

Foundations and Resources of Integral Leadership

LiFT Leadership
for Transition

Author: Elke Fein

with contributions and editorial support from Jonathan Reams



Contents:

0. Introduction
1. An overview of leadership theory, research and practice
2. Resources of integral leadership
3. The integral model of leadership – conceptual framing
4. Core dimension 1: Four quadrants
5. **Core dimension 2: Vertical development**

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LiFT Foundations & Resources Book – Chapter 5

The integral model of leadership – core dimension 2: Vertical development

“The keys to liveable futures (...) lie in human and cultural development, and in the maps that provide access to the shaping power of these widely overlooked domains.” (Slaughter, 2008, 137)

The second core dimension of the integral model that is particularly important to leadership theory and practice is the developmental axis. To the four different perspectives outlined in chapter 4, I now add a vertical dimension which highlights how phenomena and perspectives looking at them can differ and develop in complexity. This applies to all of the four spheres or quadrants described before. Integrating the developmental dimension is another key specific of the integral approach to leadership which, just as the focus on inner dimensions, clearly goes beyond more conventional conceptions of “holism”.

In the integral model, unfolding developmental complexity is an important feature of all living beings, including their joint endeavors. As all humans have the potential to develop their self, identity and ways of perceiving, processing and interacting with the world, this dimension is relevant not only for analyzing individual leaders' thinking and behavior, but also that of groups, organizations, states and their respective cultures, practices etc. The developmental dimension is crucial for a comprehensive understanding of leadership dynamics also because at different levels of development, individuals and groups have substantially different ways of perceiving, processing and acting upon their inner and outer environment. This directly impacts the level of skill with which leaders or, in the case of LiFT, Collaboratory designers and facilitators, are able to work with the respective context factors (setting and group of stakeholders and participants) they are dealing with at a specific event.

Inversely, the groups they are working with can equally differ considerably in the degree of complexity of their average culture of communication and decision-making. As most contexts require leaders to adequately respond to complex and dynamic interactions of all of these factors, their capacity to navigate this complexity likely depends on their having developed a certain depth of perception, understanding and coordinating multiple perspectives. This is why theories and models based on structuralist developmental research have been increasingly **influential in the field of leadership studies** (McCauley et al., 2006). What's more, personal development as such is increasingly acknowledged as an important predictor of successful leadership behavior (Rooke & Torbert, 1998, 2005).

The following chapter gives an overview of the research on **structural-genetic adult development** that has emerged based on the work of James Baldwin in the late 19th century and, in particular, Jean Piaget in the 1930s, and that from there has been taken on and elaborated further by a series of researchers, including Robert Selman, Lawrence Kohlberg, Karen Kitchener & Patricia King, Jane Loevinger, Susanne Cook-Greuter, Robert Kegan, Kurt Fischer, Michael Commons, Theo Dawson and others. The common ground of all of these approaches is that they look at structural patterns within the thinking and behavior of individuals, and at how these change and become more complex as the individual processes more experiences and thus, matures.

In terms of the four quadrants, the main focus of this chapter is on the Upper Left Quadrant, i.e. the interior development of the individual, since measuring development is most straightforward and has the most solid record here. Chapter 2 has already looked at a number of developments in the lower left and lower right quadrants (long-term developments and trends in economic and political cultures, as well as in the realm of social institutions) which give a good idea about how the developmental lens can be applied there. **This chapter** gives a summary account of the history of developmental research focusing on the individual, focusing on how different approaches contribute to our understanding of personal (and, connected to it, leadership) development and its assessment. Together, they point out how being aware of the developmental dimension is relevant for leaders in their dealing with complex situations.

A short overview of developmental research

“Development’ is a surprisingly difficult concept to define.” (Robinson, 2013, p.6)

5.1 Baldwin and Piaget

The core ideas of developmental psychology as described in this chapter were laid out by Baldwin (1861-1934) over 100 years ago. Influenced by evolutionary biology, he was the first one to take an organismic approach to development, and to use the term **genetic epistemology** to indicate the developmental, evolving nature of cognitive growth. Baldwin also developed the concept of “subject object theory” for describing the qualitative difference between the stages of growth in his model long before Kegan popularized the term (1895). On this basis, he questioned the contemporary habit of judging child/infant consciousness and behavior purely from the vantage point of adult consciousness (Reams, 2014, p. 124).

While working in Paris (1908-1934), Baldwin had considerable influence on Jean **Piaget** (1896-1980) who took over his ideas of stage development and conducted more systematic research on genetic epistemology (1954). Through his work with colleagues from psychoanalysis and intelligence testing, Piaget developed methods for identifying, testing and measuring cognitive development, namely semi-structured **interviews**. When looking at how individuals made sense of certain perceptions, Piaget put his focus on typical epistemological structures and how they evolved. Piaget is most known for his study of children’s reasoning and play, in result of which he came up with a systematic classification of cognitive performances sorting them by structural types that built a hierarchical taxonomy of developmental levels (Stein & Heikkinen, 2009, p. 11). From his empirical, observation-based studies it became very clear that the epistemological structures he found formed a sequence of developmental levels that individuals moved through as their thinking evolved.

Besides identifying the structural stages of children’s cognitive development, Piaget also studied moral development, for instance in relation to how children perceive and build rules, and how they change their relation to them as they grow up. He also had a deep interest in the processes themselves that enabled epistemological structures to develop (Reams, 2014, p. 124). In a nutshell, these consist of an alternation between assimilation, accommodation and adaptation, re-occurring on every new level of perception and meaning-making. *Assimilation* occurs when impressions or perceptions from the external world fit and therefore can be integrated into the existing cognitive order. In contrast, when

new facts enter perception which cannot be easily fit into the existing cognitive order, they have to be *accommodated* by re-arranging and transforming that order. *Adaptation* refers to the process of building new equilibriums. The table below shows Piaget's stage model and the skills related to each level of cognitive development.

Piaget's stages of cognitive development

Average age (years)	Name of stage	Skills	Examples / experiments conducted
12/15 - adolescence	Formal-operational	Logical thinking, mental operations with several variables, propositional thinking, logical solutions to abstract problems (what if?)	causality, algebra, metaphors, formulae...
7-12	Concrete operational	Simple abstract thinking (beyond concrete perceptions), hypothetical thinking (if-then)	Conservation task
2-7	Pre-operational	Imagination, magical thinking, mental representations, egocentrism	Failing in conservation task
0-2	Sensory-motor	Acting out reflexes, touching objects, learning movements and physical coordination, targeted movements	

An important concept that Piaget has introduced is that of **egocentrism**. By his, he understands an individual's (degree of) being focused on themselves, and to perceive the external world through the lens of their own needs and wishes. Egocentrism is thus not a normative or morally loaded, but rather a descriptive term. Piaget's core claim is that egocentrism decreases with increasing development, since as a result of the latter, individuals are able to take more and more aspects and dimensions of reality outside of their own subjective realm into consideration.

Since the beginning of Piaget's groundbreaking research, many colleagues students and followers have tested and applied Piaget's model in various contexts and cultures (Dux, 2011). They have found and confirmed that the sequence of developmental levels identified by Piaget is the same across cultures, and that none of the stages can be skipped by an individual. At the same time, intercultural comparative work has also shown that how far individuals develop up the "ladder" of potential development described by the model differs in different contexts, depending on the degree of incentive and support that is provided to individual development by the social context.

In his overview of developmental research, Reams (2014, p. 127) mentions that based on Piaget, there is a "**general agreement** around there being three or four structural levels, that the higher levels include the lower ones, and that there is a characteristic age range for the acquisition of these levels. It was also agreed that there is a cyclical recursion of sublevels within each level".

While Piaget as one of the most important originators of the research underlying this overview was initially focusing on children, my interest here is primarily in **positive adult development**. By this, I mean the possibility of life-long personal growth and maturation in multiple dimensions of thinking, knowledge processing and skill throughout adulthood. Piaget had found formal operations to be the highest and most complex structure of thinking in children and adolescents and did not extend his work into exploring development beyond this structure, even though he conceded that there may be further stages beyond what he had theorized (Piaget, 1972, quoted after Robinson).

Only the post-Piagetian, or so-called **Neo-Piagetian research** started to shift its focus towards learning in adulthood. Moreover, the field of adult development research as we know it today constituted itself

Box 1: Four general criteria are commonly used to classify structural development in the models presented here:

1. qualitative difference between the structures used,
 2. an invariant sequence of structures,
 3. these sequences forming a structural whole, or an underlying organization of thought,
 4. the stages being hierarchically integrated, taking in previous stages while also increasing differentiation.
- (Reams, 2014, p. 128)

based on the idea – and the observation – that adults tend to develop **beyond Piaget’s formal operations**, at least in highly developed countries where the overall social and institutional culture supports and is based on comparatively complex thinking, communication and interaction.

In the 1980s, a community of researchers started to convene around the idea of going “Beyond Formal Operations”. Two symposia were hosted at Harvard University, focusing on “The Development of Adolescent and Adult Thought, Epistemology, and Perception” (Commons et al., 1989, xi), exploring how “adults develop new ways of understanding and knowing that are qualitatively different from that of adolescents”

(Robinson, 2013, p. 59-60).

At the same time, the field of adult development psychology is **broader than just its post-Piagetian strands**. In his textbook on “development through adulthood”, Oliver Robinson uses the term as “a signifier for the totality of enduring changes in adulthood, both positive and negative” (Robinson, 2013, p. 7). The tradition of positive adult development research thinks of “positive development” as an “optimal” development in either of five dimensions: *orthogenetic* (greater complexity), *evolutionary* (reproductive success), *veridical* (fewer biases and false beliefs), *eudaimonic* (fulfillment and well-being) and *virtuous* (morality and righteousness). While some of these dimensions seem to at least partly overlap, only the orthogenetic dimension has the benefit of its core category, complexity, being measurable and not requiring an interpretative value-judgement (Robinson, 2013, p. 7f.). The rest of this overview will therefore focus on the Neo-Piagetian strands, taking epistemic structures of various kinds as their main unit of analysis, not individuals as such.

So what are these structures developing in adults, how does this happen and how can this development be measured? Personal development being a highly complex phenomenon in itself, research after Piaget has differentiated into various strands that, while roughly following the general criteria mentioned in the box 1 above, have focused on different aspects, elements or components of development. In doing so, researchers have come up with various ways of conceiving and operationalizing, as well as of exploring and measuring development in the respective areas they were focusing on.

When comparing some of the most prominent strands that have emerged after Piaget, we find both communalities and differences in their approaches to exploring epistemic cognition. All of the strands described below work with Piaget’s idea that development occurs towards a greater level of integrated complexity, generating **new capacities for thinking and problem solving**, based on the four general criteria listed in the box above. In other words, higher levels of development must include qualitatively new skills and abilities and be an advance along the orthogenetic (more complex) and veridical (more accurate, truthful) directions (Robinson, 2014, p. 49-50).

At the same time, their differing notions of what exactly develops, and how, has led to the distinction of so-called **hard and soft stage models** (see section 5.3 below). In addition, Kohlberg has coined the

term “functional stages” for characterizing the models of Erik Erikson and Harry Stack Sullivan. In a nutshell, the tradition of “hard” modelling has been founded by the work of Lawrence Kohlberg, building up on empirically observable and measurable actions. The tradition of “soft” modelling was essentially developed by Jane Loevinger, drawing on Sullivan’s earlier work (see below). Both of them were concerned with an aspect of meaning-making that had already been looked at by Piaget, namely moral judgement, i.e. how individuals reason about moral dilemmas.

5.2 Selman and Kohlberg

Robert Selman (* 1942) has been a student of Lawrence Kohlberg at Harvard University. Yet, for understanding the development of consciousness, it makes sense to look at his contribution to the study of social cognition before presenting Kohlberg’s work itself. For Selman’s research has focused on social cognition and perspective taking which are essential preconditions of moral judgement as it has been studied by Kohlberg. Selman’s specific contribution to the field of adult development is that he found **social cognition** to be a specific, independent competence, different from cognitive competence per se as studied by Piaget. According to Selman, social cognition requires a certain degree of general cognitive skill, but cannot be reduced to the latter, rather, it is an ability that emerges as a result of general cognitive growth.

Selman (1971,1980) describes the development of social cognition as the increasing ability to perceive and successfully coordinate the perspectives of different social actors, which then allows to integrate them into one’s own meaning-making an judgment. A higher ability to integrate perspectives leads to a greater sensitivity in interpersonal conflicts (cooperation skills, empathy etc.) and thus, to a higher level of interpersonal competence.

As an educational psychologist, Robert Selman’s point of departure was his interest in how children develop what is at the heart of social competence, namely the ability of perspective taking. He looked at how this capacity unfolds as children mature. Selman’s theory of perspective taking distinguishes two components of this capacity, first, the ability to differentiate perspectives and second, the ability to coordinate and integrate them. Differentiating perspectives means the ability to recognize that other people have their own perspective and views on things, i.e. views that differ from the child’s own. Later, children also become aware that the perspectives of different people also differ between themselves. As development proceeds, this interpersonal understanding potentially becomes deeper and still more differentiated in that it starts to include an awareness of other peoples’ inner worlds, including the drivers and influencing factors causing them to hold a certain perspective. In other words, **the egocentricity of the early stages gradually decreases** in the course of the process of development. Instead, the person’s perspective becomes more and more decentered. Researchers such as Batson and Schoenrade have conducted similar studies, looking at the relationship between role taking and empathy. They found empathy to be a product of role-taking skills.

This illustrates that the skill of social perspective taking includes both cognitive, interpersonal and emotional/affective elements. It therefore goes beyond mere perceptual perspective taking, i.e. the ability to recognize another person’s visual point of view of the environment as studied by Piaget. While the latter was mainly concerned with the development of an increasingly adequate understanding of the physical environment, Selman’s research ultimately looks at the preconditions of successful communication, social interaction and prosocial behavior.

The second element of Selman's theory, **coordinating perspectives**, therefore refers to the skill of relating other peoples' perspectives to one's own as part of social interaction. Perspective or role taking, allowing to better appreciate how peoples' actions come from certain social roles they might hold, can be considered one aspect of this. Another aspect is to see how our own actions will likely affect those of others. In a broader sense, the ability to actively coordinate one's own perspective with that of others, based on mutual understanding and sometimes active negotiation, is conceived as "**social competence**".

As children develop their social cognition, thus deepening their understanding of other people, including their thoughts, feelings, moods and motivations, and as they increase their capacity to coordinate multiple points of view towards shared social experiences, they also develop skills to manage their social relationships and to actively take roles within the larger culture and society. They become more generous, more cooperative, and more apprehensive to the needs of others. So while perspective and role taking positively relates to prosocial behavior, egocentrism and low role taking, in contrast, are related to social deviance and low skills to recognize and solve problems. Social cognition is therefore also an important element of successful leadership.

Box 2: Selman's Holly dilemma

Holly is an avid 8-year-old tree climber. One day, Holly falls off a tree, but does not hurt herself. Holly's father sees this and makes Holly promise that she will stop climbing trees, and Holly promises. Later, however, Holly and her friends meet Shawn, a boy whose kitten is stuck in a tree. Holly is the only one amongst her friends who can climb trees well enough to save Shawn's kitten, who may fall at any moment, but she remembers the promise she made with her father. After telling this story, Selman asks children about the perspectives of Holly and her father and their behaviors (see table below for typical responses).

Similar to what other complexity-based developmental models have found, **what causes or promotes the development** of social cognition is a combination of a certain degree of challenge, positive incentives, role models and/or other forms of suitable support, providing incentives to continue one's growth and not give up in the face of difficulties. Moreover, difficulties such as being confronted with contradictions, discrepancies or disagreements between close friends, or the challenge of solving specific problems in one's living environment can be powerful drivers of expanding role taking skills and social cognitive growth. Other supportive factors can be social experiences and examples, such as parental influence, for instance helping to solve sibling disagreements. In fact, Selman himself has engaged considerably during his professional career to promote children's ability to understand others' perspectives and beliefs, to form good social relations with others and to promote civic and moral engagement in youth. He conducted work in civic education and implemented civic engagement initiatives in schools, helping to strengthen students' conflict-resolution skills.

In terms of measurement and research tools, Selman has drawn on sources like the work of Feffer, Gourevitch, Flavell and others for developing his conceptual model, but has also conducted empirical research of his own. An important tool he uses are stories with social justice themes, and exercises in perspective taking, such as **the Holly dilemma** (see box 2), designed to test children's ability to differentiate and coordinate the different perspectives of characters in the story. On this basis, he has modelled the development of social perspective taking as it typically occurs between the ages of 3 and 15 years.

Selman's model of the development of social perspective-taking

Average age (years)	Name of stage	skills	Example of reasoning (Holly dilemma)
12/15 - adolescence	4 – Social role-taking	Considering others' perspectives with reference to the social environment and culture the person comes from, assuming that the other person will think and act according to their society's norms and values	Holly should not be punished. Her father should understand that we need to treat animals with care.
10-12	3 – Mutual role-taking	3 rd person perspective; distinguish own perspective from the typical viewpoint of an average group member. Integration: simultaneously consider his/her view of others and others' view of the child, and the consequences of this feedback loop of perspectives in terms of behaviour and cognition.	Holly wanted to get the kitten because she likes kittens, but she knew that she wasn't supposed to climb trees. Holly's father knew that Holly had been told not to climb trees, but he couldn't have known about the kitten.
8-10	2 – Self-reflective role-taking	Increased differentiation: understanding differences in social perspectives based on differing values and personal purposes; ability to take others' perspectives and see/follow their reasoning (exception: what regards the child themselves)	Her father will understand why she did it." considering the father's perspective in light of Holly's perspective; would the father want Holly to climb the tree? No. Solely considering the father's point of view and his worry for Holly's safety
6-8	1 – Subjective role-taking	Differentiation between own and others' perspectives and views; but failure to integrate and understand influences behind the views of others; belief that there is only one truth and differing social perspectives are due to different information.	"If he didn't know why she climbed the tree, he would be angry. But if he knew why she did it, he would realize that she had a good reason"; failure to recognize that the father may still be angry, because of his own values (his concern for his daughter's safety)
3-6	0 – Egocentric role-taking	Egocentric perspective: problems are essentially viewed through the lens of one's own needs and desires. Two abilities are lacking: to distinguish (differentiate) and to relate (integrate) different perspectives; inability to see reasons or motives behind others' perspectives or action	Holly will save the kitten, the father will not mind Holly's disobedience, because he likes kittens and will be happy. Inability to separate his and Holly's perspectives

As indicated earlier, Selman's work on perspective taking builds an important bridge between Piaget's findings about the development of cognition and Kohlberg's studies on moral development, even though this essentially took place after Kohlberg had developed his own model. For some correlations between both models see below.

In view of leadership, social competence and skills around taking and coordinating perspectives are essential for any kind of teamwork and for leading teams of any size. In the Collaboratory, these skills are actively invited and practiced in all parts of the process.

Lawrence Kohlberg (1927-1987) is by far the most important Neo-Piagetian researcher. Building up on what Piaget had already started to study, namely children's reasoning about certain rules of their play, Kohlberg developed a solid, six stage model of **moral development** from the late 1950s on. His work also reflected and drew on philosophical theories of justice (John Rawls), as well as on earlier developmental philosophers like Mead, Baldwin and Dewey, all suggesting that reasoning and social action become more complex as individuals mature.

What Kohlberg (1958, 1981, 1984) took over from Piaget was the idea that development occurs in stages of increasingly complex structures of reasoning and meaning making as individuals grow up and deal with more and more complex challenges they are confronted with in their social environments. Given that ideas about what's right and what's wrong are learnt from role models and the social environment, these ideas develop partly as a result of the child socializing into progressively larger and more inclusive social environments (starting with the family, then extending to friends, peer groups, communities, the nation, etc.).

Another important element that Kohlberg took over from and then elaborated beyond Piaget was the distinction between the **content and structure** of what develops. What this means becomes clearer by looking at some examples for each of the stages of his model below.

What is new in Kohlberg's work is that he did not limit his experiments to children and youth, but expanded them into adulthood. Kohlberg's main experiential **tool** was a set of **moral dilemmas** that he presented to test takers, combined with semi-structured interviews which helped him to probe into candidates' reasoning, argumentation and meaning-making about the dilemmas. The most famous of Kohlberg's tools is the **Heinz dilemma**, but other dilemmas have been used as well for working with more specific target groups.

While test takers might come up fairly quickly with an intuitive response, Kohlberg was interested less in the content of the answer (Yes or No), but rather in the reasons that test takers gave for their choice. In order to explore these, and thus, to determine the underlying structures of thinking, interviewers use a set of typical probing questions, inviting the test-taker to elaborate on their reasoning, i.e. the number of perspectives and factors they considered when giving their response. The latter allowed Kohlberg to analyze the structural complexity of their reasoning and thus, their stage of moral development. Starting in the 1950s, he gathered a large number of interviews, which were used to construct ideal types of reasoning based on their normative content. Gradually, structures were then inferred from the patterns in the material. The earliest scoring manual developed on this basis came out in the context of his dissertation published in 1958 and has since then seen several new editions.

Similar to Piaget's and Selman's findings, moral development as conceived by Kohlberg follows a path of **decreasing egocentrism**, i.e. self-centeredness, and increasing capacity to integrate other people's

Box 3: *The Heinz Dilemma*

A woman was on her deathbed. There was one drug that the doctors thought might save her, a form of radium that a druggist in the same town had recently discovered. The drug was expensive to make, but the druggist was charging ten times what the drug cost him to produce. He paid \$200 for the radium and charged \$2,000 for a small dose of the drug. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together about \$1,000. He told the druggist that his wife was dying and asked him to sell it cheaper or let him pay later. But the druggist said: "No, I discovered the drug and I'm going to make money from it." So Heinz got desperate and broke into the man's laboratory to steal the drug for his wife. Should Heinz have broken into the lab to steal the drug for his wife? Why or why not?

perspectives into one's own sense-making. At the same time, the **decisive authority** that is referred to in view of how to solve the dilemma moves from physical/raw power (punishment) towards ever more indirect, internalized and abstract sources as development proceeds.

For instance, a more self-centered reasoner at an early level of development might respond that stealing the drug is ok, because Heinz needs his wife to do the cooking and cleaning the house for him. In other words, the criteria for right and wrong is what serves one's own interest or not. A very highly developed individual, reasoning on a principled level, might also respond that stealing the drug is ok, yet for entirely different reasons, namely the value of human life as compared to making money. This nicely illustrates the **difference between structure and content**: the model holds that for assessing an individual's level of moral reasoning, the content of what they suggest that Heinz should do is not relevant, but rather the complexity of perspective awareness showing up in their justification of their answer.

The table below illustrates Kohlberg's model of moral development. It consists of three main levels of moral reasoning (pre-conventional, conventional and post-conventional) with two sub-stages each.

Kohlberg's stages of moral development

Main level	Stage		Typical responses to dilemma: Should Heinz steal the drug?	
	(7)	(hypothetical)	Answer "Yes", because...	Answer "No", because...
Post-conventional morality	6	Universal ethical principles	saving a human life is a more fundamental value than property rights of another person.	others may need the medicine just as badly, and their lives are equally significant.
	5	Social contract (may conflict with moral principles)	everyone has a right to choose life, regardless of the law.	the scientist has a right to fair compensation. Even if his wife is sick, it does not make his actions right.
	4	Authority and social-order maintaining, law and order	should steal the drug, but also take on the prescribed punishment and pay the druggist what he is owed. Criminals cannot just run unpunished; actions have consequences.	the law prohibits stealing, making it illegal.
Conventional morality	3	Social expectations, interpersonal accord and conformity, good boy/girl	... his wife expects it; he wants to be a good husband.	stealing is bad and he is not a criminal; he has tried to do everything he can without breaking the law, you cannot blame him.
	2	Exchange, self-interest, <i>what's in it for me?</i>	... he will be much happier if he saves his wife, even if he will have to serve a prison sentence.	prison is an awful place, and he would more likely languish in a jail cell than over his wife's death.
Pre-conventional morality	1	Obedience and punishment	... it is only worth \$200 and not what the druggist wanted for it; Heinz had even offered to pay for it and was not stealing anything else.	... he will consequently be put in prison which will mean he is a bad person.

While Kohlberg's empirical work focused on test-takers' reasoning about moral dilemmas, he was aware of the difference between moral reasoning and moral action (which he therefore distinguished). Yet, Kohlberg was less preoccupied with fostering moral behavior than Selman, for instance. Later research has focused more strongly on the fact that a certain moral reasoning capacity was not necessarily a guarantee that the person would also implement their very reasoning into action. This phenomenon has become widely observed when it comes to differences between peoples' ecological awareness and their behavior. It has become known as the "morality gap" or "value-action-gap" (Blake, 1999, and Kollmuss & Agyeman, 2002) and has been studied extensively by sustainability researchers, yet not necessarily from a developmental perspective.

cognition > social cognition / role taking > moral judgement > moral action

To sum up a core conceptual relation between the dimensions of development studied by Piaget, Selman and Kohlberg, certain levels of cognition and perspective taking have been found to be **necessary but not sufficient** prerequisites of corresponding levels of moral development. Cognitive development implies a progressive understanding of the environment as it is. Perspective taking builds up on this, recognizing that different people each have their own subjective perception and interpretation of the environment.

This also includes their patterns of thinking about and their behavior towards other people. Moral development, building up on the former two, revolves around how people should think and behave towards one another based on certain rule, values and principles. One of the **implications** from this is that programs aiming at fostering moral development and education based on Kohlberg's theory must make sure that the necessary levels of cognitive and role taking abilities have developed.

Kohlberg's work has been hugely influential and inspired a considerable number of students which cannot all be mentioned here. While Kohlberg's work is considered a hard stage model (for more details see section below), some of the later adaptations have partly modified the notion of stage to make it more flexible. One of his immediate followers who developed Kohlberg's work further was **James Rest** (1973, 1980; Rest et al., 2000). He has tried to take up some of the criticisms against Kohlberg's theory, and has developed the **Defining Issues Test**, which is based on the notion of "moral schemas" instead of stages.

A well-known criticism put forward against Kohlberg came from **Carol Gilligan** (1982). She argued that he had used only male test persons, and that when studying females' moral development (which she did), different patterns of reasoning could be found. However, while Gilligan found that girls and women were more oriented to relationships than rules, due to gender identification with the (typically female) primary care giver, she ended up finding similar structural stages in girls and women as well. So women grew through stages with a relational focus, while boys, because of developing gender identity as different from their mothers, tended more towards abstract rules.

Another research strand drawing heavily on Piaget, Kohlberg and other neo-Piagetians are **Patricia King and Karen Kitchener's** studies on the development of **reflective judgement** and ways of knowing (1994, 2004). They have focused on analyzing students' abilities for problem-solving and complex reasoning since the 1990s and tested it in relation to their ways of making judgments about controversial (ill-structured) problems. Their findings about how peoples' epistemological assumptions

differ and evolve are highly relevant for explaining why researchers favor certain research strategies over others for validating their theories. In fact, it allows to look at the level of epistemological complexity of research as a function of the initial choices of the researcher.

While Kitchener & King do draw on the earlier described work, for instance in the way their Reflective Judgement Interview is constructed, they also build on Loevinger's studies into ego development (for the "soft stage" models, see below). Also, they stress some specifics of their own approach, in particular their focus on adult life and on contextual impacts of development:

"Our data led us to reject two well-known assumptions espoused by prominent theorists from this [the (neo)Piagetian, E.F.] tradition. First, unlike Piaget, we do not assume that cognitive development is best measured by deductive reasoning, nor do we assume that it is complete with the emergence of formal operations at age 16 (indeed, our data show that this is not the case). And in contrast to Kohlberg, we do not claim cross-cultural universality, and we endorse Rest's (1979) concept of a complex rather than a simple stage model of development." (King & Kitchener, 2004, p. 9)

And while they have focused on late adolescents and adults (undergraduate and post-graduate students), similar research has been done with younger students and pupils by Rebecca Hamer and Eric van Rossum. Their model includes six stages of epistemological development that are expressed in students' different ways of learning and being able (or not) to contextualize information and reflect about it independently of external authorities.

*Kitchener & King's Reflective Judgement Model (RJM)**

Stage	Character	Concept of knowledge	Age range
1	Pre-reflective reasoning	Absolutist assumptions about the nature of knowledge. A single, concrete system of knowledge can be accessed by observation	High-school students
2		Knowledge is incomplete, because not everyone has access to it	
3		Even legitimate authorities may not know things with certainty	
4	Quasi reflective reasoning	Knowledge is inherently uncertain, because we always have incomplete information	Undergraduate students
5		There is no objective knowledge, we can only know based on our subjective context and interpretation of data and their respective rules of inquiry	
6	reflective reasoning	Some judgements are better (more rational, reasonable, evidenced, well-founded) than others beyond their coming out of a specific context	Graduate students
7		Truth is an evolving entity. It emerges via critical thinking, comparing and contrasting existing views, aiming for constant justification of one's position	

* Taken from Robinson, 2014, p. 54f.

Both Kitchener & King's and Hamer & van Rossum's work shows that many students are not prepared to engage in the kind of critical and reflective thinking they are expected to display in higher education institutions. This kind of thinking only emerges gradually as student are increasingly confronted with complex challenges and progress on their learning journey. Not every student will make the same progress though. Similar lacks of complex thinking and processing of their environment have later been observed in leaders by ego development researchers (see section 5.1.4 below).

5.3 “Hard” versus “soft” stages and the question of measurement

As indicated earlier, Kohlberg’s strand of developmental modeling is based on a so-called “hard” notion of stages. It makes more rigorous demands about the criteria for constructing stages than the so-called “soft” models do. In particular, hard stage models – which are mostly domain specific and thus have a rather clear focus as to what it is the development of which they are studying. For Piaget, it was cognition, where the achievement of a certain level could clearly be tested by Piaget’s experiments. For Kohlberg, it was moral reasoning, where reaching a certain level goes along with demonstrating certain structural patterns of reasoning in response to the probing questions about moral dilemmas.

This level of rigor and precision is obviously more difficult to meet when it comes to analyzing the development of broader, more holistic entities such as entire self systems as it is done by ego development models. The latter try to map how concepts of the self emerge and change over time. For this they have to include a much broader range of aspects than the hard stage models, including their multiple interrelations. Moreover, all of what the hard stage models described earlier have found is taken into consideration and included by ego development theories in a similar way as cognitive development is a necessary but not sufficient precondition for certain levels of moral reasoning.

At the same time, there is a lot of agreement between both hard and soft stage researchers when it comes to their understanding of the basic parameters of development as summarized earlier (the wholeness of each structure, the invariance of the sequence of stages and their hierarchical integration).

In terms of measurement, the soft stage models which will be described in more detail below, are interested in how “fairly stable” personality traits nevertheless undergo substantial transformations over time as the person grows. Therefore, they need to come up with a theoretical representation of their stages that can serve as ideal types and reference points for measuring change. However, what can be measured in terms of development here is a more gradual process, comprising a variety of elements and dimensions at the same time, rather than either clearly meeting or not meeting specific task demands of a particular stage.

So what might be regarded as a criticism related to the “softness” of ego development stages, namely that “Loevinger defines her stages partly in terms of structures, but also partly in terms of functions and motives pertaining to the whole self and its enhancement and defense” (Kohlberg, 1984, p. 243), is in fact due to the comparatively complex nature to the subject of study, the ego or self system.

As to the tools and methods of measurement used for this, ego development theory as conceived by Jane Loevinger (1970) has been working with qualitative methods of data collection and analysis, in particular sentence completion tests and content analysis, which have been designed to reveal the ways in which individuals make meaning of various typical situations and

Box 4: *Hard versus soft stages*

Hard stages are considered to relate to empirically observable and measurable actions in direct ways.

“For Piaget (1970), a **structure** is a system of transformational laws that organize and govern reasoning operations. This formalized governing system is reflected or manifested in individuals’ actual responses to conflicts or problems” (Kohlberg et al., p. 242).

Soft stages hypothetically derive structures from underlying constructs within the content of their data. It is inferred from signs taken from certain substantial categories in the sentence completion data, which are mixtures of content with structure.

“Loevinger’s **scheme** considers structure less as a form of thinking and more in terms of fairly stable personality functions and contents” (Kohlberg et al., 1984, p. 242).

challenges in life. The responses gathered from thousands of questionnaires and thinking protocols have then been aggregated inductively to build stages around a set of ideal typical patterns reoccurring in a sufficiently large number of protocols. Instead of producing a single score, ego development tests conducted based on this model typically produce a profile of the test taker's performance. It includes not only their average score of their reasoning, but also a larger bandwidth of sub-performances on various of the tested tasks. This is due to the observation that most individuals perform higher on certain tasks than on others, and that their average or dominant score or stage (calculated based on the whole set of responses) might not be actualized in every single response, due to personal or environmental circumstances. I will look at some of these ego development models in some more detail now.

5.4 Jane Loevinger, Susanne Cook-Greuter and Bill Torbert

The notion of "self-system" was first used by **Harry Stack Sullivan**, the founder of interpersonal psychoanalysis and theoretical spin doctor of the community health movement, in his work on the development of interpersonal maturity (1968). Sullivan viewed the self-system as a product of the individual's embeddedness in a network of multiple social relationships, psycho-emotional and biological needs. In this sense, he was a synthesizer, bringing together two strands of contemporary ideas, psychiatry and social science. He described its development as a function of the individual's changing patterns of responding to the totality of these needs.

Box 5: *Sullivan's model of interpersonal maturity*

Stage	Stage name
4	Autonomous
3	Conscientious
2	Conformist
1	Impulsive

Sullivan's four stage model was at the basis of Jane Loevinger's extensive work on ego development. It was also widely adopted by developmental thinkers like Abraham Maslow and Kurt Fischer, as well as integral theorist Ken Wilber (Reams, 2014, p. 131).

Jane Loevinger was the first to coin the term "**ego development**" for describing the growth of what she perceived as the complex nature of personality, including biological, cognitive, affective-emotional and behavioral dimensions and their interrelations (1970, 1976). Ego is ultimately perceived as a dynamic entity or process, rather than something static. Its essence is the striving to master, to integrate, and make sense of the person's experience while maintaining its own coherence. The latter is done by acting as a filter between itself and the world, which only allows in what reinforces the system while rejecting what might destabilize it. In this sense, the ego is both a stable and dynamic at the same time. As a (stable) self-system, it is the fundamental frame of reference and the master trait from which all other personality traits emanate. However, its "organizing or synthetic function" (Loevinger, 1976, p. 5), making meaning out of what is perceived and encountered in one's psycho-social and material environment allows for dynamic adaptations if what is encountered challenges the existing equilibrium in a productive way.

Like all other developmental researchers, Loevinger's work is based on the assumption that "all human beings evolve toward greater complexity, coherence and integration" (Cook-Greuter, 1999, p. 33), and that this is a process that happens in a sequence of stages, each of which is characterized by a different

inner logic and guiding principle. So even though her stage descriptions are considered as “soft” ideal-types, constructed around a number of contributing factors, there is a clear structural essence to each stage which clearly transforms the dominant logic of the individual’s functioning at the previous stage.

Box 6: Examples of sentence stems in Loevinger’s WUSCT

- When I am criticized...
- Being with other people...
- The thing I like about myself is...
- When people are helpless...
- A wife/man/woman should...
- Rules are...
- I just can’t stand people who...
- I am...
- My main problem is...
- If I can’t get what I want...

At this point, one critique that authors of hard stage models have come up with against Loevinger’s approach is that this transformative outlook implied a normative preference of higher stages over the lower ones. In fact, while both Piaget and Kohlberg’s models include similar normative conceptions of the higher stages being “more adequate” in perceiving and responding to the environment, Loevinger has repeatedly stressed that she does not see later stages as necessarily normatively “better” than earlier ones, even though they transcend and include the previous ones.

Another contribution that Loevinger has made to developmental research is her insistence on rigorous **psychometric modeling**. As mentioned in the previous section, she has mainly used a pencil-and-paper sentence completion test that she has developed over many years where responses were scored in terms of the structural complexity of their reasoning and content. Her so-called Washington University Sentence Completion Test includes 36 sentence stems that test-takers can complete in any way they wish, and that Loevinger wanted to be as objective as possible. Therefore, she developed a number of unique rules regarding test-taking and scoring. For example, she made sure that the test leader or researcher remained in the room with the test-taker to prevent the latter from asking others about their answers. Also, she argued that every response must be scored even if it is incomplete or fragmentary, holding that they are a reflection of internal, conscious and unconscious processes which are sometimes fragmentary by nature. Her scoring rules were equally grounded in her extensive empirical material.

Loevinger’s measuring method used a **bootstrapping approach** which allowed her to infer from a simple system (a sentence completion) to a more complex system (the person’s system of meaning-making), and thus, to score and process data and build theory at the same time. She developed a thorough **scoring manual** and trained scorers accordingly, reaching an inter-rater reliability of about 85%. She thereby also combined qualitative and quantitative elements of measuring which helped her to calibrate and validate her tools continuously.

On this basis, Loevinger differentiated Sullivan’s model from four to nine stages of ego/self development (see box 7), where each new stage offers a more complex perception of oneself, one’s social relations and one’s embeddedness in the world. These have later been taken on by her student, Susanne Cook-Greuter, who made a differentiation of the top level and replaced Loevinger’s “integrated” stage by two separate levels, “construct-aware” and “unitive”.

added another two levels on the upper end of Loevinger’s scale, holding that the highest stages in her model were not accurate and too blurry to account for a number of profiles the research team had gathered over the years.

Susanne Cook-Greuter came to study adult development comparatively late, after having raised children and as a second career after initial studies of linguistics in Switzerland. Hence, her strong

emphasis on the importance of language in Loevinger’s scoring approach. Susanne Cook-Greuter has been a close collaborator of Jane Loevinger for many years. In her dissertation “Post-autonomous ego development” (1999), she has argued that many of the protocols taken from test-persons who scored in the latest stage on Loevinger’s test yet displayed structural differences between them. Based on these observations, she has presented a model of her own which expands on Loevinger’s one mainly by differentiating the highest stage of the model and by adding two levels at its upper end (see table below).

Cook-Greuter has been working on practical applications of ego development research in various forms of coaching as an independent scholar. Rather than choosing an academic career, she entered a cooperation with **Bill Torbert**, a professor of leadership at Boston College. Together with him and other partners, she developed the **Leadership Development Framework (LDF)**, an application of her model to leadership challenges, and the Leadership Maturity Profile (MAP), an application of her sentence completion test to business contexts. Combined, these tools allow for examining stages of cognitive and ego development in managers and to offer them targeted coaching and support (Torbert et al., 2004).

Box 7: Loevinger’s model of ego development, Cook-Greuter’s additions to it and Torbert et al.’s adaptations for leadership work

Stage	Stage name Loevinger	Cook-Greuter	Bill Torbert	
10		Unitive	Ironist	Post-conventional
9	Integrated	Construct-aware	Alchemist	
8	Autonomous	Autonomous	Strategist	
7	Individualistic	Individualistic	Individualist/Pluralist	
6	Conscientious	Conscientious	Achiever	Conventional
5	Conscientious-conformist (later: “self-aware”)	Self-conscious	Expert/technician	
4	Conformist	Conformist	Diplomat	
3	Self-protective	Self-protective	Opportunist	Pre-conventional
2	Impulsive	Impulsive	Impulsive	
1	Pre-social			

In fact, as their work with, and thereby, research on manager’s stages of development continued, it revealed that most tested managers were operating on one of the conventional stages, whereas only about 15% scored on one of the post-conventional stages. This means that they discovered **a gap between the mental demands of current organizational life and the cognitive capacities of most leaders** working therein. With Action Inquiry (2004), Cook-Greuter and Torbert have also developed a method and approach designed to help managers make progress on their current level of meaning making in view of growing towards more complex understandings of self, other and the environment.

Since ego development is the broadest and most complex of all developmental approaches presented so far, studying the complex interrelations between the test-takers sense of self, of others and of their material environment, it is very well suited for analyzing social phenomena, the complexity of which generally goes beyond single domain challenges. One important area of application is research on identity, both individual and collective, and related topics, such as national identity or a society or a nation’s dealing with national trauma where these models provide useful insights into the workings of socio-political discourses (Fein 2010 and 2016, Wagner & Fein, 2016).

Obviously, the ego development perspective is also best suited for analyzing and supporting leadership development, given that leadership, in itself is a complex process, involves the coordination of multiple dimensions (self, team, environment) at the same time.

Box 8: Average distribution of ego development levels in the US population (2007)

%	Cook-Greuter’s stages	
1 %	Post-conventional	Unitive
2 %		Construct-aware
12 %		Autonomous
		Individualistic
75 %	Conventional	Conscientious
		Self-conscious
		Conformist
10 %	Pre-conventional	Self-protective
		Impulsive

However, there has also been criticism of this work, first, as indicated above, by followers of the hard stage approach who claimed that stages built on stable personality traits and contents did not meet the “hard” criterion of a structure of thinking (Kohlberg et al., p. 242), thus confusing content with structure. To this, Cook-Greuter (1999) has responded that the WUSCT “measures performance, unlike Kohlberg’s instrument, which indicates competence”. Furthermore, she argued that shifts in performance as represented by the LMF are something that even people without research background in the field can intuitively order or rank along a developmental continuum (Cook-Greuter, 1999). In other words, their model is highly plausible in itself.

Also, it was criticized that by using sentence completion tests, the model had to rely on written linguistic performance alone, without options for additional probing for clarification where it appeared necessary (as in the Kohlberg interview).

Note that Kohlberg has later acknowledged the **value of ego development research**, including the soft stage approach:

“The strict Piagetian stage construction may need to be abandoned in the study of adult development, but the idea of soft stages of development in adulthood should not be. ...Soft stage models present a new way of doing research in the subject area of adult development, a way that has emerged from the Piagetian paradigm.” (Kohlberg et al., p. 249, quoted in Reams, 2014, p. 130)

This quote points to the need to find good ways to integrate the findings of both soft and hard stage models in a dialectical way.

Several strands of work dealing with ego-development, especially in leaders and managers, have chosen different approaches, partly avoiding the critiques listed above. One is Robert Kegan’s self-development research and the other is Theo Dawson’s introduction of lectical assessment and

measurement, drawing on many of the previously described models, as well as on Kurt Fischer's Dynamic Skill Theory.

5.5 Robert Kegan

Robert Kegan's work is of interest here in at least three respects. First, he somehow bridges the gap between hard and soft approaches to development. Second, he has also looked more extensively at the social context of developmental challenges and at the development of societies as a whole. And third, he has built extensive experience in using developmental modeling in the area of leadership coaching.

As to the first aspect, similar to Loevinger, Kegan has studied the development of the self-system from early childhood into mature adulthood across a number of "evolutionary truces" in between new challenges (1982). His focus is on the process of **meaning making**, by which he means an individual's efforts to make sense of their experience through discovering, exploring and resolving problems. It is thus a constant balancing out of the subject's self-image (including their image of and beliefs about the external world) and the objective reality it is confronted with. The process that Kegan describes is a continuous shifting back and forth between the current way (or "balance") of making sense of the individual's experience and new challenges that force it to engage in novel forms of integrating new information or new experiences which cannot be meaningfully integrated into the current system. Kegan calls these balances "orders of consciousness" or **subject-object balances**, because each of these orders contains a certain relation between what the subject is identified with and what it sees as external objects – and can thus relate to.

This epistemological process can be compared to Piaget's notion of decreasing egocentrism. While small infants cannot yet understand their external environment as an objective given in its own right and governed by its own inherent logics, increasing development leads to an increasing ability to see objective entities independent of its own needs and wishes. Similar, Kegan describes an increasing ability to "objectify" things and to reflect about them instead of being subjectively identified with them. The table below shows Kegan's orders of consciousness.

Box 9: Kegan's model of the evolving self

Stage	Order of consciousness
5	Inter-individual self/self-transforming mind
4	Institutional self/self-authoring mind
3	Interpersonal self/socialized mind
2	Imperial self
1	Impulsive self

Yet, different from Loevinger, Robert Kegan uses a mixed methodology for measuring these orders, namely an interview technique that allows to probe into respondents' answers until the given self-system reveals itself clearly enough. What he calls the **subject-object interview** is a semi-structured interview designed to gradually explore what the person is identified with and what they can actively relate to.

The second specific in Kegan's work is his extensive focus on what he calls the **holding environments** of a person's development. Since the latter is always a matter of productively dealing with tensions between new challenges and sufficient support to do so, the context duly receives his attention as either providing the individual with the right incentives and feedback or not. Similar to Torbert and

Cook-Greuter, when looking into holding environments in the larger society, Kegan has also found a gap between what he calls “**the mental demands of modern life**” and the level of development that a majority of the adult population has actually achieved. Kegan has dedicated his second book to the fact that in contrast to literature – and public discourses – stating that current organizational complexity requires more post-conventional stages, very few people actually function at these stages. While the guiding cultural model generally asks for self-authoring individuals, the majority of the adult population has not made the transition from the socialized to the self-authoring mind. The tensions resulting from this in many different areas of everyday life for many people is described by Kegan as these people being “in over their heads” (1994).

This social analysis might have been one of the reasons for Kegan to develop leadership programs responding to the needs of people transitioning between two stages of meaning-making. Again, similar to Torbert and Cook-Greuter, Kegan has come up with a range of business applications of his model, with a focus on coaching and consulting. The most important one is his “**immunity to change**” process (2009), helping people to first identify their current subject-object balance and then look at which internal defense mechanisms they might have developed to keep this balance in place. His observation is that a clear and stable internal sense-making system often acts as a barrier to change, the latter being experienced as threatening, because it implies to leave a familiar identity and “social toolkit” that has been functional for the person for a considerable time.

Kegan’s immunity map and an example

Commitment	Immunity	Competing commitment	Big assumption
What are the changes that we think we need to make?	What are we doing or not doing that prevent us (immunize ourselves) from making those changes?	What hidden, competing commitments might be the reason for this? What anxieties and big assumptions does that doing or not doing imply?	What big assumptions are behind this competing commitment?
Delegating work and inviting my staff’s initiative	Get involved myself too much over again	I need to control things to assure good quality, I am responsible to be present and support my staff	My staff cannot be trusted to do good work. Being successful means to work hard and do things.

In fact, what people often lack in view of making a next step to change and transition to the next level is adequate support and scaffolding that provides a safe “holding environment” for them to try new ways of thinking and behavior. His “immunity to change” process provides just that, helping to see what has previously been their subjective inner world from a more objectified perspective, including its limitations, and thus, enabling the person to act upon and change it towards the next more mature order of consciousness.

Kegan’s “immunity to change” process is supported by a worksheet that leads the person into a reflective inquiry into their own personal “immunity” step by step. It can be used individually, but also in groups. Kegan himself uses it as a standard tool in organizational development processes, inviting teams or even whole workforces to engage in a joint exploration of how every single team member might contribute to blocking necessary developments through their own personal immunities. The

process starts by looking at what the person/team wants to achieve/change. The next step is then to note and observe any counteracting behaviors and practices that prevent the goal from being (easily) achieved. Usually, these behaviors are informed by some kind of “competing commitment”, a “but”, that neutralizes the initial goal from being implemented. Going even deeper into the reflection, the fourth step asks for any “big assumption” or belief behind the competing commitment.

Often, this is connected to some kind of fear or anxiety that has its roots deep inside a personal identity – and that appears quite irrational once it is brought to light. So the process focuses on looking for ways to test those big assumptions so as to disturb the respective immunity to change and to make possible new experiences based on alternative assumptions, which can then allow the desired change to happen.

While Kegan’s work basically benefits anybody who wants to engage in transformative learning and development, he has been very engaged in leadership and organizational development, together with his colleague Lisa Lahey. His most recent book has been inspired by this work on developing both individuals and the organizations they are embedded in at the same time, a concept that Kegan has termed a “**deliberatively developmental organization**” (Kegan et al., 2016).

For the LiFT context, this makes clear the close interrelations between leadership and the context in which it happens. While the context can be limiting or encouraging for implementing collaborative leadership tools and practices, a context sensitive leader can also use collaborative tools to transform their existing context – provided they have the necessary formal authority and/or backup. In fact, the Collaboratory, as well as all of its components on their own, are tools which can be used for working towards similar transformative purposes.

5.6 Domain-independent skill theories and metrics

Beyond the models and measuring approaches presented thus far, another stream of work has started from different assumptions as to what it is that develops as a person matures. **Kurt Fischer** (1980) has built his model on the concept of **skills instead of entities** (persons), while arguing that skills differ across domains and are always context-specific or even situational. Thereby, he suggests that a person’s development cannot be measured adequately by single stages. Instead, he proposed to look at specific skills as expressed in actions which always need to meet different complexity levels of demands. Also, he sees every individual functioning at a range of levels at the same time.

Fischer has defined **skills** as “**the capacity to act in an organized way in a specific context**” which means exercising control by acting on an object, or a set of aspects. Skills are thus action-based and context specific” (Mascolo & Fischer, 2010, p. 321). This implies that developmental models and metrics should **take into account variability** instead of only coming up with statistical averages. This is because “abstract or representational thought is built on complex sets of sensory motor cognitions” and these “move in iterative tiers, from sensory-motor, to representational, to abstractions, to principles (Reams, 2014, p. 140).

So when looking at specific actions, Fischer includes both **thought and behavior**, conceiving action as a comprehensive term that includes inner and outer movement. At the same time, he shows that cognition always adapts to the object or specific thing or situation being acted on. While he also does use the concept of (psychological) structures, he sees these as having their origin in action and emerging within particular behavioral domains and contexts” (Mascolo & Fischer, 2010, p. 150). And

since contexts differ in their degree of being supportive to the respective action, that again constitutes levels of challenge.

Because of his differentiated view of interrelated factors informing the process of development, Fischer has used the metaphor of a web, through which one needs to find one's own pathway, instead of the more linear image of development as climbing a ladder (Reams, 2014, p. 140).

Even though Fischer insisted on a complex, differentiated, context sensitive perspective on development, he ultimately looked for a model that would be abstract and general enough to be valid in any domain. This concern, along with parts of his approach, have been taken up by a number of researchers.

Michael Commons, the author of the **Model of Hierarchical Complexity** (2006) and the related Hierarchical Complexity Scoring System (Commons et al. 1998), has taken up the idea of measuring development by testing specific skills for each of which he designs appropriate tasks the test-taker (or object of study) has to perform. In his model, tasks are clearly hierarchically ordered in that each new level is defined by transcending and including the task complexity of the previous level. This formal definition allows to focus on the structures by which complexity is organized, rather than on specific contents. The measurement of the level of performance is then very clear, because a task can only either be successfully completed or not. Results are run through a mathematical procedure (the Rasch analysis) to verify the degree of coherence between responses.

Stages of hierarchical complexity according to the MHC

	Order of Stage	Possible Operations and Competences and their results
14	Cross-paradigmatic	Coordinates and crosses paradigms, builds new fields of knowledge (consisting of two or more paradigms)
13	Paradigmatic	Coordinates, integrates and synthesizes meta-systems (fields of knowledge), builds paradigms, requires high degree of decentration
12	Meta-systematic	Compares and coordinates various systems, builds meta-systems out of disparate systems, as well as meta-theories (theories about theories)
11	Systematic	Multiple relations between abstract variables, considers relationships in contexts (→ building systems)
10	Formal	Coordinates two abstract variables, calculates the influence of <i>one</i> variable on another <i>one</i> , solves problems with <i>one</i> unknown using algebra, 1-dimensional linear logic (if-then) and empiricism
9	Abstract	Builds abstract concepts and variables out of finite classes of concrete phenomena (time, place, act, actor, state, type), makes and quantifies propositions: logical quantification (quantifiers: all, none, some), categorical statements/stereotypes (e.g. "We all die")
8	Concrete	Full complex arithmetic (long division, short division), 2. person perspective: takes and coordinates perspective of other and self, follows complex social rules, forms cliques, plans reasonable deals, conceives history and geography
7	Primary	Simple logical deduction and empirical rules involving time sequence, simple arithmetic (adds, subtracts, multiplies, divides, counts, proves), does series of tasks on its own
6	Pre-operational	Simple deductions, tells stories, counts events and objects up to 5, combines numbers and simple propositions, connects the dots, follows lists of sequential acts

5	Sentential	Chains words (coordinates words and names), imitates and acquires sentences and sequences; follows short sequential acts, pronounces numbers in correct order, acquires pronouns: subject (I), object (me), possessive adjective (my), possessive pronoun (mine), and reflexive (myself) for various persons (I, you, he, she, it, we, y'all, they)
4	Nominal	Uses words and names for things (coordinates and relates concepts), single words: exclamations, verbs, nouns, number names, letter names
3	Sensory-motor	Responds to stimuli in a class successfully and non-stochastically, forms simple concepts, morphemes (coordinates schemes)
2	Circular sensory-motor	Schemes (touch, grab, shake objects, circular babble, ...), coordinates perceptions and movements, forms open-ended proper classes, phonemes, archiphonemes
1	Sensory or motor	Discriminates in a rote fashion, stimuli generalization, perceives and views objects or moves; moves limbs, lips, toes, eyes, elbows, head
0	Calculatory	Exact computation only, no generalization, human-made programs manipulate 0, 1; not 2 or 3

Commons holds that the MHC can be applied to any task in any domain, even across species in other words, beyond humanity (Commons, 2006). It has been widely applied by the adult development research community, across disciplines, topics and challenges, including leadership. However, it does not play an important role in the leadership field, because its focus on single tasks is less concerned with complex contexts which are a crucial factor in many typical leadership challenges.

Last not least, **Theo Dawson** (2002) has been working on building up a synthesis of most of the earlier models both in terms of understanding and of measuring adult cognitive growth and development. Dawson was a student of Commons and did extensive work on comparing existing measurement tools in the field, starting with her PhD thesis (2002). Coming from the hard stage tradition and having worked on task-based approaches, her main focus was on domain and content-independent models and assessment systems. Building heavily on Kurt Fischer's Dynamic Skill Theory, Dawson has developed a comprehensive assessment system over the last years, the **Lectical Assessment System** (LAS), which has integrated and enhanced experience from previous work by multiple researchers in the field.

At the same time, her previous career as a midwife sharpened her **focus on learning** from very early childhood on. For Dawson, supporting learning means to offer test-takers extensive feedback on their performance, along with suggestions as to how to engage in what she calls robust learning. One of the tools that is regularly used in her programs is the so-called "Virtuous Circle of Learning (VCoL)". Based on a detailed analysis of performance and related learning edges, test-takers are coached to set themselves a hands-on learning goal within short-term reach, seek information about what they might need to be able to make practical steps towards their goal, then implement these and finally seek feedback and reflect about the whole process. This learning cycle can be iterated several times and

Box 10: Theo Dawson's model of a Virtuous Circle of Learning (VCoL)



gives individuals the opportunity to gain first-hand experience with practicing new kinds of behaviors, a core aspect of robust learning.

This approach is also a practical implementation of developmental theory's core insight that learning and action always happen within a context, and that transformative learning needs the context to be as encouraging and supportive as possible.

Dawson's work on modelling and measuring development is combined with a strong commitment to put her tools and applications based on solid developmental research in service of the larger society, especially the educational system. Her company Lectica (that is marketing applications

of her work) meanwhile also offers computer-based measurement tools, which support the processing of textual data from respondents who take the Lectica tests (see below). Her team currently advances a measurement test called **CLAS** (Computerized Lectical Assessment System) that clients can try out through a free demonstration version online, and which gives them developmental feedback right away.

Besides offering tools for schools or even students to use independently of their teachers (Wallin, Reams, Veine, & Andersen, 2018), Lectica has developed multiple Lectical assessments for more specific needs and target groups which are continuously refined. The most important ones are the Leadership Decision-Making Assessment (LDMA) and the Lectical Self-Understanding Assessment (LSUA). Furthermore, it offers trainings about the foundations of lectical assessments (FOLA), on coaching and on recruiting based on it ([Lectical Assessment in Practice](#), LAP 1 and 2). More recently, Theo Dawson has also started to publish in a more popular form about the relevance of assessing cognitive growth, for instance looking at political leader's complexity of reasoning in the [National leaders series](#).

These practical applications show that there is a huge potential to developmental analysis which can help to fine-tune and calibrate strategic choices of decision-makers at various levels and in various fields, and help to make public responses to complex problems more targeted and thus, more efficient. While optimal outcomes generally require that the level of complexity of the response matches that of the task, we do not hold that higher levels of development are always necessarily better. Rather, this body of research suggests that people each struggle with specific challenges in their specific contexts based on their specific current level of skill. In most western societies, the challenge is the transition from a socialized to a self-authoring mind, in Kegan's terms. Regardless where they are exactly though, in order to be able to make their specific next steps, they need well-targeted support and a "holding environment" that allows for safely doing new things in different ways. If prepared and facilitated well, the Collaboratory can be such an environment.

Closing remarks

This chapter has looked at structural development as the vertical dimension of what happens in all four quadrants, mainly focusing on the first quadrant, the personal/ inner individual realm. By this, the chapter has pointed out how some of the so-called soft skills that are necessary for collaborative leadership can be determined, measured and developed. Since a more detailed description of each of the models presented here is not possible within the limits of this book, interested readers are referred to the original research for a more in-depth discussion.

The chapter has also made clear that personal development always happens (or not) in a context which usually plays a decisive role with regard to the quality, depth and speed in which development occurs. Embedding contexts can be supportive or constraining to development. Therefore, contexts are an important object for integral leadership to be mindful of and to work with productively. Moreover, an integral approach to leadership always needs to take into account the **organizational and institutional cultures** it is working in in view of designing optimal processes and settings.

When analyzing cultural dimensions of leadership challenges, integrating the vertical perspective allows integral leadership to take a more differentiated view on subcultural "tangled situations" as they result, among other things, from conflicts between values, patterns and practices of interpretation and communication, which structurally differ in their complexity. Depending on the structural complexity of how internal and external processes are perceived, interpreted and organized in a given context, as well as the complexity of their guiding principles, integral leadership will derive its recommendations for action based on appropriate levels of challenge and support. Thereby, research on complexity development can not only "give a more comprehensive picture of human experience" (Reams 2014, 123), but also help leaders to come up with more adequate strategies for addressing complex challenges.

Readers who are interested in learning more about how vertical development occurs – and how it can be supported in the other three, especially the collective quadrants are referred to the work on adult development and social science beyond the LiFT context (for example, Fein & Commons, 2016, and Fein & Jordan, 2016). Our other LiFT outputs will shed more light upon the practical dimensions of how integral leadership can be implemented in view of **leading societal transition** through designing, hosting and facilitating collaborative processes.

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