# Apprendimento intergenerazionale per l'apprendimento permanente: concetti pedagogici e politiche in europa

# Intergenerational learning for lifelong learning: pedagogical concepts and the eu policy context

# Shaping the vision. Intergenerational Learning and Education
# Dare forma alla vision. Apprendimento intergenerazionale e formazione

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**ABSTRACT**
According to the research in the field of intergenerational learning, a wide range of skills are enhanced when they are developed in an intergenerational teaching and learning context. Language, literacy and numeracy skills can all be supported and extended by intergenerational models if they are facilitated effectively. Moreover, the intergenerational learning provides a non-threatening, reassuring learning environment and creates learning opportunities and activities that are relevant to the learner. In this theoretical contribution, the author discusses the form that learning takes in an intergenerational process, from implicit and informal learning, to enactive learning, which entails autonomy, sense-making, emergence, embodiment and experience. Furthermore, the author envisages the changes and challenges to be tackled in order to promote intergenerational learning for the future.

La ricerca nel settore dell'apprendimento intergenerazionale indica che un'ampia rosa di competenze vengono migliorate attraverso contesti di apprendimento e insegnamento intergenerazionale. Le capacità linguistico-verbali e logico-matematiche sembrano essere supportate ed allargate da modelli intergenerazionali, se facilitate adeguatamente. Inoltre, l'apprendimento intergenerazionale fornisce un contesto rassicurante per i partecpanti, e crea opportunità di apprendimento significative. In questo contributo teorico l'autore discute i tipi di apprendimento alla base dell'apprendimento intergenerazionale, dall'apprendimento implicito all'apprendimento informale e l'apprendimento enattivo; queste forme di apprendimento implicano abilità e competenze come autonomia, processi di generazione di senso, apprendimento incarnato ed esperienza. Inoltre, l'autore considera i cambiamenti e sfide che dovranno essere affrontati in future con lo scopo di promuovere l'apprendimento intergenerazionale.

**KEYWORDS**
Intergenerational learning, implicit learning, informal learning, enactive learning.
Apprendimento intergenerazionale, apprendimento implicito, apprendimento informale, apprendimento enattivo.

Formazione & Insegnamento XII – 2 – 2014
ISSN 1973-4778 print – 2279-7505 on line
doi: 107346/-fei-XII-02-14_02 

*In a single photograph, the horizon is a line from one side of the frame to the other. Do we really see our surroundings in this way? No, because we look around, we don't look at. In this way the horizon is a circle, and we are always at the centre of the circle. Even though we define a circle visually wherever we stand, we need not be conscious of ourselves doing the looking, so we define a circle with a hole in the middle. That is the human condition. As we look we also unconsciously magnify the horizon. With the discovery of perspective, a painter could convey distance by making objects on the horizon appear very small. But we see the horizon as bigger than that. A photograph never does justice to the 'grand view' to which we aspire because the hills in the distance are smaller than we remembered. The human mind is easily capable of imagining its surroundings from a vantage point above eye-level. Reality in this sense is more map-like. It makes more sense to imagine things from above because the brain needs less memory to make one useful picture – like a template – from which to infer necessary information as we move about. It may be the case that our perception and our cosmology are intimately bound together, and that discovering the meaning of lost cultures will require the simple question to be answered: How did they look at their surroundings?*

Mark Johnston 1997



## Introduction: the culture of Intergenerational Learning

Intergenerational learning is apparent in the parenting styles of adult children, with many choosing not to inflict upon their children the harsh parenting they experienced as children. However, we continue to say that the specific mechanism for intergenerational transmission and the actual effects of father involvement is difficult to determine. Children who grow up in healthy, happy families appear to assume their role as parents with positive attitudes. Despite the typical reference to parents and children in intergenerational studies, grandparents and often great grandparents are increasingly a source of support and may contribute to children's attitudes and beliefs as much as parents. Relationships between parents and adult children appear strongest for mothers and daughters, with mothers having more influence on daughters' perceptions of gender roles. Children whose fathers were present and involved in the home report the greatest comfort around issues of sexuality. Parents seemingly affect adult children's attitudes and behaviours most often in religious practices and beliefs, political activism, and educational values, with some differential effects appearing in mothers' influence on daughters' activism and fathers' influence on sons' religious practices. There is still no clear-cut evidence about the effects of divorce, although increasingly studies draw a connection between divorce and several negative behaviours and experiences such as single parenting in the next generation. The effect that is most harmful is a decline in a family's standard of living which may explain some of the different outcomes for children. A consistent finding, however, is that compared with children from most intact homes, children of divorce consider divorce a viable alternative to marital conflict. However, children in unhappy, conflictual homes also share this view. Our conclusion

is that children's behaviours reflect the beliefs and practices of their parents and families, sometimes in concordance and other times in reaction. But the question is: What information are parents transmitting to their children, and is this information transmitted intergenerationally?

The implications of the studies on intergenerational learning are not neatly packaged into research, practice, and policy, nor does the separation of the three domains serve our purposes well here. In general, research needs to expand the subject and informant pool in order to understand how learning occurs in different populations and across social classes. There seems to be some disjuncture between researchers' talk about a more diverse society and changing family forms and the research practices they use to focus disproportionately on middle-class families. In addition, research might consider the ways in which families of color are studied, presented, and represented. There is an impending urgency around adolescent parenting and the poverty within female-headed households, many of which are disproportionately African American and Latino. After, there is a theme throughout the existing literature that grandparents contribute in meaningful ways to their grandchildren's learning and that the natural impact of their contributions are affected by differences in cultural norms. With increases in the divorce rate and reliance on families of origin, the role of grandparents in intergenerational learning acknowledges the centrality of multiple generations in many families. The role of grandmothers, which has been the focus of most discussions, should continue to be the center of studies, particularly those addressing the changing roles of grandmothers.

The intergenerational effects of parenting are consistent with our intuitive sense that children in happy, generally non conflictual, intact families will experience fewer problems with parenting than those who grew up in homes where there were conflictual parent relationships. Although we should continue to examine the intergenerational effect of these "healthy" homes, substantial work—much of it painful—needs to focus on the negative consequences of homes in which there is abuse and the differential effects of father involvement and absence. That is, does a dysfunctional or abusive father have a greater impact than a dysfunctional or abusive mother? Other issues range from the impact of child and child-observed abuse to adolescent and adult children's imitation of behaviours around alcoholism, drug use, and psycho-emotional well-being.

The absence of a critical discourse on the intergenerational impact of fathers on children's educational beliefs and practices signals a need to transform the culture of fatherhood and fathering. The transition in gender roles over the past 20 years suggests that the responsibility for children's education as "women's work" is neither applicable nor advantageous. Here, the connections among research, policy, and practice are obvious. As research develops more intensive and expansive designs to identify parents' impact on children's educational choices and on their ability to persist, practice must construct effective ways to invite parents into children's educational experiences and sustain their participation in the learning process. Policies for the establishment of government supported intergenerational and parenting programs might build into grants incentives for grantees to include fathers over the course of the program (recognizing the evolutionary and difficult nature of recruitment) and increase support for research and evaluation components that encourage researchers and practitioners to work collaboratively in the development and implementation of the programs. The intergenerational impact of divorce is apparent in many of the studies. More basic studies and secondary analyses are needed, however, to support the sweeping generalizations that are made about the impact of father absence

from a relatively small core of data. In addition, the work on the effects of family instability should make distinctions between children of never married parents and divorced or separated parents. This work could be complemented by studies that examine the intergenerational effect of cooperative parenting, also. A special focus might address a subset of families, to which we refer to as *fragile families*. In addition, research needs to model, through more broadened conceptualizations, the impact of parents' behaviours on both sons and daughters. The current impetus in public campaigns often includes a subtle subtext that assigns more attention to sons than daughters. This, of course, is a complete reversal of earlier work that assumed that mothers influenced both daughters and sons more than fathers. We suggest that we minimize this imbalance and inequity in the literature and in public and private discourses.

Intergenerational learning occurs in all families, irrespective of class, race, or culture; and fathers contribute in many ways to how children think about their roles and abilities into adulthood. Families are biological and social structures, providing the first intersection between individual and society. No matter what the family pattern, intergenerational transmission seems to occur. How research, practice, and policy contribute to this intersection will affect not only environmental and social structures but also the life needs of individual members and the survival of family cultures and family organization within and across multiple generations—for fathers and mothers and, most important, the well-being of their children.

Intergenerational Learning is a learning partnership based on reciprocity involving people of different ages where the generations work together to gain skills, values and knowledge. Activities are labelled as intergenerational learning when they fulfil three criteria: involve more than one generation, planned in purpose and progressive, mutually beneficial learning which promotes greater understanding and respect between generations and, consequently, community cohesion. The main issues addressed by intergenerational learning approaches throughout Europe reflect the challenges of today's European society: the digital divide between the young and the old, drop-out rates that are still worryingly high in some countries and literacy problems, risk of social exclusion for vulnerable groups such as senior citizens, migrants and young people at risk.

According to research in the field of intergenerational learning, a wide range of skills are enhanced when they are developed in an intergenerational study (teaching learning) context. Language, literacy and numeracy skills can all be supported and extended by intergenerational models if they are facilitated effectively. Finally the intergenerational learning provides a non-threatening, reassuring learning environment and creates learning opportunities and activities that are relevant to the learner. There is evidence that intergenerational learning provides a non-threatening first step to further learning for those who perceive learning to be irrelevant or who have had humiliating experiences in the past.

## 1. Wich is the form that learning takes in an intergenerational process?

Identify the generative structure of intergenerational learning is the focus of our inquiry, Our goal is to provide an overview of important aspects of human learning involved in intergenerational interaction between parents or adults and joung people. So it represents an exciting but difficult challenge because human learning is a highly complex topic. Different theories have emerged as re-

searchers have focused on different kinds of learning. Making sense of these different perspectives, and giving each their just due, is a challenging task.[1]

For example, behaviourism views learning as the strengthening of associations between stimuli and responses. In contrast, learning from the constructivist/rationalist tradition is conceptualized in terms of the growth of conceptual structures and general cognitive abilities such as reasoning and problem solving, Finally, the enactive perspective, representative both of the pragmatist-socio-historical tradition and of phenomenological approach, views learning as being intricately bound up with social interactions and cultural tools.

We believe that the timing is right for targeted efforts toward synergy to become an explicit goal of educational researchers.

The three major areas of research that we explore include (1) Implicit learning, (2) Informal learning, and (3) Enactive or generative structure of intergenerational learning. These three areas have tended to operate relatively independent of one another. Researchers in each of these areas have attempted to apply their thinking and findings directly to education, and often the links between theory and "well grounded implications for practice" have been tenuous at best.

The goal of integrating insights from these strands in order to create an *enactive theory of intergenerational learning*. The fundamental reason for pursuing this goal rests on the assumption that successful efforts to understand and propel human learning require a simultaneous emphasis on informal and formal learning environments, and on the implicit ways in which people learn in whatever situations they find themselves.

## 2. Implicit Learning

Implicit learning refers to information that is acquired without conscious recollection of the learned information or having acquired it (Reber, 1967; Graf & Schacter, 1985). There are many types of implicit learning, but a common process may underlie all forms — the rapid, effortless, and untutored detection of patterns of co-variation among events in the world (Reber, 1993). We consider that the implicit learning reflects the view that: (a) it is implicated in many types of learning that take place in both informal and formal educational settings, (b) it encompasses skill learning which plays a vital role in many other types of learning, and (c) it plays a substantive role in learning about language and people

1 Some have focused on the acquisition of skills such as learning to type, write and read (e.g., Anderson, 1981; Bryan & Harter, 1897; LaBerge & Samuels, 1974; NRC 2000). Others have focused on learning with understanding and its effects on schema formation and transfer (e.g., Anderson & Pearson, 1984, Judd, 1908; NRC, 2000; Wertheimer, 1959). Still others study the emergence of new ideas through interactions with other people and through "bumping up against the world" (e.g., Carey, 2000; Karmiloff-Smith & Inhelder, 1974; Papert, 1980; Vygotsky, 1978). Learning theorists have also explored different settings for learning—including, preschool, school, experimental laboratory, informal gathering spots and everyday, home and workplace settings—and they have used a variety of measurements of learning (e.g., neurobiological, behavioral, ethnographic). Furthermore, learning theorists work at time scales that range from milliseconds of processing time to lifespan and even intergenerational learning (e.g., Lemke, 2001; Newell, Liu, & Mayer-Kress, 2001).

across the lifespan[2]. Moreover, a substantial portion of learning from media and technology is implicit[3]. Across both live, face-to-face interactions and mediated interactions, the common conclusion is that people can learn patterned regularities without intending to do so and sometimes without being able to describe the patterns they have learned. Implicit learning has educational and even evolutionary value, as it enables organisms to adapt to new environments simply by *being in them* (Howard & Howard, 2001). So the label "implicit learning" is not meant to be an operationally defined category with necessary and sufficient conditions for inclusion and exclusion. We focus on two domains that are prototypical cases of implicit learning and which provide much food for thought — language learning (Kuhl, 2004; Kuhl et al., 2003) and learning about people, sometimes called "social cognition" (e.g., Ochsner & Lieberman, 2001; Flavell & Miller, 1998; Meltzoff & Decety, 2003; Taylor, 1996), with heavy emphasis on the former case. Our lifelong learning about language and people begins before kindergarten, and in some cases important foundations are established in the first year of life. In these domains parents are the first "teachers" and much is absorbed through spontaneous and unstructured play.

So recent studies explore many key hypotheses: (a) implicit learning plays an important role across the life span, starting very early in life, (b) research on language has discovered principles of learning that emphasize the importance of patterned variation and the brain's coding of these patterns, and these findings may apply across other cognitive and social domains, and (c) principles uncovered through research in language and social learning raise questions about formal instruction and "oversimplified" curriculum design.

The 1990's were dubbed "The Decade of the Brain" and produced advances in

2 Implicit learning occurs in many domains. For example, it influences social attitudes and stereotypes regarding gender and race (Greenwald et al., 2002), visual pattern learning (DeSchepper & Treisman, 1996), motor response time tasks (Nissen & Bullemer, 1987), syntactic language learning (Reber, 1976), phonetic language learning (Goodsitt, Morgan, & Kuhl, 1993; Saffran, 2002; Kuhl, 2004), and young children's imitative learning of the tools/artifacts of their culture and the behaviors, customs, and rituals of their surrounding social group (Meltzoff, 1988b; Tomasello, 1999).

3 Only a minority of research about the effects of media and technology test purposive effects of messages, for example, formal classroom learning from instructional media (Mayer et al., 2004) or the ability of television news to teach citizens about how candidates stand on political issues (Krosnick & Branon, 1993; Schleuder et al., 1991). More commonly, media research examines effects that are indirect, involve automatic attentional processes, and are often beyond the conscious awareness of those processing the information. This includes the ability of media to determine the perceived importance of political issues (Iyengar & Kinder, 1987; Spiro & McCombs, 2004); learning about the appropriateness of social behavior in interpersonal relationships (Glascock, 2001; Larson, 2001); the influence of media on perceptions of social reality, for example, what people learn about the prevalence of crime (Shanahan & Morgan, 1999; Sparks & Ogles, 1990); learning from persuasive consumer messages that occurs subliminally (Petty et al., 2002; Trappey, 1996) or through frequent and implicit associations between people, places and appeals (Chang, 2002; Invernizzi et al., 2003); learning about the personal qualities of prominent figures in politics and government based on how messages are framed (Benoit & Hansen, 2004; Iyengar & Simon, 1993) and on their visual structure (e.g., cuts, camera angles, use of motion sequences) used to present information (Mutz & Reeves, in press); and learning to control complex media such as computer games (Berry & Broadbent, 1988)

neurosciences. Modern neuroscience shows the impact of experiential learning *before it can be observed in behaviour*. The study of a live brain "at work" is the new perspective. The main question is following: "What are the advantages of knowing which brain regions are activated over time and how they are associated with behavioural and attitude changes?" The answer is not straightforward.

Brain studies link neural underpinnings to behavioural function; they will help us understand learning. Neurobiological studies do, however, provide crucial knowledge that cannot be obtained through behavioural studies and this provides at least three justifications for adding cognitive neuroscience to our arsenal of tools for developing a science of learning. First, a mature science of learning will involve understanding not only *when* learning occurs but also understanding *how* and *why* it occurs. Second, neural learning often precedes behavior (Tremblay, 1999), offering a chance for scientists and educators to reflect on what it means to "know" and "learn". Third, behaviours that appear similar may involve different neural mechanisms that have different causes and consequences. Better categorization of learning, according to neural function instead of the appearance of behavioural similarity, should allow the educational strategies and policies that affect learning to be usefully grouped in ways not obvious absent the study of brain function.

It is a common misconception that each individual's brain is entirely formed at birth. For educators, the idea of rapid brain organization during the early years of life is important but can also lead to serious misconceptions (as elegantly described by Bruer, 1999). For example, people often question whether children who spend their early years in under-stimulating environments, will jeopardize chances for future learning and development? The popular literature is filled with discussions of "critical periods" for learning, and the assumption persists that the ability to learn certain kinds of information shuts down if the critical period is missed and learning is affected forever.

Assumptions such as these sometimes cause teachers and parents to underestimate the abilities of students whose early years seemed less rich and more chaotic than others who come to school. Brain research shows that the timing of critical periods differ significantly depending on whether one is discussing the visual, auditory, or language systems. Even within different systems, there is emerging evidence that the brain is much more plastic than heretofore assumed, and that the idea of rigid "critical periods" does not hold[4].

The concept related to the "critical period" is Kuhl's claim that early learning both supports and constrains future learning. Neural commitment to learned patterns also constrains future learning; neural networks dedicated to native-language patterns do not detect non-native patterns, and in fact may interfere with their analysis (Iverson et al., 2003). The concept of neural commitment is linked

4 New studies by Kuhl and colleagues explored potential mechanisms underlying critical periods in early language development (e.g., Kuhl, 2004; Rivera–Gaxiola, Silva-Peryra, & Kuhl, 2005). The idea behind the studies relies on the concept of *neural commitment* to learn language patterns. Kuhl's recent neuropsychological and brain imaging work suggests that language acquisition involves the development of attentional networks that focus on and code specific properties of the speech signals heard in early infancy, resulting in neural tissue that is dedicated to the analysis of these learned patterns. Early in development, learners commit the brain's neural networks to patterns that reflect natural language input.

to the long-standing issue of a "critical" or "sensitive" period for language acquisition. If the initial coding of native-language patterns interferes with the learning of new patterns (such as those of a foreign language), because they do not conform to the established "mental filter," then early learning promotes future learning and builds on the patterns already experienced, limiting (or making more difficult) future learning of patterns that do not conform to the ones already learned. The "critical period" thus depends on experience as much as time, and is a *process* rather than a window. Thus both maturation and learning determine the critical period. Maturation may "open" the period during which learning can occur, but learning itself may play a powerful role in "closing" the period (Gopnik, Meltzoff & Kuhl, 1999a; Kuhl, 2004).

Broadening this discussion, the neural commitment concept can be thought of as a neural instantiation of "expertise" in any domain. Expertise in many areas may reflect these kinds of filters on experience — filters that focus attention, and structure perception and thought, so that we work more efficiently and thereby freeing up our attention and energies to thinking creatively in other domains, but also limiting an ability to think in novel ways within the area of expertise (e.g., Gopnik & Meltzoff, 1997). For example, learning algebric principles or mastering the scientific method changes our filters (our concepts and theories), leading us to perceive the world in a new way. This learning alters the brain's future processing of information.

Other studies by brain and developmental scientists are relevant to a science of learning. One example comes from children's learning from watching other people. This is a skill that is important both for the transmission of culture from parents to children and in peer-group learning. The topic of imitative learning has undergone a revolution in the past decade, as studies have revealed the ubiquitous nature of imitation among humans across the lifespan (e.g., Meltzoff & Prinz, 2002). Research now shows that human beings are the most imitative creatures on the planet. Humans imitate from birth (Meltzoff & Moore, 1977) and the young child's capacity to learn from imitation outstrips that found in other primates such as chimpanzees and gorillas (Povinelli, et al., 2000; Tomasello & Call, 1997; Whiten, 2002). Recently, the importance of imitative learning has been given a boost by the discovery of "mirror neurons" that are activated whether a subject sees an action performed by another or performs the action themselves Rizzolatti, Fadiga, Fogassi, & Gallese, 2002; Rizzolatti, Fadiga, Gallese, & Fogassi, 1996). So imitative learning involves more than the presence of mirror neurons, and neuroscientists are trying to determine the special, perhaps uniquely human abilities, that support our proclivity for learning by observing others in the culture.

One possibility is that even a simple act of imitation is connected with perspective-taking and therefore is more of a social, collaborative activity than it first appears (Meltzoff, 2005). We must consider that the adult or parent and child rarely see the world from the same perspective. The child sees her own body and own actions from a "first person" perspective; but we see others from a "third-person" perspective. Imitation requires that the child watches the adult and is able to "transform" it across differences in points of view, size, and sensory modality. Even a simple act of imitation requires facility in identifying with others and being able to "take their perspective." This capacity for perspective taking may be fundamental to humans and important to a wide range of learning activities. Indeed some have argued that the close neural coupling of self and other that under-girds imitation may also be implicated in such other distinctively human traits as social collaboration (Rogoff, 2003), the preservation of cultural prac-

tices involving implicit teaching and learning across generations (Meltzoff, 1988b, 2005; Tomasello, 1999), and empathy for others, where empathy is viewed as a kind of affective perspective taking that requires us to stand in another's shoes (Jackson, Meltzoff, & Decety, 2005).

Regardless of these theoretical views, ample research shows that young children learn a great deal about people and cultural artifacts through imitation, and children are influenced not just by their parents, but also by their peers and what they see on television. To prove that infants can learn from television it is not enough to know that young children are visually captured. They may simply be attracted to the visually changing mosaic of colors. But the Meltzoff (1988a) study went beyond assessing "visual interest." In that study, 2-year-olds watched an adult perform a novel action on TV. The children were not allowed to play with the object, but returned to the lab after a 1-day delay, and then were presented with the novel object for the first time. The results showed they duplicated from memory the specific act that they had seen on TV one day earlier.

### 3. Informal Learning

Some researchers use the phrase to refer to learning that happens in designed, non-school public settings like museums, zoos, and after-school clubs. Others use the phrase "informal learning" to focus attention on the largely emergent occasions of learning that occur in homes, on playgrounds, among peers, and in other situations where a designed and planned educational agenda is not authoritatively sustained over time. If we begin by looking outside of traditional schooling and focus our attention on children rather than adults, we note that 79% of a child's waking activities, during their school age years, are spent in non-school pursuits—interacting with family and friends, playing games, consuming commercial media, and so on (NRC, 2000). If we extend this calculation to the human lifespan, the percentage of time spent outside of school, and therefore a potential source of informal learning, would be over 90%. Turning to adults specifically, we note that a great deal of what an adult learns in a lifetime is not "covered" in school (e.g., raising a child, saving and investing money wisely). And even with regard to what is "covered", it remains an open question to ask in what ways school-based learning substantively transfers to non-school life both in occupational and every day contexts.

On one hand, informal learning has been championed as a romantic alternative to schools, where productive proto-forms of disciplinary knowledge and other forms of productive knowledge develop with minimal effort. A contrasting perspective argues that informal learning leads people to form naïve and misconceived ideas at odds with disciplinary knowledge (e.g., Driver, Guesne, & Tiberghien; 1985, McCloskey, 1983), and that these everyday "naïve" ideas that need to overcome to develop normative knowledge. Another pair of contrasting perspectives on informal learning concerns the quality of the thinking and practices in which informal situations engage people. On one hand, some view informal learning situations as wellsprings of new knowledge and cultural production, especially among young people (e.g., Gee, 2003(a)(b)). On the other hand, some view informal situations as characterized by a lack of thinking and the consumption of a degraded popular culture (Healy, 1991).

The origins of the informal learning tradition are diverse and are most readily understood as an affiliated set of approaches and ideas that can be contrasted

with mainstream psychology and educational psychology. For example, informal learning research typically takes an ecological conceptual stance and an ethnographic methodological approach, seeking to study how people learn in "their" informal settings with sustained attention paid to "indigenous meanings and local phenomena" (Emerson, 2001, p. 136). Research on learning and cognition outside of laboratory settings often has been critiqued by mainstream educational psychology as lacking experimental control and internal validity. Informal learning research has typically placed its emphasis on *ecological validity* and has made the counterargument; laboratory research is very often lacking in this type of external validity. The research tradition on informal learning has its origins mostly outside of mainstream educational psychology. Ethnographic work in anthropology established the perspective in the first half of the twentieth century, by showing that while many non-Western societies lack formal schooling they do not lack meaningful, everyday learning. This poses the problem of how people learn without teaching, curricula, and schooling as conventionally understood in Western industrialized societies. An informal learning perspective is clearly present in Margaret Mead's *Coming of Age in Samoa (1928)* and is developed further in Mead's continuing work with Gregory Bateson. As McDermott notes, Mead did not write much about learning theory, at least not directly; but it would be easy to reshape her ethnographies into accounts of what the people studied were learning from each other about how to behave, be it about adolescence in Samoa; gender among the Arapesh, awayness among the Balinese. Her version of the social actor, that is, the unit of analysis in her ethnographies, was in constant need for guidance from others (McDermott, 2001, p. 855).

A second line of work that provides theoretical roots for an informal learning perspective comes out of the sociological ethnography of Howard Becker and his colleagues. Beginning in the late 1950s and finding full expression in the 1960s and early 1970s, Becker and colleagues explored questions of how and what people learned, mostly in occupations, but also in clearly informal situations for which no curricula or schooling exists. Characteristic of the latter was Becker's influential article *Becoming a Marihuana User* (1953). In this paper Becker argued against an exclusively skill-based notion of learning that has been characteristic of both behaviorism (physical skills) and cognitivism (mental skills). Becker's critical addition was to show that learning also involved the development of particular *meanings* for a skill, which were learned among other community members. What's important about this argument is that it focused on a type of learning that is often understood in terms of bio-physical effects and the skills needed to produce these effects. These studies brought significant attention to the peer-maintained informal cultures that arose among students in formal institutions—what might be called the informal properties of formal settings. These were among the earliest studies to locate the development of identity as a dimension of learning (e.g., Becker & Carper, 1956). And the concept of identity has become central to understanding informal learning. When one is learning outside of school, it is as much about who one wants *to be* as what one demonstrably comes *to know*. Becker's provocation was that school, despite its labeled purpose, is often a "lousy place to learn anything in." Becker argued that it was the specific structural properties of how school is *typically* organized (cf. Tyack & Tobin (1984) on the "grammar of schooling") when compared to other learning situations, like on-the-job training, that made it lousy.

At about the same time Becker and his colleagues were conducting their studies on informal learning, a movement among some psychologists began to

establish a "comparative psychology of cognition" (Cole & Bruner, 1971). In practice, this programmatic goal led to many studies of informal learning, both within non-Western cultures and within non-schooled activities in Western societies. The two most prominent contributors to this line of work at the time were Michael Cole and Sylvia Scribner that looked to the work of Russian scientists on human learning and cognition for inspiration (Leont'ev, 1978; Luria, 1976; Vygotsky, 1962, 1978, 1987). One foundational study that influenced the comparative tradition was *The Logic of Non-standard English* by sociolinguist William Labov (1969). This study sought to challenge what Labov called a deprivation view and what has come to known as the "the deficit hypothesis."[5] What Labov's study showed was two-fold: (1) that while different, African American speech practices obeyed just as strict a "logic" as middle-class European American speech, and (2) that seemingly small changes in the context of eliciting speech, used to make research generalization about categories of people, can have a decisive impact on the kinds of performance displayed by research subjects *to research scientists*.[6]

A well-elaborated program of research that combined fieldwork and experimentation was led by Sylvia Scribner. This approach is exemplified in Scribner's studies of learning and cognition among dairy workers (Scribner & Fahrmeir, 1982; Scribner, 1997a, 1997b). Scribner argued that controlled experimentation—in the form of posed simulation tasks closely based on field observations— was valuable in exploring specific hypotheses about human cognition and activity, but that these claims still needed to be tested *again* in various fields of naturally occurring activity. She showed how physical and mental labor were both elements of what people learned as part of everyday work and that demands of the work environment substantially explained the distribution of these types of labor in daily work practice.

In addition to the research on informal learning associated with Cole & Scribner's research laboratories (see Cole, Engeström & Vasquez (1997) for an overview; also, Tobach, Falmagne, Parlee, Martin, & Kapelman (1997)), the early 1980s brought work by anthropologists, sociolinguists, and small subset of psychologists into closer conversation, both theoretically and methodologically. An important early volume that recognized the shared interdisciplinary space developing around informal learning was *Everyday Cognition* (Rogoff & Lave, 1984). A decade later, a similar volume entitled *Ethnography & Human Development* (Jes-

5 "[This view] rests on the assumption that a community under conditions of poverty [e.g., most ethnic minority communities]…is a disorganized community, and this disorganization expresses itself in various forms of deficit." (Cole & Bruner, 1971, p. 867).

6 To make this point, Labov presented the case of an African-American boy named Leon who when interviewed at school by a skilled African American interviewer was taciturn and "non-verbal" in response to questions. Upon review of the recordings made, Labov and his colleagues decided to use this data as "a test of [their] own knowledge of the sociolinguistic factors which control speech" (Labov, 1972, p. 160). When the same interviewer spoke again with Leon, the interview was held in Leon's room at home, with Leon's best friend and a bag of potato chips as part of the conversational scene. In comparison with the first interview at school, there was a "striking difference in the volume and style of speech" (Labov, 1969). In this situation, Leon had a lot to say, competed for the floor, and spoke as much to his friend as to the interviewer—all strong contrasts with the first interview situation.

sor, Colby, & Schweder, 1996) showed how far this interdisciplinary conversation had proceeded[7].

Typically, informal learning studies have found that the practices and knowledge of compared settings differ in important and consequential ways, thus leading to the view that what is important or necessary to learn in each setting differs accordingly. An early influential study of this kind was Philips' (1983) study that compared the participation structures and speech practices of Native American children in school and in their cultural community contexts. Philips found that the adults in the respective contexts—the elders of the community and the teachers at school—differed in their expectations for children's speech and that these differences manifested themselves at the level of how turns at talk were allocated. This had the effect of leading the children's teachers, of a different cultural background, to misunderstand their abilities[8]. Although studies of informal learning have been used to cast a critical eye on the traditional practices of schooling and to provide ideas for formulating alternative educational practices.

Nearly all studies of informal learning highlight that learning happens without most of the apparatus of schooling such as intentional teaching, designed and sequenced curricula, and regular individualized knowledge assessments. This leads researchers to try to describe the means, pathways, and practices by which learning happens in non-school settings. Many of the alternative formulations of how people learn play off concepts of apprenticeship (Lave & Wenger, 1991; Rogoff et al., 1996). Specific constructs include Lave & Wenger's idea of *legitimate peripheral participation*, which highlights the practices by which newcomers are gradually enculturated into participation in existing "communities of practice"; and Rogoff et al.'s related notion of *intent participation* in which learning is described as happening "through keen observation and listening, in anticipation of participation…[children] observe and listen with intent concentration and initiative, and their collaborative participation is expected when they are ready to help in shared endeavors" (Rogoff, 2003, p. 176). Understanding learning in this way attends to how individuals can learn without explicit teaching but through participation in a community's ongoing activities.

Informal learning researchers have described other, though not necessarily incompatible, dimensions of change when people learn. For example, a number

7 A history of informal learning research can also be told through the places where it has been at least partially institutionalized as a going research concern and in this regard, two "centers" warrant special mention. The first is the Laboratory of Comparative Human Cognition (LCHC), led by Michael Cole from its inception in 1972. The second was the Institute for Research on Learning (1986-1999), a private research institute whose interdisciplinary research staff included anthropologists, sociolinguists, educators, and cognitive and computer scientists. IRL is perhaps best known as the home of the influential volume *Situated Learning* (Lave & Wenger, 1991), but it, like the LCHC, has a rich and varied history of research and practical educational work related to informal learning. Three more recent organizational settings are worth mentioning as ones where the details of informal learning are being further studied. These are the Center for Informal Learning and Schools (CILS), and the Learning in Informal and Formal Environments (LIFE), both funded by the National Science Foundation, and the Center on Everyday Lives of Families (CELF), funded by the Sloan Foundation.

8 Other informal learning studies that have compared contexts for learning include Saxe (1982), Carraher, Carraher, and Schliemann (1985), Heath (1983, 2001), deAbreu (1995), Hall & Stevens (1995), Stevens (2000a).

of informal learning researchers have described learning in terms of changing forms of *participation* in ongoing cultural activities (Lave & Wenger, 1991; Rogoff et al., 1996). Other researchers have highlighted that learning involves changes in people's *identities*—who they understand themselves to be and who others position them to be (Becker, 1953; Holland, Lachicotte, Skinner, & Cain, 1998; Lave & Wenger, 1991; Nasir, 2002; Wenger, 1999). Others have highlighted that learning, even in activities typically understood as academic or theoretical, involves changes in *tool-mediated, embodied skills* (Goodwin, 2000; Rose, 2004; Stevens & Hall, 1997, 1998; Wertsch, 1998). Though no single definition of learning unites studies of informal learning, Hutchins' definition of learning as "adaptive reorganization in a complex system" (Hutchins, 1995) is a reasonable placeholder for a working consensus view and one that links it to other contemporary views on "adaptive expertise" described in the next section.

A good proportion of research in the everyday cognition and informal learning traditions documents adult activities within specific settings. In terms of settings where this research has been conducted, these studies range from what is conventionally viewed as "low brow" work (Scribner, 1997b; Beach, 1993; Rose, 2004) to "highbrow" professional work (Hall & Stevens, 1995; Hall, Stevens, and Torralba, 2002; Hutchins, 1995; Jacoby & Gonzalez, 1991; Latour, 1995; Ochs et al, 1992; Stevens & Hall, 1998). Taken together, these studies expose the limitations of assumed hierarchies (i.e., low to high or concrete to abstract) and entrenched binary distinctions like "mind/body", "expert/novice", and "theoretical/practical". A similarly extensive program of research on children's informal activities may hold the possibility of additional theoretical reframings of how we understand the basic categories of children's activities and development, such as, for example, the unexamined distinction between "play" and "work". At a more basic level, these studies can help us understand how the demands, problems, constraints, and affordances of particular contexts organize stable forms of learning and development within these contexts for children and how children organize their own learning in contexts. Even in anthropology, ethnographic description "of children and their agency" has been "sparse" (Das, 1998). We have just described the ways that within context studies have challenged a variety of common distinctions.

The distinction between "informal" and "formal" serves as an entry point into our discussion of different traditions for studying learning and marks some trough differences between self-organized, emergent learning and learning occasioned by organized instruction and designed curricula. Nevertheless, the distinction is limiting because, as argued from many perspectives, a setting-based notion of context makes too many assumptions about the homogeneity of settings (i.e. that all activities in places called "schools" or "homes" are similar) and the homogeneity of experience within these settings for individual learners (Becker, 1972; Rogoff et al., 2003; Schegloff 1992). In addition, emergent learning may be as present in some school contexts as in out-of-school ones (Stevens, 2000a, 2000b). If we set aside the firm distinction between "informal" and "formal" the foundational issue becomes *the structuring properties of contexts for learning and development*, with the very nature of what constitutes a "context" remaining an open theoretical question (Goodwin, 1992). One particular direction for further research is to identify and study *exceptional informal contexts* in which young people are in control of advancing their own learning, with the goal of understanding *how people advance their own learning* by assembling and coordinating heterogeneous resources (Barron, review; Becker, 1972; Crowley & Ja-

cobs, 2002; Lave & Wenger, 1991). As with any field-based scientific discipline, we need to better understand the distribution of "ecological niches" in which children are most actively engaged, and study how the problems that emerge in these non-school settings make new knowledge necessary and certain kinds of thinking and action adaptive. We also have strong reason to believe that descriptions of mean tendencies are insufficient, because distributions of resources and practices vary widely by gender, ethnicity, and socio-economic status, an issue of importance for translating findings from basic research to the educational goal of developing more equitable learning environments.

## 4. Enactive Learning: the magic circle of intergenerational process

There is a small but growing community of researchers spanning a spectrum of disciplines which are united in rejecting the still dominant computationalist paradigm in favor of the *enactive approach* (e.g., Stewart et al. 2011; Torrance 2005, 2007). The framework of this approach is focused on a core set of ideas, such as autonomy, sense-making, emergence, embodiment, and experience. These concepts are finding novel applications in a diverse range of areas. One hot topic has been the establishment of an enactive approach to social interaction. We suggest that this revised conception of 'socio-cognitive interaction' may provide the necessary middle ground from which to understand the inner structure of intergenerational learning. In contrast to the mainstream this account of sociality begins with an emphasis of biological autonomy and mutualy coordinated interaction. It is recognized that the interaction process itself forms an irreducible domain of dynamics which can be constitutive of individual agency (De Jaegher and Froese 2009) and social cognition (De Jaegher et al. 2010).

The enactive approach was initially conceived as an embodied and phenomenologically informed alternative to mainstream cognitive science (Varela et al. 1991). Since then it has begun to establish itself as a wide-ranging research program with the potential to provide a new perspective on an extremely diverse variety of phenomena, reaching all the way from the single cell organism to human society (Thompson 2007). Moreover, the ongoing search for novel theoretical and methodological foundations has led to a series of systematic confrontations with some of the hardest questions known to philosophy and science: What defines cognition? What is the relationship between life and mind? What defines agency? What is special about social forms of interaction? What is the role of culture for human learning? The research framework of this approach is inherently trans-disciplinary and driven by fundamental questions that are organized around the core ideas of autonomy, sense-making, emergence, embodiment, and experience (Di Paolo et al. 2011). The advantage of this conceptual coherence is a discourse that can integrate a diverse set of observations which are otherwise separated by disciplinary discontinuities. This trans-disciplinary integration has to proceed along a delicate middle way: neither an eliminative reductionism nor a mysterious dualism will do. Observations drawn from distinct regions of phenomena must retain a relative independence with respect to each other.

Through the studies of Francisco Varela on the fundamental role played by the sensory-motor coordination in cognition, we can show recurring patterns in the learning process of the person, focusing on interdependent relationships among perception, emotion and action, which define a self-organizing system

that allows the emergence of coherent meanings for all persons involved in intergenerational process. These relationships are based on the activity of the entire body, allowing the emergence of both the „inner world of the person and what she considers her „outer world, in a process of generating interrelated and consistent meanings. Starting from Francisco Varela s studies on enaction, our aim is to outline the meanings that parents and sons give to everyday experiences and to reality, as emergent phenomena from the sensory-motor couplings with the context, rather than ready-made information that they extract from a pre-given world. Through the theory of complexity, we place at the center of our investigation the personas the source of her knowledge. Knowledge is her embodied know-how that thery learn to recognize and observe through the help of others. So, we must be obliged to consider learning as a process of cooperation and mutual coordination in which the relational aspect becomes the foundation of all knowledge, rather than an adaptive ability to a given context. Through the personal perception of the world in which parents and sons or adults and young take part by acting in it, they enter the context that changes while they transform themselves. Therefore we are obliged to define the personal learning as the process that occurs between the person and her context when they relate to each other, through which the person changes herself – not only at a purely cognitive level, but in every part of her body – changing her context: it is a form of embodiment of experience and cognition.

We may differentiate the intergenerational learning process of a living being and, in general, its cognition, in two main ways: the first considers the learning process as an adaptive necessity of the individual to its environment, the second considers the learning process as a *co-generative modality* between the individual and the environment: the enactive approach to cognition and experience. Traditionally, the environment is considered dominant over the living beings; they have to conform to it to survive. Under this approach, subject and environment are separated and the only relationship that binds them is the direct causal link input / output from one to another, without any form of interdependence. The relationship between them is therefore an instructive one-way. The frame of reference is the traditional cause and effect relationship, the behaviour of living being appears to be appropriate only if it is able to adapt as best possible to a given context, according to a classical approach of „problem solving skills of the nervous system. Learning becomes a process that finds its „raison d'être outside the person: it is the environment, both natural and social – the external reality – that defines and specifies a process of adaptation for the subject. This view implies a sort of „cognitive realism :cognition is grounded in the representation of a pre-given world by a pre-given subject.

But the learning process can not only be understood as a process that embodies a causal relationship with the environment; it can also be understood as a phenomenon that may have its origin in the inter-relationship established between the subject and its environment. In this case, learning can be considered as an *emerging phenomenon* that occurs when subject and environment come into relationship in a dynamic and recursive process. The learning that emerges from this connection is a *generative phenomenon* that influences both the subject and its context.

Francisco Varela has repeatedly stressed in his studies that the process of cognition is strongly related to the possibility that we, as living beings, have to cope with our milieu through our bodies. The context in which we interact is something we take part in: touching, seeing, tasting, moving in it. The term enaction

emphasizes precisely this possibility of emergence: to make active, to bring forth something that through our manipulation appears real in itself. According to enaction, essential elements of cognition are the dynamic sensory-motor skills of the person: it is through the ability to perceive and act in one's own context that can trigger a process of learning, a close relationship between agent and environment in the cognitive process. By environment we mean broadly any external „disturbances to the person, including other people who are part of that context. Maturana and Varela write in this sense of *structural couplings* between living beings and their milieu to emphasize reciprocity and consistency that is established between one another, without any prevalence of one over the other. Each of them – living being and environment – is only a trigger for the other that can give rise to reciprocal structural changes, in their material manifestation. Once those changes occur, we can speak of structural coupling between a living being and its environment and viceversa. It is through these repeated structural couplings that one can speak of cognitive process, since every action becomes in itself a cognitive act, an experience that is embodied in the person. The body becomes a central tool – an ontological machine – to take part in one's own reality by defining the boundaries and possibilities of understanding. According to enaction, it is therefore relevant to study how the human being acts in its local situations and how these local situations change constantly as a result of its activity. There is a fundamental circularity between action and experience that allows both the embodiment of these changes in the living being, and the emergence, through these actions, of the context within it operates. Intelligence is no longer the ability to solve problems already given, but rather the ability to access a common world. The living system is able to maintain its identity through a circular process of interaction with the environment and of self-reproduction; all interactions operating within the network of cognitive acts are coordinated between perceiver and perceived. The cognitive process becomes the evolution of living organisms along a path chosen by them in the course of time in their structural couplings. Time thus becomes a key aspect in the analysis of cognition and learning, in which the personal history of a being becomes an embodied know-how: skills learned and experiences are full of all those aspects that make its history unique, defining it as a specific identity.

The closed circular organization of the lived body defines a field of dynamic interactions in intergenerational process, creating a boundary which defines the unit system as a specific identity, according to the principles of self-organization. The focus is therefore on the nexus among the components that define the organization of the intergenerational interaction system, and not on individual, material components, which define the structure instead. While the structure actually occurs while changing, the underlying network organizational structure and its dynamics seem more diaphanous, having no substantial and material existence. However, it is the continuity of these connections that allows the life and the sense-making process of intergenerational learning.

The key point is that such systems do not operate by representation. Instead of representing an independent world, they enact a world as a domain of distinctions that is inseparable from the structure embodied by the cognitive system. *'I see if I act, I act if I see'*. The intergenerational process's actors comes into contact with the surrounding environment through structural couplings which generate its own inner world related to the environment, as a dynamic process of mutual co-definition. Perception, unlike what we are led to believe, is accomplished with the body and through the body, becoming a global experience that

involves the whole person together with her context. The brain participates in the process of perception as an active configuration of interactions between the environment and the body: the structure of the perceiver is closely interrelated with the perceived reality. *Perception, into intergenerational process, is an active process involving not only our senses but also our nervous system, including the brain, our body in general and the environment in which we are immersed*. Enactive learning emphasizes two fundamental and interrelated aspects: first, that cognition consists of perceptually guided actions. This aspect shifts attention from the signals coming from the outer world to the way the person guides her actions in her local situation, through her sensory-motor system. Second, that cognitive structures emerge from recurrent sensory-motor patterns that enable perceptually guided actions. It is no longer the outer world that specifies a perception, but rather the inner world, the embodied sensory-motor patterns, that guides actions while changing the external environment as a result of its activity. This is what is meant by the inseparability of the perceiver from its reality. This is also the relevance of repeated interactions as an evolutionary path of the system over time, and the importance of complex dynamic systems studies to understand the evolution of intergenerational process. There is therefore a strong interdependence between what we call culture of intergenerational process and the dept structure of intergenerational learniing of a person. There is thus a visual control of action, and viceversa; objects become "hypotheses of action" for our body, transforming them into a life experience. This intergenerational experience is embodied in us as a habit of which we are unaware: perception is a phenomenon that can be determined only if there is a relationship between what we usually call subject – the perceiver – and what we commonly call the object –what is perceived through action. So the intergenerational patterns are recursive and capable of self-organizing and self-generating, according to a circuit that generates not only itself but also the meaning of action and the reality with which it interferes.

Emotions are the immediate meaning of intergenerational experience. She is given to what is experienced and that exceeds and precedes the rational-logical meaning, representing the feedback loops of the cognitive system. Every cognitive act is modulated by emotions; they function as a system of self-regulation, defining the cognitive process as a self-organized system. In this process emotions become the feedback loops that amplify and reinforce (positive feedbacks) or that self-regulate (negative feedbacks) the belief system and the thought patterns through which we perceive the external reality and the whole experience. In the intergenerational experience the basic emotional systems may act as "strange attractors", that show recurring patterns in the learning process of the person, focusing on interdependent relationships among perception, emotion and action, which define a self-organizing system that allows the emergence of coherent meanings for the person. These relationships are based on the activity of the entire body, allowing the emergence of both the "inner" world of the person and what she considers her "outer" world, in a process of generating interrelated and consistent meanings. This circular process defines the evolutionary history of one s cognitive system, defining a unique memory in a process that determines the historical memory itself as irreversible. The cognitive process involves continuous changes of the system: perception, emotion, and behavior, in a continuous transformation and generation of the self, without ever returning to previous states. This process is what we call personal learning circle a long an evolutionary path that is quite unique. Each time there is a different experience

that is stratified, as if this model is theoretically infinite, while maintaining the same type of movement, represented schematically as a strange attractor. The experience is stratified, becoming a long-term memory by changing the structure of the attractor and continuously transformed into embodied knowledge. This double loop determines within it a coherent world, with a sense and meaning, whose boundary becomes its own cognitive domain: the system itself produces its own world, according to a recursive process constantly changing, just like a fractal or a strange attractor. It is a pattern that represents the principle of self-organization of intergenerational cognitive processes, closed with respect to its surroundings. The cognitive process is therefore the individual learning process, in the context of its evolutionary process. So the enactive learning is a pattern representing a double-closed circle of learning when the person enters into a relationship with her own environment, highlighting how the recurrence of interrelationships between perceptions, emotions and actions become incarnate in her personal experience. This pattern takes the form of a strange attractor, in which the emotional aspect is the central point of activity, the diaphragm, between perceiving and acting, between the emergence of the inner world and the emergence of contextual outer world, between the self and the other, along a circle that repeats itself endlessly, and yet is finished, closing the space of possibilities, The enactive learning structures a knowledge embodied in the person that is expressed in her behavior, her language, her emotions, her perceptions, and that defines her history and memory. The recurrent experience becomes a know how of the person, which manifests itself in the naturalness of everyday life. It is a dynamic and evolving process, a real learning process: the process of learning is a process of signification, in which any action, any interaction, has a meaning within a coherent network of meanings. It is this body of skills ready to be activated automatically without the need to think up that we can define, together with Francisco Varela, as the know-how embodied in the person: it is the ability to immediately cope with the surrounding world, that readiness for action that allows the emergence of micro-worlds within which a person can easily move. Therefore, the structure of the intergenerational experience embodies the history of its continual changes; this process of ongoing structural changes keeps firm the identity of the subject. Through this enactive learning process we define our own identity, with reference to our environment, as a form of differentiation of ourselves from the environment. The emergence of our inner world, according to this analysis, is something intangible and not concretely defined. This is in fact a process that can emerge from the intertwined elements and their iteration, namely the continuous repetition of similar phenomena, although never identical, giving rise to a seemingly constant reality, as something stable, although always in motion and always co-determining in a seamless flow. In this generative process, named as enactive learning, cognition is represented as a process of transformation of the person, both inside and outside herself, changing her internal world and, simultaneously, changing her own context. This process is generative only if we acknowledge the other with whom we dependently co-generate. It becomes an infinite and indefinite iteration at the same time, that does not begin and end anywhere, with the emergence of coherent meanings in a common cognitive domain. Learning can thus be seen as a process of cooperation and mutual coordination, in which the relational aspect becomes the foundation of all knowledge. Through the personal perception of the world in which we take part with an action, the domains of self and other are intertwined making it impossible to remain outside.

## 5. The future: changes and challenges in intergenerational learning

We can look into the future in different ways. At one level the predicted patterns of ageing might not surprise us. People will live longer and healthier lives and assuming the reduction in fertility rates continues. Although there will be transient effects such as the 'age wave' resulting from the high fertility rates, there will continue to be a large representation of older people and different generations of families with relatively few offspring co-existing. We may also be unsurprised about the forecast that with continuing rates of migration, ethnic diversity will also become more widespread in Europe. We might also make a reasonable guess at the career involvement and the prevalence of working mothers as well as fathers increasing within the system with the consequent reduction of availability of within-family childcare. We might also be quite comfortable predicting that technology may not only change but become more available. What may be more difficult to predict, however, is how the different trends might interact. For example, while there is more scope for ethnic diversity within families, the cultural effects are not certain. It is not certain, for example, to what extent immigrant groups will become assimilated, nor how acculturation will take effect, so that the values, the culture and the customs merge with the majority population with time. Conversely, some communities might retain a strong heritage and cultural identity. There may be further tensions in retaining identity if family members are dispersed geographically because of economic demand and globalisation. While information and communication technologies have the power to enable younger family members to become independent and lose their cultural identity they can also, at the same time, facilitate cultural contact within and across national boundaries. It is likely that the continued weakening of horizontal household ties through divorce and other instabilities in relationships will mean that vertical intergenerational links and influences will become more important (Owen et al, 2004). However, this will also be in a context where an increased active lifespan together with employment rights for the elderly may mean that those family members who in the past have played this role may become more likely to take on the pivotal role of working and supporting those both younger and older than themselves (Dench and Ogg, 2002). We do not know how family members will continue to balance these demands and whether families can remain as coherent cohesive units. We do not know whether grandparents will continue to have the time for childcare and that special bond and, for that matter, whether grandfathers rather than grandmothers will have to play a greater role.

The challenge for some minority communities could be in terms of maintaining a heritage identity. Even if there are collective communal initiatives that support this, the role of the family could be crucial in this respect. While grandparents have been an active source of cultural knowledge and practice in the past, how this role might be picked up by future generations is less certain. In addition, particular occupations and the associated skills are less likely to remain stable within a given family and so learning needs could become less predictable. In turn this could affect the status of older generations as authoritative sources of information and skills. We are also living at a time when information is not only much more readily accessible but also is there in greater variety, quantity, detail and abundance.

Work patterns will affect what goes on within families. Apart from the possibility of a longer active life which has career implications, the demands of the labour market in response to shortages of particular skills will mean that patterns

in work, training and education will change when viewed from a life-long perspective. The blurring of boundaries between living, working and learning currently experienced may continue to progress; particularly as new technologies, mobile communications, and global business practices can keep people electronically connected at all times of the day and night regardless of whether they are at a place of work, at home, or on holiday. Perhaps the biggest challenge to families in relation to this context is managing the balance between work and leisure – or, indeed, a new order of family life. Although flexible working patterns could assist this process there is also the possibility that the more traditional opportunities for family and intergenerational interaction, such as in the evenings and at weekends, may disappear.

In addition we know that a majority of people in the Europe may be at risk of digital exclusion in 2040. While in the past a 'digital divide' has been framed in terms of a lack of availability of digital resources, more sophisticated notions of digital inclusion or exclusion also consider broader problems of social inclusion and engagement. Selwyn (2002), for example, argues that access to technology in itself is insufficient in promoting a digitally inclusive society and results from an adult continuing education survey carried out with his co-workers (Gorard et al, 2000) support his contention that access should be meaningful, functional, and of perceived relevance. In terms of social capital this also presents a challenge that belongs as much to the family as in the public domain. The use of ICT in the home can reduce the time that families interact as a whole. Sanger et al's (1997) work suggests that, in contrast to a family watching the same programmes on the one and only television receiver in the house, the increased availability of technology such as video games has segregated families; parents, for example, know very little about what their children are doing when they are each in their own rooms in different parts of the home. We are, perhaps, living at a time when families could be encouraged to negotiate rules around the use of new technologies. On this basis there is a need for parents to talk to children about the dangers of the internet and encourage them to look critically at the information they find on the internet and other media. Similarly, as more mobile phones become available, it is timely to address questions on how such technology is shaping family life and how families are shaping the use of technology.

So, the intergenerational learning is the real and evolutionary space of more complex relationships involving different generations including parents and children. What we regard as enactive learning today may take on a more tangible coherent and connected life of its own as we are able, through communication technologies, to maintain, sustain and develop relationships. The space in which we live and learn may no longer be defined by four walls and a roof. In this context the challenge for intergenerational learning 'actors may be one of identifying and contributing to a group identity, even if this identity is dynamic in nature. The syncretic processes could have a role to play here. The implications arising from the possible blurring of chronological divisions of education for intergenerational learning are widespread. Segmentation of education may be less distinct. For example, the role of the university could become a more continuous one where people remain connected as part of a lifelong learning community. With regard to children's learning and development, another challenge is for teachers to know more about the learning that goes on within families so that they can learn from this as well as allow their own institutional approaches (which will be different) to interface in a sensitive way. This is still an under-researched area. While studies such as the Teaching and Learning Research Pro-

gramme's Learning Lives (Hodkinson, Biesta, & James, 2008) have begun to contribute to the literature on the kind of learning going on throughout people live both formally and informally, further attention will still be needed in understanding the different kinds of learning, cultural practices and development taking place in a variety of out-of-school settings including the family.

Older people, of course, are not fixed entities. The older people of 2050 will have been the younger people of today who will have taken with them not only the practices we associate with young people today but also some of the attitudes to change and flexibility that we may consider a hallmark of our time. Assuming the infants of today will be the elders of the future then, to survive as a responsive and flexible community in a changing world, what they will take with them into that future will not just be the transferred remnants of yesterday but also the ability to play their part in creating the culture of tomorrow.

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