Attachment, what it is, why it is important and what we can do about it to help young children acquire a secure attachment
by Sir Richard Bowlby from the U.K.

SUMMARY

What is attachment theory? Attachment theory is based on findings from empirical research, from observational studies and from clinical examples; it's a framework for understanding the nature of the enduring family bonds that develop between children and their parents – their attachment figures. The theory focuses mainly on relationships during early childhood, and the impact that these have on the emotional development and mental health of children as they grow up.

Babies and toddlers have a powerful survival reaction to sense danger whenever they are in unfamiliar places and have no access to an attachment figure, preferably to their primary attachment figure (who is usually but not necessarily their biological mother). This sense of danger frightens children and triggers their attachment seeking response, and this response will be terminated only when they reach proximity to their attachment figure. The attachment response starts at about 6 months, peaks between 12 and 24 months, and by 36 months the intensity has reduced sufficiently that most children can tolerate a few hours separation from attachment figures without distress – during pre-school nursery for example.

A secure attachment is likely to develop when an adult is sensitive and attuned to the baby's communications, and when the adult provides consistent and predicable care which meets the needs of the baby quickly and reliably.

An insecure attachment is likely to develop when the adult is insensitive and not well attuned to the baby's communications, and when the care is inconsistent and unpredictable and does not satisfy the baby's needs quickly or reliably.

How to change from insecure to secure attachment.
To my knowledge, no one has found a "magic bullet" for instantly switching insecure attachment into secure attachment. The most common origin of children's insecure attachment is the intergenerational transmission of insecure relationships. Most of the effective interventions (such as attachment based family psychotherapy) aim to resolve old attachment issues from previous generations.
Changing from insecure to secure attachment is slow, expensive and takes very skilful therapists, and the cure is never complete – at times of stress, "ghosts from the nursery" return to haunt people. Prevention is infinitely preferable to cure.

The age that a young child is ready to leave the home: 33 months
Maria Montessori, in the 1930's in Italy, found that children were ready to go to pre-school nursery at the age of 2 years and 9 months. Present day brain research indicates that at this age the right brain is ready for emotional and intuitive activity and the left brain enables the child to speak with three words and it can remember the past (for instance that "mum will come back").

When we look at this situation it becomes clear that developments in society will force us to go back (or forward) to a situation where the child will again receive care of a good quality during the first phase of his /her life. This may be an inconvenient truth, but we have to face it.

What Is Attachment Theory?

Before talking about attachment theory, I need to tell you what attachment is. My father used the term "attachment " to describe the affectional bonds that develop between babies and their mothers. Most people call these family bonds "love" – the sort of family love that's different from sexual love'.

Based on empirical research
Attachment theory is based on findings from empirical research, from observational studies and from clinical examples; it's a framework for understanding the nature of the enduring family bonds that develop between children and their parents – their attachment figures. The theory focuses mainly on relationships during early childhood, and the impact that these have on the emotional development and mental health of children as they grow up. Is the mental health of children today better than 50 years ago? Many psychologists respond with 'no'.

In times of danger babies and toddlers seek their mother/ primary attachment figure
Babies and toddlers have a powerful survival reaction to sense danger whenever they are in unfamiliar places and have no access to an attachment figure, preferably to their primary attachment figure (who is usually but not necessarily their biological mother). This sense of danger frightens children and triggers their attachment seeking response, and this response will be terminated only when they reach proximity to their attachment figure. Attachment seeking is a specific response requiring a specific termination - proximity to an attachment figure. Similar behaviours (usually called imprinting) can be observed in the young of many other species and it's a very successful survival strategy. For example, if you watch a herd of elephants protecting newly born baby elephant from a group of lions, they do such a good job that: the lions do not have not a chance.

Attachment response: when it starts and when it peaks
The attachment response starts at about 6 months, peaks between 12 and 24 months, and by 36 months the intensity has reduced sufficiently that most children can tolerate a few hours separation from attachment figures without distress – during pre-school nursery for example.

The quality of this enduring mother/child bond will have a significant impact on the child's developing personality and future social, emotional and mental wellbeing
By their fifth birthday most children can manage five short days of school. Attachment theory concentrates mainly on the bond that a mother has with her child, and on the attachment that a child has with their mother or the person who raises them. The quality and nature of this enduring mother/child bond will have a significant impact on the child's developing personality and future social, emotional and mental wellbeing – for better or for worse.

The quality of the attachment has a very significant influence on how children build future relationships
A child's primary attachment figure is usually the biological mother, but the biological link is not essential. In many cases someone else raises the child and becomes the primary attachment figure - such as when a child has been adopted or raised by the father or grandmother. A baby sometimes becomes primarily attached to a temporary carer, a nanny for example, instead of to their own mother, and the child experiences a traumatic loss if the nanny leaves and the primary attachment bond is broken. But most people have an enduring attachment bond with their mother that lasts a lifetime, and the quality of this relationship has a very significant influence on how they build future relationships.

The development of babies' primary attachment bond can be compared to the development of speech.
Human babies have a natural propensity to talk, but they need to have the experience of hearing speech in order to acquire the words and to learn to speak the language of the adult. Similarly, babies have a natural propensity to become attached, but they need to have regular interactions with a consistent adult in order to develop an attachment relationship with them. The quality of the relationship will depend on the adult's capacity for making secure or insecure attachments.

Secondary attachment figures can promote self-esteem in children
In appropriate circumstance and given sufficient time and attention, children can develop enduring secondary attachment bonds to affectionate and responsive people such as grandmothers, nannies, aunts, neighbours or child-minders. Three or more secondary attachment figures in addition to a primary attachment figure can promote self-esteem in children, and is a psychological protective factor that can reduce the probability of mental

health problems in the future. Being part of a big family is a protective factor. An isolated mother, alone with a child, is a risk factor.

Why is attachment theory important?
Attachment theory has helped researchers to identify the causal links between people's childhood experiences of adverse attachment relationships, and their subsequent social, emotional and mental health problems. Understanding the nature and effects of childhood attachments has been extremely valuable to health care professionals who try to promote good parenting practice and to support disadvantaged families.

It assists therapists to help people and it helps policy makers to promote good parenting practices
Attachment theory has been especially valuable to professionals trying to treat people who have suffered from the negative effects of dysfunctional or broken attachments in childhood, and who as adults are struggling with emotional or mental health problems. Attachment theory is beginning to have an influence in various spheres:
- the law in child custody cases;
- the decision by the UK government to provide longer, paid, maternity leave;
- the introduction of legislation requiring babies and toddlers in day-care to be cared for by a secondary attachment figure, or a "key-person" as they are called. It is even written down in the law in Britain that anybody caring for a baby must love the child and build up a genuine bond with the child and its parents. It may be difficult to implement this, perhaps undeliverable, but the wording of the law text is as it is.

A secure attachment is an advantage for a whole life time
Most children develop relationships with their parents that make them feel safe and give them a sense of security and confidence. Such children will have a subconscious psychological model of their parents as being available and loving, and a complementary model of themselves as being worthy of their parent's support and love. This positive expectation of relationships is part of "secure attachment" and is an advantage to children and a protective factor. Not all relationships are the same. Some less positive attachment relationships are classified as insecure, and this sort of relationship can be a disadvantage to children and a risk factor that contributes to future mental health problems.

Attachment is a characteristic of the relationship
A child can form a secure attachment to one parent, and an insecure attachment to the other parent. Attachment is not a characteristic of either the child or the parent, it is a characteristic of the relationship. The parent's sensitivity to the needs of the child is a major determinant in whether a secure or insecure attachment will develop. It has been found that the parent's ability to provide a secure attachment will be heavily influenced by the quality of care that they received during the first two or three years of their own life.

The nature of the attachment bond is passed on to the next generation
There is an inter-generational transmission of attachment styles. If the care that the parents received when they were children was sensitive and well balanced and provided them with a secure attachment, they are likely to provide similar parenting for their own children. If the care the parents received was insensitive and unbalanced and provided them with an insecure attachment, they are also likely to provide similar parenting for their children.
In both the first and second case, the style of attachment is repeated with their own children because it feels familiar to the parent, but in the second case the parents either justify their parenting behaviour as "it never did me any harm", or they may over-react and try to provide the complete reverse of their own experience, but they provide equally unbalanced and insensitive care, and again an insecure attachment will develop. For example, if the parent was abused or neglected as a child, they may over-protect their own child and restrict play and exploration - providing unbalanced and insensitive care.

There is a tendency for the quality of early attachments to continue into adulthood
In the absence of any significant life-changing events, there is a tendency for the quality of early attachments to continue into adulthood, and this can have an influence on future relationships. Some positive experiences in life, such as psychotherapy or meeting a secure partner, can alter a person's expectation of how relationships develop, and their model for making relationships can become more secure. But someone's model of relationship can become less secure if they have a negative experience such as untimely separation from or loss of an attachment figure.

Attachment bonds are extremely powerful and can yield great benefits or the inverse
Throughout life, attachment bonds are extremely powerful, and like any powerful system the benefits can be very great when the system is optimal, well balanced and working smoothly, but very painful if the system is sub-optimal, out of balance or broken. Attachment theory has highlighted the social and emotional consequences of a range of problems associated with the making and breaking of attachment bonds.

How can we achieve secure attachments?
It takes babies several months to develop an attachment to an adult, yet an adult can form a bond to a baby very quickly - sometimes even before it's born - but most parents develop a bond gradually during the first few weeks. Although the great majority of mothers love their babies, some parents have a problem that prevents them bonding with their baby at all, and the baby is then very unlikely to be able to form a secure attachment to them. 35 - 40% of babies develop an insecure attachment to their mothers. The insecurity of these relationships means that babies are anxious about their mother's ability to comfort them emotionally.

Important concepts we need to understand about attachment:
• how babies develop a primary attachment.
• how babies develop a secure attachment.
• how to maintain a secure attachment.
• how to avoid harming a secure attachment.
• how to change from an insecure to a secure attachment.

Virtually every culture throughout the world strives for a stable family life
Virtually every culture throughout the world strives for a stable family life, but rapid change in the Western lifestyle over the past two generations has led to many cultural values being abandoned – they seem old fashioned and inconvenient to many of us. One recent change is that many extended families have become fragmented into several "nuclear families", and this has had a profound impact on family life and child rearing practices. We may find it helpful to have a more cognitive understanding of how these family bonds develop, so we can make better informed choices about work / life balance and the care of our young children.

Raising securely attached children is very demanding on parents. Sensitive attunement (the cornerstone of secure attachment) takes a great deal of parents' time and attention. Knowing the personality and understanding the individual communications of a baby is very difficult if parents don't have sufficient time, and even more difficult for working single parents raising children on their own

How do babies develop a primary attachment?
From birth, babies are learning to recognise different people and are developing their mental capacity to form attachments. By about 6 months most babies are beginning to show a preference for one person, and by about 9 months their primary attachment bond to this person – usually the birth mother – is well advanced, and by about 12 to 14 months the primary attachment is usually well established. At the same time the baby's ability to differentiate between familiar people they know and unfamiliar strangers they don't recognise will have developed.
There are many features of care that influence babies' choice of who becomes their primary attachment figure, but the two main ones are:
• being comforted when they cry,
• being played with.
These two experiences help babies select the one person who most frequently and predictably brings them both comfort and joy, and that person becomes the baby's primary attachment figure. In the English language there is a saying which illustrates the above:

"Families that play together stay together."

How do babies develop a secure primary attachment?
A secure attachment is likely to develop when an adult is sensitive and attuned to the baby's communications, and when the adult provides consistent and predicable care which meets the needs of the baby quickly and reliably.
An insecure attachment is likely to develop when the adult is insensitive and not well attuned to the baby's communications, and when the care is inconsistent and unpredictable and does not satisfy the baby's needs quickly or reliably.

Playing - providing positive feelings.
A secure attachment is likely to develop when an adult engages sensitively in playful interactive games that hold the baby's attention and bring them joy. The adult's play needs to be appropriate to the baby's capacity to enjoy the game, and the adult must be sufficiently attuned to know when to start, stop, repair or re-engage with the baby.

An insecure attachment is likely to develop when the adult is not sufficiently sensitive when playing interactive games and does not engage with the baby or bring them joy. The activities may be beyond the baby's capacity for excitement, or the adult may be careless, neglectful or intrusive and misjudge the baby's abilities or mood, and not know when to start, stop, repair or re-engage with the baby.

NOTE. At the same time that babies are developing their primary attachment (either secure or insecure), they are usually developing secondary attachments to other familiar people. These secondary attachments can be either secure or insecure depending again on the adult's ability to relate, so a baby can develop a secure attachment to one adult and an insecure attachment to another adult.

How to maintain a secure attachment?
One of the most important and complex tasks for parents of securely attached children is to maintain boundaries that are realistic and appropriate to the child's developing competence and within the parents' resources. Considerable time and attention is required to maintain these limits for children who have grown to expect supportive and sensitive care and are eager to explore and learn about their environment. The challenge for parents is to find a balance between restraint and safety on one hand, and encouraging new and challenging experiences on the other.

An important research finding is that the most socially adept young men and women had mothers who had provided an enduring secure base throughout their childhood, and also had fathers who were sensitive when playing challenging and exciting interactive games. Young adults who had been provided with a secure base and exciting activities by parents who expressed satisfaction with their partner relationship, had the highest social skills at age 22 years.

Maintaining a secure attachment to the primary attachment figure during childhood promotes stable intimate relationships in adulthood, and having exciting and challenging activities promotes social competencies at school and in young adulthood.

How to avoid harming a baby's and a child's attachment
The key to maintaining secure attachments throughout childhood is to avoid any experience, however well intentioned, that overwhelms the attachment bond. Maintaining children's security of attachment requires that their attachment figure provides them with a sense of safety and protection at all times. Children who are frightened, whether by parents who are abusive, neglectful or violent, or by being separated from their attachment figures for an inappropriate amount of time (even when they're in perfectly "safe" situations) can become insecurely attached.
Extreme experiences of separation that are known to harm young children are: spending weeks or months in residential care or, as used to happen in the UK in the 1950's, spending two weeks in hospital with only brief visits from an attachment figure. An experience which seems safe to adults but not to babies, is spending each day without access to an attachment figure in certain forms of non-parental daycare. The circumstances in which babies cannot access a secondary attachment figure are found most frequently in group child-care settings such as day-nurseries.

I believe that many babies and toddlers develop a risk factor in daycare without an attachment figure, and babies from disadvantaged families where insecure attachment is common are particularly vulnerable. Babies with an insecure attachment at home, who then spend time in daycare without an attachment figure, will have their negative model of relationships reinforced.

These babies need daycare from a long-term secondary attachment figure who is consistent throughout the years of daycare, is sensitive to their individual needs, and is always available to them. In this way a more positive model of relationships can develop. Although we know that this is what babies need, it seems to be extremely difficult to provide this in group daycare settings.

I am against the British habit of sending 6 year old children to boarding school. They are not ready for it: it is overwhelming and harmful for them. Secure attachment is attained when the attachment figures provide the child with a sense of safety and protection at all times. It is typically the mother that provides the emotional security and the father that provides the physical security. Today in the UK 50% of co-habiting couples (40% of all couples) split up before the child is 5 years old.

How to change from insecure to secure attachment.
Attachment theory is concerned with the quality of the relationships that babies and toddlers develop with their primary attachment figures. Although the security of the

babies' attachment may be influenced by their temperament, the greatest influence will come from the adult's ability to form secure relationships. Therefore changing the adult's ability to relate to the baby is going to be the focus of early intervention programmes.

To my knowledge, no one has found a "magic bullet" for instantly switching insecure attachment into secure attachment. The most common origin of children's insecure attachment is the intergenerational transmission of insecure relationships. Most of the effective interventions (such as attachment based family psychotherapy) aim to resolve old attachment issues from previous generations.

Changing from insecure to secure attachment is slow, expensive and takes very skilful therapists, and the cure is never complete - at times of stress, "ghosts from the nursery" return to haunt people. Prevention is infinitely preferable to cure.

Neuroscientists discover the impact of a good early childhood environment on the brain
Today neuroscientists are discovering that they cannot explain the rapid neurological developments in the brain of a child without reference to the interaction between the baby and his/her environment. This discovery was triggered by research on the Romanian orphans from the Ceausescu regime, which were intensely studied. These orphans had been severely deprived of interactions with a primary caregiver. It turned out that certain parts of their brains were non-existent (black holes on the brain scans). It furthermore turned out that the harm was least for those children who had endured this for a shorter period. Professor Mike Rutter is one of the people who carried out this research.

Cortisol levels in the blood of a toddler
When toddlers are in a daycare centre the cortisol levels in their blood increase. When the primary attachment figure fetches the child at the end of the day normally the cortisol level drops. However some primary attachment figures do not succeed in comforting the child sufficiently and the child's cortisol level remains elevated throughout the night. I am not aware of studies regarding the long term effects of prolonged high cortisonl levels in the blood of a toddler. I do not thinks that it will be beneficial for the child, but this needs to be researched.

Good behaviour of toddlers can disguise the fact that a child has shut down
Children in many daycare centres seem to be happy. From the outside they seem to be children that behave well and do what the daycare workers tell them. The parents are happy: they don't have any complaints, either about their children or about the daycare centre. But the situation only seems to be good. When we take a deeper look we can see that some children have shut down and are withdrawn in themselves, and we should be aware of this phenomenon.

The age that a young child is ready to leave the home: 33 months
Maria Montessori, in the 1930's in Italy, found that children were ready to go to pre-school nursery at the age of 2 years and 9 months. Present day brain research indicates that at this age the right brain is ready for emotional and intuitive activity and the left brain enables the child to speak with three words and it can remember the past (for instance that "mum will come back").

When we look at this situation it becomes clear that developments in society will force us to go back (or forward) to a situation where the child will again receive care of a good quality during the first phase of his /her life. This may be an inconvenient truth, but we have to face it.

Sir Richard Bowlby is the son of the well-known Dr. John Bowlby, who in 1958 was the first to publish the theory of attachment. This theory was based on his work with young children in London in the 1940's, when he observed how distressed babies and toddlers became when their primary attachment figure, normally the mother, was separated from them. Sir Richard Bowlby himself was born in 1941. He furthered his father's work and the subject of children's attachment and in this way he became one of the key-note speakers on attachment both in Britain and internationally.

The Changing Face of Adolescence
The lengthening of a fascinating developmental phase, its threats and challenges
By René F.W. Diekstra

SUMMARY
In this paper René Diekstra gives a detailed overview of adolescence today. Adolescence is a developmental phase that today considerably exceeds the length of childhood as traditionally understood (i.e. the period of birth till puberty). Remarkably, this substantial change of adolescence has at its roots not only social but also biological causes. For example, biologically, there has been a substantial decline in the age at which puberty begins. In addition, we now know that the brain reaches maturity somewhere between 21 and 25 years of age.

Professor Diekstra outlines some of the many threats and challenges faced by adolescents today, and discusses how we can better support and enhance adolescent development, particularly through Life Skills Education and Social and Emotional Learning programmes.

Introduction
It was around noon on a bright sunny day in August that 18-year-old Jürgen Peters climbed the ladder on the outside of the water tower in the German city of Kassel. By the time he had reached the top, a number of people were already gathering at the foot of the tower, wondering and guessing what was happening.
It soon became clear that he intended to jump, in an attempt to take his own life. Earlier that morning, Jürgen had been fired by his boss, a local garage owner, for whom he had worked as an apprentice mechanic. The reason had been that, on being asked to test-drive a client's car, he had gone joy-riding instead and in the process had severely damaged that car as well as two others.
At the tower, onlookers called the police who in turn called for assistance from the fire department. A fire ladder was put up to the top of the tower, and one of the firemen tried in vain to talk Jürgen out of his plan. Then a girl he had been dating, and liked very much, was asked to talk to him. She climbed halfway up the ladder, spoke to him through a megaphone for quite some time, and succeeded in persuading him to give up his attempt.
While Jürgen stepped from the roof of the water tower onto the fire ladder and started his descent, a couple of youngsters about his age who had been watching the events, began to yell at him: 'Hey, you! Coward! You don't even have the guts to jump, do you?' and similar provocative remarks. Jürgen at first hesitated, and then interrupted his descent. As he lingered there, just one meter or so below the top of

the tower, an ominous silence descended on the scene. Suddenly, he started to move again – upwards. He hopped on the top of the tower and, almost in the same movement, jumped off.

During the few seconds while he fell the length of the tower, the onlookers stood in petrified silence. That silence was brutally shattered by the dull sound of the body crashing to the ground. Panicking shouts and cries of anger and distress broke loose. They heralded an extremely painful period of mourning, depression, aggression, disruption and hostility within the small community that would last several years before it began to abate somewhat.

However sad and shocking this event must have been at the time, and today still is for those who hear or read about it, in a number of ways it is also very revealing – instructive one would almost say, if that word did not sound too cool and detached in this context. Jürgen Peters' suicide has been one of the very few cases in which the process of provoking and executing suicidal behaviour was actually 'recorded before a live audience', so to speak. It is also one of the very few cases in which the interaction between peers, 'peer pressure', is shown to be of decisive weight on the scales of life or death.

But there is much more to this tragic event than the occurrence of a tragic, provoked suicide. In a number of ways the events on that fatal day in August in Kassel are illustrative of the psychology of adolescence. Jürgen at 18 years was still an adolescent, an adult-to-become as the word adolescent literally means. His behaviour was also typically adolescent behaviour, such as his joy-riding with a customer's car, the impulsive reaction of climbing the watertower after being fired, and also the impulsive way of meeting the challenge if his peers by committing suicide. Likewise, the behaviour of these peers was typically adolescent behaviour: almost without any consideration of the risks involved they threw challenges at Jürgen as if it was merely a game.

It is difficult to imagine mature adults engaging in such dangerous, risky behaviour towards others. It is also almost unimaginable that young children would behave in the ways of Jürgen Peters and his peers. Then why is it not difficult at all to imagine adolescents doing so? What is it about adolescence that we tend first and foremost to see this as the period in life of experimentation, of risk-taking, of Sturm und Drang, of emotion-driven problem-solving? Why is it that adolescence, and in particular that period of adolescence that is called puberty, is feared by parents and other educators as the most dangerous developmental stage, a period of losing parental control to peers, of tensions and conflicts, of family chaos, of the threats of drug and alcohol abuse, traffic accidents, behavioural problems such as truancy, vandalism, risky sexual behaviour, criminality and mental problems such as depression and suicidality? Is it true, as many people claim, that such problems are particularly part-and-parcel of adolescence in the 20th and 21st centuries? In the following section we will address these questions, with particular emphasis on the issue of whether adolescence has indeed changed over the past two hundred years. While discussing this issue we will pay attention to a number of essential characteristics of

adolescent development, including brain development.

Adolescence

It has often been said that adolescence starts in biology and ends in society. What this expression intends to convey is that adolescence starts with the gene-driven biological changes of puberty but that the end of adolescence, the point in time when a young person takes on adult status, responsibilities and independence, is first and foremost a socio-cultural given. Consequently, the length of adolescence varies from culture to culture and even from social class to social class. Throughout human history, many cultures have established a transitional period between childhood and adulthood and rites of passage that are meant to mark the emergence of the adult out of the cocoon of childhood. Consequently, adolescence as a period characterized by change and transition is not a modern phenomenon, it is not an offshoot of the industrial or post-industrial era.

What is a modern phenomenon, however, is the large number of years of life that are designated by the term adolescence in our day and age. Over roughly two centuries the developmental period called adolescence has been lengthened so substantially, that today it comprises many of the years of life that former generations and eras considered as belonging either to childhood or to adulthood. In developed countries, and increasingly so in developing countries, adolescence today comprises at least one life decade, and often even more. If one considers the fact that puberty starts between 8 and 13 years of age in girls and 9 to 14 years of age in boys (Petersen and Leffert, 1995) and that full adulthood is often not attained before the second half of the third decade of life, adolescence marks a developmental phase that today considerably exceeds the length of childhood as traditionally understood (the period of birth till puberty). Remarkably, this substantial change of adolescence has at its roots not only social but also biological causes.

The lengthening of adolescence: challenges and threats

Various sources (see Tanner, 1962, Evers & Heineman, 1990) have indicated a substantial decline in the age of onset of puberty, defined as menarche (the first menstruation) or spermache (the first ejaculation). Some authors report a drop in age of menarche from an average of slightly less than 17 years of age in the first decades of the nineteenth century to about 12.5 years by the end of the twentieth century (Evers and Heineman, 1990, Brudevoll et al., 1979, Hauspie et al., 1997).

Although precise and valid data on population level are difficult to obtain and estimates of the decline in average age of menarche and spermarche differ somewhat between authors and studies, today there is a general consensus about a substantial decline over this period. There seems to be no consensus, however, on whether the average age is still declining. Some studies report an ongoing decline (Hauspie et al., 1997), while others do not (Barsom et al., 2008).

As to the causes of the overall decline over the past two centuries, there is more speculation than valid indication. Most authors attribute the decline to better health and nutrition (see Petersen and Leffert, 1995). But how that relationship should be explained is

unclear thus far. Nevertheless, according to some authors (Hamburg, 1989) the magnitude of the decline in the age of puberty over the past two hundred years is an evolutionary novelty that poses a number of challenges and threats, to society at large, to social institutions such as schools, to families, as well as to adolescents themselves.

In order to understand the challenges and threats posed by the earlier onset of puberty and the lengthening of adolescence, some developmental facts must be considered. First is the fact that adolescence is a period of pervasive, or even dramatic, biological changes. As to outward appearance there is no other period in human life where changes are so conspicuous, both in terms of height, weight, body fat, muscle mass, hair growth, pitch of voice, and sexual characteristics. These changes are to a large extent hormonally driven.

Adolescence is a period of pervasive, or even dramatic, biological changes.

Second and concomitant with the biological changes are psychological changes. The adolescent experiences feelings, develops cognitions and tends towards behaviours that are both new and which require substantial adaptation, self control and identity formation. As a matter of fact, it is fair to say that the adolescent has a dual task: to learn to live in a new body while getting accustomed to the use of a new mind. This is what Jean-Jacques Rousseau had in mind when he wrote in his famous Emile (1762, p.198) that man is born twice: the first time for existence, the second time for life.

The adolescent has a dual task: to learn to live in a new body while getting accustomed to the use of a new mind

Adolescence, as the second birth, is indeed a period of transformation, although it is not necessarily, as has often been claimed or assumed, a period of turmoil, 'Sturm und Drang', of intense tensions and conflicts. Only for a minority of youngsters, estimates vary between 10 to 20 % (Petersen and Leffert, 1995), can adolescence can rightfully be labelled as a 'problematic period'. Against this background, the drama of Jürgen Peters, as narrated at the beginning of this chapter, is an exception rather than the rule.

A number of aspects of the case of Jürgen Peters, however, are rather typical for the adolescent period. Most relevant are Jürgen's joy-riding, a typical example of risk-taking behaviour and experimentation, his climbing of the water tower and the implicated threat of self destruction, a typical example of impulsive emotion-focusing coping behaviour, and his reaction to the challenges by his peers, a typical example of a fragile self-identity and difficulty in resisting 'peer pressure', the temptation 'to prove oneself' to others, even if death is a probable outcome.

This raises the important question of why these phenomena are special for adolescence, or are they?'[1] In order to answer that question, first some biological and second some psychological facts about adolescence will be discussed in more detail.

The adolescent brain

There is more to the biological changes with which adolescence starts than the outward apparent changes in height, weight and secondary sexual characteristics. In actual fact, even before these changes that mark puberty, are beginning to appear, other remarkable but less visible changes are already going on.

For a long time it has been assumed that the human brain, like the rest of the body, reaches its mature status by the end of childhood, in or around puberty. This assumption has been reinforced by the observation that by age 5 brain size is approximately 90% of adult size. However, in the past decade a number of studies using techniques such as functional magnetic resonance imaging (fMRI) have revealed that the human brain continues to develop into the third decade of life and reaches its mature status during that time (Lenroot & Giedd, 2006, p. 720).

Important changes in or remodeling of the brain start shortly before the onset of puberty. At that time there is an increase in grey matter (neurons or brain cells) in certain brain areas, a process called neurogenesis or synaptogenesis. This increase or thickening of brain centres just before the onset of puberty seems to take place particularly in the prefrontal cortex (see Blakemore & Choudhury, 2006). This is the area of the brain that (neuro)psychologists prefer to label as 'the executive'. The basic tasks of this brain region are planning, decision making, weighing the pros and cons of different behaviours, sorting out conflicting thoughts, goal direction and exercising self control, which is the ability to suppress certain urges, that, if not supressed, may result in asocial, antisocial or socially unacceptable behaviours.

After puberty and the following decade of life this process of the thickening of the brain cortex is followed by a process of 'thinning', an elimination of neurons or synapses ('pruning'), in which frequently used connections are strengthened and infrequently used connections are eliminated. The net result of pruning is 'fine tuning' of the brain and increased efficiency of the remaining neuronal networks. This increase in efficiency is made possible by the process of myelinezation, myelin being a layer that neurons build around their extension (the part with which they make contact with other neurons).

Myelin acts as an insulator and vastly increases the speed of transmission of electrical impulses from neuron to neuron (see Blakemore & Choudhury, 2006). Increased myelinezation leads to an increase in white brain matter in the brain. Apart from acting as an insulator, there is also reason to assume that myelin plays a protective function for neurons.

Adolescence starts with biology, the onset of puberty, but also ends with biology, with the brain reaching its mature status roughly between 21 and 25 years of age

Arriving at this point, three important conclusions can be drawn. Firstly, from a neuropsychological point of view, adolescence starts with biology, the onset of puberty, but also ends with biology, with the brain reaching its mature status roughly between 21 and 25

years of age. Secondly, during the course of adolescence the brain is not only 'under development', but it is also more vulnerable than in later years. It is for that reason that, for example, the (ab)use of alcohol and other drugs carries greater neuropsychological risks when consumed in adolescence than in adulthood. In addition, the earlier the onset of such (ab)use during adolescence, the greater the possible risks and (long term) damage.

Thirdly, thinking, planning, decision making and self control is less efficient, more difficult and more exhausting, and requires more energy from adolescents than from adults. Consequently, adolescents engage in risky, erratic, asocial, antisocial or socially inappropriate behaviour more often than adults do.

> *The (ab)use of alcohol and other drugs carries greater neuropsychological risks in adolescence compared to adulthood.*

An intriguing question that arises is whether the declining age of puberty over the past two centuries has been accompanied by a decline in the age when the brain reaches its mature status. There is no way to answer that question empirically, since the techniques required such as fMRI were not available for most of that period. Some authors believe, however, that the number of years between the onset of puberty and brain maturity for previous generations was considerably shorter than for present generations (see e.g. Hamburg, 1989). The implication of this is that while the average onset of puberty has declined substantially, the average age of brain maturity has not changed. If that hypothesis holds up, the declining age of puberty has caused a disjunction of biological, psychological and social development. This implies that the number of years of biopsychosocial imbalance, of experiencing 'adult' feelings and desires on the one hand but not possessing an adult brain and its executive and self control functions on the other hand, have gone up dramatically. If the earlier age of puberty is indeed mainly caused by improved nutrition and health as was pointed out earlier, the bottom line might be that present-day adolescents are healthier in the physical sense, but not necessarily in terms of mental health and social or behavioural functioning.

Adolescent threats

Indeed, recent summaries of physical health status indicators suggest an emerging trend of healthier adolescents in developed countries (Irwin & Vaughan, 1988, Diekstra, 1995). However, a more comprehensive picture of the current state of adolescent health, seems to indicate otherwise. If parameters of health include mental and psychosocial conditions and behaviours which have longer-term implications for health such as dropping out of work or school, sexual activity, substance abuse, and inclination to violence, depressive mood swings and suicidality, current data do not provide unequivocal support for the view of improving health and social well-being among adolescents.

An important explanation for this state of affairs is that the lowering of the average age of puberty has been accompanied by the earlier use of various life- or (mental) health-threatening substances as well as an earlier emergence of mental disorders (see table 1).

Table 1

- When puberty age decreases, the prevalence of disorders that are/were normally associated with adulthood increases (decreasing age of onset): such as:

  - Depression and suicidal behaviour

  - Substance abuse and dependence

  - Behavioural disorders and criminal behaviour

- Hazard model applies: the earlier a disorder appears in the life cycle the higher the risk for future episodes

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> *Problem drinking and alcohol-associated morbidity and mortality rates have increased among adolescents.*

For example, over the past fifty years increasing percentages of young people have started to drink alcoholic beverages, their alcohol consumption has increased in quantity and frequency, and the age at which drinking starts has become lower (Perry, 1989, WHO, 1989, Diekstra, 1995, Curry et al., 2004). Consequently problem drinking and alcohol-associated morbidity and mortality rates have increased among adolescents and although they are higher for boys than for girls, the rise in alcohol use appears to be as strong for girls as for boys (Perry, 1989). Chronic excessive use of alcohol among adolescents is often a reaction to social problems, such as family difficulties or failure at school, and can also aggravate these problems. Acute intoxication often removes inhibitions that would otherwise prevent risky behaviours. It is especially implicated in aggression, crime, accidents, and suicidal behaviours.

What applies to alcohol use applies, mutatis mutandis, to the use of other substances, such as tobacco, cannabis, cocaine, and psychopharmaca (prescribed or non-prescribed). The age of the onset of use has lowered, and the quantity and frequency of use in adolescence have generally increased. There is also growing evidence to suggest that the use of substances tends to cluster. Adolescents who are regular smokers have a higher probability of using alcohol regularly. Adolescents who drink regularly are more likely than others to use illicit drugs (WHO, 1989). Regular multiple substance use is associated with poor performance at school, at work, in sports, and with a pessimistic future perspective.

From a sociocultural perspective it is important to note that the increase in substance use among adolescents, in particular the use of alcohol, tobacco and psychopharmaca, is

associated with the increased availability of those substances both in the family and at the societal level and with the increased acceptability of their use by young people as portrayed in the media, for example.

The combination of the increased availability and acceptability of chemical mind and mood changing substances in highly industrialized countries is, from a psychological perspective, particularly relevant with regard to depression and suicidal behaviours. Depressive mood disturbances and suicidal inclination peak during adolescence. In many countries, the majority of so-called non-fatal suicide attempts (or parasuicides) in young men and women are by overdoses of prescribed and non-prescribed drugs or (other) poisonous substances, often in combination with alcohol. Once young people have taken to coping with life stresses and strains through the use of chemical substances, such as alcohol and drugs, there is a strong increase in the probability of use of other chemical substances and their (combined) abuse or over-dosage, often labeled attempted suicide in the case of a nonfatal outcome and suicide in the case of a fatal outcome.
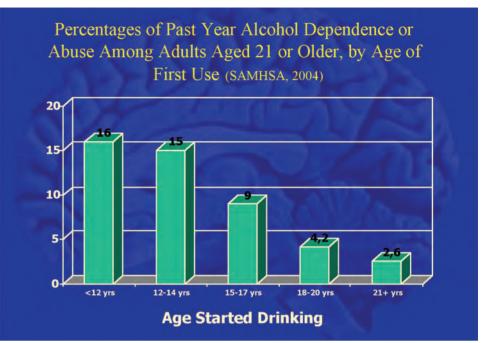
In addition, given the vulnerability of the adolescent brain as explained earlier, substance (ab)use carries a high risk of damaging brain development with both short and long term consequences (see table 2 for possible consequences).

Given the vulnerability of the adolescent brain, substance (ab)use carries a high risk of damaging brain development with both short and long term consequences

Table 2

- Adolescents with a history of extensive alcohol use or binge drinking, compared to a control group show...

  - Reduced hippocampus volume (10-35%) (part of emotional brain)
  - Less brain activity during memory tasks

- Effects of cannabis is related to hard drug use in adulthood and, in some adolescents, to irreversible brain/mental disorders (such as psychotic disorders)

It is also a given that the earlier a disorder appears in the life cycle the higher the risk of future episodes of that disorder (such as depression and substance dependence) as well as of other disorders (for example, a depressive disorder might lead to substance abuse or dependence and vice versa). Consequently, adolescent (ab)use of substances and adolescent violent and criminal behaviour as well as adolescent depression and suicidality are predictive of mental and behavioural disorders in adulthood. Figure 1 shows such a relationship for alcohol dependence and abuse, while available data convincingly show that similar relationships hold true for other disorders, such as depression and suicidal behaviour (see Merikangas & Angst, 1995, Diekstra, 1995).

Source: Substance Abuse & Mental Health Services Administration (SAMHSA). (2004)_ National Survey on Drug Use and Health. See
http://www.oas.samhsa.gov/2k4/ageDependence/ageDependence.htm

The clear-cut relationship between the age of an onset of a disorder or problem behaviour and the risk of future disorder episodes or problem behaviours implies a crucial indication for prevention or intervention, namely: *every year that the use of a substance or emergence of a disorder or problem behaviour is delayed, the risk of developing substance use disorders, other disorders or problem behaviours is reduced* (SAMSHA, 2004). Or stated otherwise, the earlier in adolescence that youngsters become resilient to mental ill-health and distress, the seduction of substance (ab)use and problem behaviour, the higher the probability that they will develop into healthy, mentally sound and socially well-functioning adults. To enhance the resilience of adolescents therefore constitutes a pivotal challenge.

Adolescent challenges

An important conclusion from what has been discussed so far is that adolescence is the developmental period par excellence for fostering overall development, including physical, cognitive, social and emotional health. For adolescence is the period during which society gives the young person four important tasks to fulfill, while at the same time biology provides the opportunity to develop the brain in ways that foster and support the completion of these tasks.

The four tasks are to develop[2]: a) a social self or identity, being able to relate to others, both inside and outside the family of origin, in ways that are constructive, sensitive to both others' and one's own needs, conscious of rights and responsibilities; b) a sexual self, being able to experience and express a variety of feelings, build and maintain intimate

relationships with at least one member of the opposite or same sex, establishing commitment to that relationship and, possibly, to a family: c) a working self, i.e. developing a professional identity and competencies, not only to be economically independent, but also as a source of self respect, social respect, self knowledge and self actualisation: d) a philosophy of life, a moral frame of reference for making important life decisions and for understanding and evaluating the attitudes and behaviours of others.

> *Adolescence is the developmental period par excellence for fostering overall development, including physical, cognitive, social and emotional health.*

In order to arrive at the threshold of adulthood with considerable progress having been made in the completion of these tasks, the adolescent has a high need for input and feedback from both peers and relevant adults, not only parents but also other adults, such as teachers, employers, responsible adults in the workplace, sports clubs, volunteer organisations, spiritual or religious leaders, and so on.

A number of authors[3] have recently voiced the opinion that the task of such adults is to function first and foremost as the adolescent's 'frontal lobes', for learning from experience may not take place until underlying brain structures are in place. Well-informed adults look at adolescent risk taking as necessary and normal; they see one of their tasks as being to help young people to find safe ways to experiment and take risks. They also help them decipher emotions, and do not assume that they automatically achieve emotional understanding of themselves and others. They also understand that adolescents still have to learn social skills, such as communication, goal setting, problem-solving techniques, stress management, refusal skills, and decision-making skills. And they understand that successful adolescent development, including academic and professional development, depends on the extent to which the young person acquires such life skills.

The importance of the acquisition of social and emotional skills by young people has led the United Nations to include in the Convention on the Rights of the Child (CRC)[4] the position that: 'the education of the child shall be directed to the development of the child's personality, talents and mental and physical abilities to their fullest potential'. The implication of this article of the Convention is that the enhancement of the social and emotional development of young people is as much a task of the educational system, that is of schools, as it is a task of parents and families.

Enhancing adolescent development

Basically there are two ways to look at the contemporary lengthening of adolescence as described earlier in this chapter. One way is to approach it as a threat because the longer the period of biopsychosocial imbalance, the higher the risk of the emergence of mental and behavioural problems and thus maldevelopment, with the potential spillover into adulthood.

The other way is to see it as both an earlier as well as a longer opportunity to help young

people to acquire the attitudes and skills necessary for healthy development and successful adulthood. Taking the latter perspective, many authors have pointed out ways to foster adolescent development and prevent the emergence or continuation of emotional and behavioural problems. Common to most propositions are the following three approaches[5]:

- Provide opportunities for adolescents to engage in healthy discussions that question and examine the issues of underage drinking or other high risk behaviours.
- Provide self-management skills for self-control such as refusal skills, goal-setting, and planning for the future.
- Teach decision making based on intrinsic motivation rather than external punishments or consequences.

These suggestions almost completely coincide with what many experts in the field of adolescent health and development call either Life Skills Education (LSE) or Social Emotional Learning (SEL).

In 1998 a groundbreaking meeting on Life Skills Education was held at the World Health Organisation's (WHO) Headquarters in Geneva. Participants were representatives of a number of agencies of the United Nations, such as WHO, UNICEF, UNFPA, UNHCR and UNAIDS, the joint United Nations programme on HIV/AIDS. According to the report of that meeting[6] there was unanimous agreement among the agencies represented that (1) life skills are of pivotal importance to the development of all youngsters around the world; (2) schools have a central role to play in the teaching of life skills; and (3) that generally Life Skills programmes, which are meant to promote healthy physical, mental and social development (cfr. WHO's definition of health as 'a complete state of physical, mental and social well-being, not merely the absence of disease') have proven to be effective in these respects.

Life Skills were defined as follows: *"abilities for adaptive and positive behaviour that enable young people to deal effectively with the demands and challenges of everyday life. In particular, life skills are a group of psychosocial competencies and interpersonal skills that help to make informed decisions, solve problems, think critically and creatively, communicate effectively, build healthy relationships, empathise with others, and cope with and manage their lives in a healthy and productive manner. Life skills may be directed toward personal actions or actions toward others, as well as toward actions to change the surrounding environment to make it conducive to health[7]."*

The acquisition and implementation of these skills require a well-developed 'executive' in the brain, i.e. a well-developed frontal brain. This raises an intriguing question, namely: *if adults offer and deliver to adolescents opportunities for Life Skills Education or Social Emotional Learning, do they therewith enhance the maturation of the adolescent brain, the frontal parts in particular?*

The answer to that question, unfortunately, has to remain open, since at present no data

are available on the effects of so-called SFE of SFL programmes on brain development and functioning in adolescents.

However, there is a large number of studies on the effects of SFE or SEL programmes, in and outside schools, on outcomes such as increase in prosocial behaviour, self control, self efficacy, and a decrease in problem behaviour, aggressiveness, and drug(ab)use.

The most recent review of the research literature of school-based SFE/SEL programmes, comprising over 700 studies and several hundreds of thousands of adolescents, draws the following conclusions (Diekstra & Gravesteijn, 2008).

Firstly, the general picture that emerges from the research literature shows convincingly that (1) SFE/SEL programmes do indeed significantly enhance what they are teaching, namely social and emotional skills among youngsters;(2) SFE/SEL programmes significantly reduce or prevent behavioural and mental problems or disorders, such as violent, aggressive and antisocial behaviour, drug(ab)use, anxiety and depressive symptoms and disorders; (3) SFE/SEL programmes enhance or promote positive attitudes and behaviours towards self, others and school, such as self concept, prosocial behaviour, school compliance and service orientation. (4) SFE/SEL programmes significantly enhance school grades and/or academic achievement.

Skills for Life / Social and Emotional Learning programmes significantly reduce or prevent behavioural and mental problems or disorders, such as violent, aggressive and antisocial behaviour, drug(ab)use, anxiety and depressive symptoms and disorders

Secondly, the most effective programmes appear to be those that are theoretically consistent, highly interactive, use a variety of didactic or 'work' forms, cover both general and domain-specific skills (comprehensive life skills programmes), are of considerable duration or intensity (from several months up to a year) and are cast within a supporting community or include environmental strategies. An important aspect of the latter is the use of social influence strategies, i.e. the establishment of shared norms for prosocial behaviour, interpersonal interaction, drug use (such as 'no binge drinking'), and the like.

Thirdly, teachers appear to be as effective programme deliverers as others, such as psychosocial professionals, although acquisition by teachers of skills in interactive training methods is crucial, particularly when the prevention of drug(ab)use and/or mental problems or disorders are (among) the programme goals.

Fourth, there is no reason for concern that SFE/SEL programmes are predominantly suitable for youngsters from families and neighbourhoods that are relatively well off or socially advantaged. If anything, programmes are at least as beneficial, if not more, to youngsters from socially disadvantaged family and urban contexts.

Fifth, the effects of SFE/SEL programmes appear to be larger in the short term, after programme completion and a number of months thereafter, than in the longer term, although also the longer term effects are usually significant.

The latter finding suggests something intriguing. It seems as if SFE/SFL programmes speed up the formation of the internal 'executive' and thereby shorten, so to speak, adolescence psychologically, and maybe even biologically.

If future research using present-day technology such as fMRI substantiates this supposition, a dream has become true. Adults in schools and other organizations, such as sports clubs, offering SFE/SFL education, can indeed function as frontal brains until such time that the brain of the adolescent has been developed enough to function all by itself. Against this background, it is a sad observation that in by far the majority of countries in the world, and therefore in most schools around the globe, Skills for Life Education programmes are not on offer. They are also not on offer in most youth health care facilities. Worse, most education and health care policy makers as well as the general public are not even aware of the availability and efficacy of such programmes.

Epilogue

What if Jürgen Peters would have attended a Life Skills Education programme in high school? What if Jürgen Peters' employer would have known of the peculiarities of adolescent development, both psychologically and biologically and had acted accordingly when Jürgen returned the client's damaged car to the garage? What if Jürgen's peers at the foot of the water tower would have attended a Life Skills Education programme at high school? What if adult bystanders had been conscious of the importance of functioning as the frontal brains of those adolescent peers and had reacted accordingly and immediately? To each of these 'What if' questions applies that 'posing the question is answering it'. Clearly, there is no exaggeration in the statement that many adolescents do not develop favorably, suffer from emotional and behavioural problems that spill over into adulthood, or even, like Jürgen Peters, never make it into adulthood.. Clearly, society, parents and young people themselves suffer the loss of happiness, wellbeing and even life, mainly because of a lack of developmental knowledge, understanding and appropriate action by the adults surrounding them.

In conclusion: while adolescence has changed substantially, the changes necessary in our health and educational systems and public awareness still lag behind to an enormous degree.

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[1]Petersen & Leffert, 1995, who gave their publication the title 'What is special about adolescence?'

[2]Wall, W.F. (1968) Adolescents in school and society. National Foundation for Educational Research. Slough

[3]Partners in Life Skills Education. Conclusions form a United Nations Inter-Agency Meeting. Geneva: World Health Organisation. 1999, WHO/MNH/MHP/99.2, pp.14

[4]The CRC is a specification of the Universal Declaration of Human Rights to the particularities of the position of the child

[5]See N. Smith http://www.bacchusgamma.org/

[6]Partners in Life Skills Education. Conclusions form a United Nations Inter-Agency Meeting. Geneva: World Health Organisation. 1999, WHO/MNH/MHP/99.2, pp.14

[7]Partners in Life Skills Education. Conclusions form a United Nations Inter-Agency Meeting. Geneva: World Health Organisation. 1999, WHO/MNH/MHP/99.2, pp.14

Rene F.W. Diekstra is a Professor of Psychology at the Roosevelt Academy, Honors College of the University of Utrecht in Middelburg, The Netherlands. He is also a Professor of Youth and Development at the University for Professional Studies in The Hague, the Netherlands. He is a world-renowned expert on suicidal behaviour in adolescence, has worked as programme manager for the World Health Organisation in Geneva and acts as an advisor to national and local governments on youth health policies. He is the author of the first European Skills for Life programme that proved to be effective in consecutive experimental studies. Recently he carried out a nation-wide study on what grown-ups know and understand about development of children and adolescents. He has published over 45 books and over 400 articles in scientific journals. He is also a columnist for the State Journal of the Netherlands and a number of daily newspapers. Together with his partner, he guided three sons through the transition from childhood into adulthood.

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Multiple intelligences in the knowledge-based society

by Professor Steen Hildebrandt
University of Aarhus, Denmark

SUMMARY

The Knowledge Revolution is comparable to the Industrial Revolution

The point of departure for the points raised in this presentation are closely related to Ken Robinson's three fundamental arguments:

- *We are caught up in a social and economic revolution, which is comparable to the Industrial Revolution of the 19th century. This revolution has hardly begun.*
- *To survive it we need a new understanding of human resources. Current approaches to education and training are hampered by ideas of intelligence and creativity that have wasted untold amounts of talent and ability.*
- *To develop these resources we need radically new strategies. We cannot survive the future simply by doing better what we have done in the past. There is no point in raising standards if they are the wrong standards.*

The Knowledge Revolution has had a profound impact on the role of employees

Many European societies are part of this revolution. The labour markets of this century are changing beyond all recognition. We are talking, for example, about the Y-generation. We experience new values and expectations from what we are used to call employees, but who will have quite a different significance and quite different roles in the future. The nature and our understanding of the organization of tomorrow is changing.

Change is becoming the normal state

Therefore, it is not a revolution in a figurative sense, but a real one comparable in scale and impact to the massive upheavals of the Industrial Revolution. The new revolution is being driven, as the last one was, by developments in technology. Change has always been part of human history but it seems as if we are moving from a situation where change was an exception to a situation where change is the normal state.

The shift from manufacturing to the so-called knowledge-based industries

New technologies, the Internet, advances in neuroscience and genetics, information sciences and so on are transforming the nature of the work we do and the work we will do in the future; how we work, who works, with what, when and for how long a time. Also, new technologies are generating many new social issues and cultural challenges. One of the most significant changes is the shift from manufacturing to the so-called knowledge-based industries.

Individuals and groups of individuals are the most critical elements in the new economies
This change is characterized by the fact that individuals and groups of individuals are the most critical elements in the new economies. The creation of value by modern knowledge-based societies and economies are of course dependent upon many factors but it seems as if the human element is the single most critical factor, i.e. humans as individuals, and more critically, individuals with a diversity of education and backgrounds working together with other individuals in complicated and shifting ways. Therefore we are also talking about network organizations and network societies. The most important factor in these networks is individuals who connect with each other and cooperate with each other in diversified shifting networks.

The school system must adjust to meet the requirements of the knowledge-based society
Therefore, human beings are important in understanding what is contributing to value creation in modern societies. Of course, people have always been important, as has technology, but the specific character of this importance has changed as part of the ongoing transformation of society, as part of the shift from the industrial to the knowledge-based society.
Society is in great need of diversity. The creative and innovative society is in need of creativity. The network society is in need of social intelligence. Experience based society is in need of emotional intelligence. In short, modern societies are in great need of multiple intelligences, and not only the single intelligence which we measure again and again, i.e. the intellectual intelligence. The whole school and education system ought to be changed in accordance with this view. This means that all human intelligences must be appreciated and also measured, at least in the sense that they are accepted, appreciated and evaluated as part of developmental and pedagogical processes in schools and universities as well as in companies.

Our children must take care of the Earth in the future
The children of today are the future. For this reason we have to take care of them. The children will be the leaders, the workers, the managers and the teachers of the future. As the human community, living on the Earth, we are dependent upon our children.

As humans we do not always do very well. The English Professor Ken Robinson, who has been working in the area of creativity in schools, said:

> *If all insects would disappear from the Earth within 50 years all life on Earth would end. If all human beings were to disappear from earth within 50 years all life on Earth would flourish.*

With this quote he is pointing to the fact that we do not treat the Earth or our children in a proper way.

Growth from Knowledge: what growth and what knowledge?
This morning I read an advertisement in a taxi which stated: 'growth from knowledge'. This statement is most interesting, because it raises two questions:
• What is growth?
• What is knowledge?

We normally conceive of growth as a materialistic phenomenon and we strive for industrial, economic and materialistic growth, as if this were the single most important goal in the world. Perhaps this is one of the main challenges we have to face in our time. We have to find answers to the questions:

• Why are we here?
• What are we aiming for?

We have been scripted so that we as human beings should strive for industrial and economic growth. This is the leading philosophy.

When the children of today become adults, they may instead choose to strive for social, emotional and ecological growth. By focusing only on a narrow, materialistic concept of growth we are harming the Earth in a dramatic way. Therefore the Earth is crying, because we are not doing things in the right way. For this reason we have to change our worldview and our view of human beings. In this context we have also to change our view of children.

> *We have been scripted to strive for industrial and economic growth. When children of today become adults they may choose instead to strive for social, emotional and ecological growth.*

Adults have more responsibility than children, because they have the power
We as adults have the final responsibility for all that is done in relation to children. For this reason we have a much bigger responsibility with regards to children in comparison to our responsibility to other grown-ups, because they can oppose us if they do not agree with us.

My fundamental point of departure is therefore:

> *because the world is becoming smaller and smaller, while the population continues to increase. Young people will be faced with great challenges when they grow up. They will face a very complex world with extreme conflicts and many groups, regions and countries with conflicting interests. The challenges in fifty years time for the leaders, the politicians and the workers will be much more demanding than we, the adults of today, face at this moment. Our world of today is not easy, but their world will be much more complex. I am not saying that it will be catastrophic, but it will be much more complex. It will demand much more from them as*

individuals, as decision-makers, as politicians, as stewards of humanity and of democracy in the future. It will be a demanding task to shape new forms of democracy in a highly technological world. Therefore I consider that the most important challenge that we face as a society is to enable our children to gain the ability to navigate through a very complex world. They have to learn to calculate, to speak, to learn physics and so on, but before all these practical things they have to learn to exist in a complex world'.

A rapidly changing world requires a new school system
What is needed for the world of the future is "existential intelligence": the intelligence to exist. By this I mean the ability of young people to find their way forward, to navigate through and within the complexities in their lives, in their families and in the countries where they will live. For our (grand) children the world will be a much smaller place than for us and it will happen much more frequently that people will live in various countries. This fact has consequences for the school system. In my own youth in the 1940's and 1950's in Denmark the world was more stable than it is today. And this trend will continue: the 2050's will be more volatile than the 1990's.
How can we prepare our children today for the tasks and challenges that they will face in 50 years time when they will be the leaders, the managers, the workers and the voters? For them lifelong learning will be the reality. If we take these elements into consideration we cannot escape from the conclusion that we have to reshape our school systems. The school or the university is no longer the place where you convey all the knowledge that somebody may need in his/her life and professional career, but it is just a phase in the life trajectory of somebody who will have jobs where continuous learning will be an integral part of the assignment.

This insight changes the perception of the mission of the school system:
- Not all knowledge of the usual subjects has to be transferred to the students by their 25th birthday, but instead;
- To teach them to be able to learn over their entire life span, to learn to navigate their way within and through many different contexts, to learn to exist, to live, the ability to know who they are, their ability to have relationships with other people, the ability to respect themselves. On the basis of these learnings they could then go on to learn the various subjects (mathematics, language, physics, biology, etc.). But first of all they must learn to live a healthy life in an unhealthy world.
- One of their tasks will be to contribute to building a more healthy world'.

Today's Transformation Process is comparable with that of the Industrial Revolution in the 19th century
We have developed a world in which only a small part of human intelligence is recognized, and valued, namely the intellectual capacity. This tendency to only value intellectual
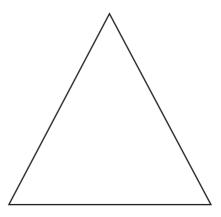
capacity has to do with the industrialised society which was created 100 to 200 years ago. Today we are caught up in a social and economic revolution, which is comparable in scale to the Industrial Revolution. The revolution of today has hardly begun. It will have a myriad of consequences for us all. In order to be able to handle this new revolution we need a new concept of human resources. Current approaches to education and training are hampered by perceptions about intelligence and creativity that have wasted untold amounts of talent and ability, because with the current evaluation mechanisms we only evaluate a small part of a person's intelligence and capabilities.

> *Current approaches to education and training are hampered by perceptions about intelligence and creativity that have wasted untold amounts of talent and ability*

The Industrial Society can be depicted as a Triangle
You could say that a triangle best epitomises the relationships in the industrial society. The industrial society is depicted as a hierarchy. The overall idea behind the Industrial Revolution was the division of labour. It brought us a whole range of industrial products, but at the same time our society was changed along the lines of the Industrial Revolution, dividing all parts of life into different segments, including schools and public agencies. There were segments for the various school subjects, for areas of production, and so on and people were trained in accordance with this paradigm:
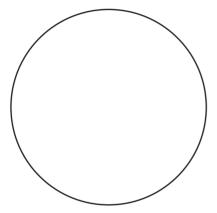
For example, teachers can choose to train in a wide range of different specialisms. They work mainly alone in large organisations. It is their task to do an effective job, but only in their own area.

The triangle epitomises the philosophy of the Industrial Society.

The current Social and Economic Revolution is depicted by a Circle of Networking
The current Social and Economic Revolution goes hand in hand with the emergence of other types of relationships:
- There will be much more networking;
- The shape which reflects these new relationships and hierarchies is the circle;
- The division of labour is not the dominant paradigm, but instead the opposite, namely the sharing of knowledge. This knowledge is not the narrow blocs of knowledge of the era of the Industrial Revolution, but it encompasses creativity, social abilities, emotional abilities, and special abilities such as being a good football player, ballet dancer, actor or film producer.

The Circle depicts the Networking Society, which will emerge as a result of the current Social and Economic Revolution.

Europe as a region is moving from an Industrialised Society towards a Knowledge-Based Society, which every day is becoming more dependent upon individuals:
- On industrial facilities, machines, etc. When they were in place, growth was assured and the labour force would do its work.
- In the Knowledge-Based Society value creation will be more and more dependent upon individuals who work together with other individuals in network type structures.

The Knowledge-Based society is based on Multiple Intelligence
When we consider the Knowledge-Based Society and the work being done in network structures, then we begin to understand the importance of the new concept of multiple intelligences. We have always tended to think that there was only one type of intelligence, namely the intellectual intelligence that is measured by IQ-tests. People's intelligence is measured all the time and the school systems have incorporated these tests into their procedures and structures. By integrating this in our school systems we have created lots of 'winners' and lots of 'losers'.

I think, very soon, this testing of intelligence will be forbidden just in the same way as hitting children is now forbidden by law. It is a similar type of violence against children. In this way only a narrow concept of intelligence is measured, ignoring emotional, social, creative, artistic and other types of talents.

In Denmark we are close to a language that speaks of 'strong' and 'weak' children. By using this language we are creating 'losers', and this division of children into segments is based on narrow and faulty intelligence tests. We must strongly criticise this approach for two reasons:
- We are not treating children in a fair way;
- As a society we need all the other types of intelligences, which we now disregard, and do not appreciate.

Howard Gardner developed the concept of multiple intelligences
The concept of multiple intelligences was described in the book by Howard Gardner entitled 'Intelligence Reframed, Multiple Intelligences for the 21st Century' (1999). Professor Gardner studied the subject at Harvard University for twenty years and he distinguishes seven different types of intelligences:
- Linguistic intelligence
- Logical-mathematic intelligence
- Musical intelligence
- Bodily-kinesthetic intelligence
- Spatial intelligence
- Interpersonal intelligence
- Intrapersonal intelligence
This new approach of Howard Gardner is now broadly accepted by scientists.

The concept of Multiple Intelligences must be implemented
The concept of multiple intelligences should really be taken seriously and the various intelligences should be understood, studied, appreciated, stimulated, and perhaps also measured. We need everyone and all of their different intelligences in the Knowledge-Based Society of the 21st century for it to be effective and prosperous. People should also have the ability to work together with others, because in the future the wealth of a society will depend on its ability to create more and more complex solutions for products and services.

Key Characteristics of the New School System: human beings are again treated as human beings
- There is an expression 'you get what you measure'. If you measure children's abilities in physics, mathematics and language you will eventually get what is being measured. If we want to change the school system we should start to measure the abilities of children differently.

- One of my own teachers said to us 'you can't compare yourself with others. You are you'. We are always comparing individuals, schools, communities and societies. The OECD's PISA Study is a good example. The philosophical concept on which the PISA Study is based is that of the industrial society, not the Knowledge-Based society as described above. The PISA Study measures the ability of the students in mathematics, science and language, but because of this these organisations orient themselves towards the PISA criteria, neglecting other domains such as creativity, interpersonal and intrapersonal intelligence and so on'.
- For example, a boy was told by his teacher that he was stupid and a dummy. When a teacher makes such remarks every day to a child, then in the end the child will start to behave in that way. A philosophical and educational mistake is being made here. Everybody is an individual and has the right to be treated as such.
- The heart has been neglected in our school systems and society, and the brain has been given too much preponderance. The heart will become more important again. We must show children how to listen to their own hearts, because your heart cannot lie to you. This is a basic ability that people need to learn to live their lives.

Today many parents are fearful about the future well-being of their children. As parents they wish for a good future for their children. Because of this, parents, also in their role as voters, demand from their governments more of the same 'school system''. This is the wrong demand. One of the fundamental changes of our school system should be that we no longer consider the student as an object, who should be filled with knowledge, but instead as a subject, an individual, who has the right to individual treatment. The teacher and the school should accept the student as he/she is, and not as the teacher would like to see him/her. And the same is true regarding the teacher's perception of how the student should evolve. These wishes of teachers are often based on old models that were valid in the industrial societies of the past but which are not relevant anymore. In twenty years time our society will look completely different from how it is today.

> *One of the fundamental changes to our school system should be that we no longer consider the student as an object, who should be filled with knowledge, but instead as a subject, an individual, who has the right to individual treatment.*

With regard to the shaping of our future societies the following questions should be clarified by the European Parliament:
- What kind of European Union do we want? What should be the role of the European Union in the world of tomorrow? What is our perception of a human being?
- What could be the European Union's specific contribution to the world? Will the EU be the world's school? Can the European Union be the place and the laboratory where we help people to be and to become human beings, who respect each other and who live together in peace, in a democratic context and whose well-being is based on its

innovative and knowledge driven character?

Once these questions have been clarified then the question can be asked: what then does this mean for the school system and the practices and procedures in schools?

Steen Hildebrandt is a Professor of Organisational and Management Theory at the Aarhus School of Business, University of Aarhus, Denmark. The focus of his academic work has been on subjects such as: management and organisational theory, project and quality management, learning organisations and human resource management. Currently he works on topics such as change management, skills development and leadership in the knowledge society. He was elected by the MBA students at Aarhus School of Business as the year's best MBA teacher in 2001, 2002, 2003, 2005, 2006, 2007 and 2008.

He has written, edited and contributed to more than 200 books on organisations and management and he has written hundreds of articles. He is also a business editor at the Danish newspaper 'Børsen'. Together with a colleague he runs a consultancy firm called Hildebrandt & Brandi A/S.

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