France

Email: sbuisine@cesi.fr