

PART II

CHAPTER 5

A WHOLE LIFE, AND DREAMS

Humans are regarded as the most social animal, which explains the thriving of the human species and enchanting social lives.¹ Human social brains have a ‘theory of mind’, which is a capability of attributing mental states to other persons and predicting others’ desires and beliefs.² The neurosciences normally concentrate on the adult brain and mind including their declining states. Methodologically there can really only be one empirical target: the brain of an individual; in practice, of a mature adult human. Thus the neuroscientific account may underestimate the infant, child and youth ages together with socio-cultural and unconscious influences. In contrast, traditional Christian thinking views human persons before birth,³ across a lifetime which includes their souls and the life hereafter.

This chapter considers a wider existential perspective, convinced that scientific-social studies can inform the Christian understanding of persons. Attention is to given society, language, the young brain/mind and also the phenomena of dreams. The first section, ‘A Whole Life’, visits some areas that can diversify the scientific and philosophical accounts of brain and mind: infant and youth development, language acquisition, the young brain and mind, the young soul, and a view of life as vocation. The second section proposes an additional area which is harmonious with a Catholic outlook: dreaming.

A WHOLE LIFE

Society and Culture

Cognitive neuroscience has progressed chiefly with studies of the individual brain but until recently has been less interested in the subject’s relationships with others

¹ Uta Frith and Chris Frith, “The social brain: allowing humans to boldly go where no other species has been,” *Philosophical Transactions of the Royal Society B* Vol.365 No.1537 (12 January 2010), pp.165-176

² Frith & Frith, *The social brain*, p.165

³ Genesis 25:22-23; Isaiah 49:1; Jeremiah 1:5; Psalms (138) 139:13-16; Luke 1:15, 41-44

and social situations.⁴ The question can be asked, “would a rose by another name smell as sweet?” and one answer is ‘no’ from a social viewpoint. If a person believed the rose was another flower, the smell differs. Emotion is context-dependent.⁵ Moreover, functional neuroimaging has demonstrated individual variations in brain activity in the experience of emotions like sadness, without genetic effects.⁶

Similarly, emotions and the brain feature in a phenomenon known as rapid facial reaction (RFR) as emotional facial mimicry. People who see a smiling face usually smile, as the muscles causing the raising of cheeks increase in activity. The view of an angry face causes a scowl when the muscles causing the movement of eyebrows usually respond. Generally adults will mimic facial expressions within 1000 milliseconds, however, adults with autism spectrum disorder (ASD) fail to do this. Such RFR and interpersonal matching are connected with the development of social-emotional skills.⁷ Responses to angry, happy, fear and sad facial expressions can be studied in relation to mimicry and emotional responsiveness to specific emotions during childhood.⁸

Sociologically, a distinctively human characteristic is dependence on emotions to form social bonds and multifaceted cultures.⁹ Emotions are envisaged by sociologists as the “glue” holding people together, producing commitments to vast social and cultural structures. Interestingly, in the social sciences and sociology, there is a growing trend towards ‘nature’ and biology. However, crude biological determinism is not accepted but there is openness to nature and culture where a more

⁴ Tania Singer, “The past, present and future of social neuroscience: A European perspective,” *NeuroImage* Vol.61 No.2 (June 2012), pp.437-449

⁵ See Kevin N.Ochsner, “How Thinking Controls Feeling: A Social Cognitive Neuroscience Approach,” in Eddie Harmon-Jones and Piotr Winkielman (eds.), *Social Neuroscience: Integrating Biological and Psychological Explanations of Behavior* (New York and London: The Guilford Press, 2007), pp.106-136 (p.108)

⁶ Catherine Côté et.al., “Individual Variation in Neural Correlates of Sadness in Children: A Twin fMRI Study,” *Human Brain Mapping* Vol.128 No.6 (June 2007), pp.482-487.

⁷ Paula M.Beall et al., “Rapid facial reactions to emotional facial expressions in typically developing children and children with autism spectrum disorder,” *Journal of Experimental Child Psychology* Vol.101 No.3 (November 2008), pp.206-223.

⁸ P.K.H.Deschamps et.al., “Electromyographic responses to emotional facial expressions in 6–7 year olds: A feasibility study,” *International Journal of Psychophysiology* Vol.85 No.2 (August 2012), pp.195-199

⁹ Jonathan H.Turner and Jan E. Stets, *The Sociology of Emotions* (New York and Cambridge: Cambridge University Press, 2005), p.1.

wholistic, co-constructionist approach recognises that modern humans are mostly the product of ‘social facts’, but behaviour is also affected by evolutionary factors.¹⁰

Social psychology looked to variable circumstances and was regarded as anti-reductionist.¹¹ Whereas, psychobiology avoided mentalist and functional ideas and stressed neural correlates and physiological mechanisms. Then ‘social neuroscience’ was used in 1992 to associate the biological and social.¹² There is important research focused on self-processes including emotion regulation, self-reference, and attitude processes, and on the ways in which humans make sense of other people via mirror neurons, theory of mind, or empathy.¹³

The newer sub-speciality of social neuroscience is also known as the neurobiology of social behaviour.¹⁴ Social neuroscience is linked with social cognition, development, collective behaviour, and human uniqueness. There are conceptual challenges and the rapid pace of research which leaves little time to reflect on the questions.¹⁵ Robotics and artificial intelligence are interested in the social too.¹⁶

Social animals depend on communication for survival and need cognitive capabilities to monitor others’ behaviour and adapt to competitive and cooperative signals. It is thought that there are evolved brain areas dedicated to processing social communications: the ‘social brain’.¹⁷ The relative size of the brain or neocortex in a

¹⁰ John Bone, “Beyond Biophobia: A Response to Jackson and Rees, *Sociology* 41(5): 917-930,” *Sociology* Vol.43 No.6 (December 2009), pp.1181-1190. See also Stevi Jackson and Amanda Rees, “The Appalling Appeal of Nature: The Popular Influence of Evolutionary Psychology as a Problem for Sociology,” *Sociology* Vol.41 No.5 (October 2007), pp.917-930

¹¹ Gary G.Berntson and John T.Cacioppo, “Multilevel Analyses and Reductionism: Why Social Psychologists Should Care about Neuroscience and Vice Versa,” in Gary G.Berntson and John T.Cacioppo (eds.), *Essays in Social Neuroscience* (Cambridge, Mass. & London : The MIT Press, 2004), pp.107-120

¹² Berntson & Cacioppo, *Multilevel Analyses and Reductionism*, pp.107-120

¹³ Matthew D.Lieberman, “A geographical history of social cognitive neuroscience,” *NeuroImage* Vol.61 No.2 (June 2012), pp.432-436

¹⁴ Ralph Adolphs, “Conceptual Challenges and Directions for Social Neuroscience,” *Neuron* Vol.65 No.6 (25 March 2010), pp.752-767 (p.752).

¹⁵ Adolphs, *Conceptual Challenges*, p.752

¹⁶ Social robotics uses ‘embodied’ technologies designed for social interaction and has relations to the body and embodiment. See Morana Alač, “Moving Android: On Social Robots and Body-in-Interaction,” *Social Studies of Science* Vol.39 No.4 (August 2009), pp.491-528. Also related it the social interactions of humans and computers, cf.Eun-Ju Lee, “The more humanlike, the better? How speech type and users’ cognitive style affect social responses to computers,” *Computers in Human Behavior* Vol.26 No.4 (July 2010), pp.665-672

¹⁷ Beatrice de Gelder and Sarah Partan, “The neural basis of perceiving emotional bodily expressions in monkeys,” *NeuroReport* Vol.20 No.7 (6 May 2009), pp. 642-646

species is correlated with its social bond coalitions or the size of its social network. Comparative investigations support an important role for social interactions in the cognitive evolution in primates, other mammals and birds.¹⁸

In a related field, cultural neuroscience studies cultural variation in genomic, neural and psychological processes as a way to express the two-way relationships and their emergent properties.¹⁹ Two questions are, “how do cultural traits (e.g. values, beliefs, practices) shape neurobiology (e.g. genetic and neural processes) and behavior and how do neurobiological mechanisms (e.g. genetic and neural processes) facilitate the emergence and transmission of cultural traits?”²⁰

There are also some limitations to this approach. Some believe that cultural neuroscience approaches ‘culture’ in a non-neutral even political manner.²¹ For example, mind-body thinking occurs cross-culturally.²² Reasoning about the autonomy of mental and biological function reaches beyond Western populations. A study found significant cross-cultural parallels across two samples with regard to where the line between “you” and “body” lies. Person-body dualism may not be a default view but where there are cross-cultural similarities for dualistic notions of ‘person’ and ‘body’, this may not be wholly culturally transmitted.²³

In addition, there is cultural and scientific significance in comparisons between apes and humans.²⁴ But human features shared with an ape may not necessarily be enlightened by examining its ape manifestation. One view is that, lacking a reasonable presumption that the feature is homologous between human and ape, that

¹⁸ Carel P. van Schaik, Karin Isler and Judith M. Burkart, “Explaining brain size variation: from social to cultural brain,” *Trends in Cognitive Sciences* Vol.16 No.5 (May 2012), pp.277-284.

¹⁹ Joan Y. Chiao et.al., “Theory and methods in cultural neuroscience,” *Social Cognitive and Affective Neuroscience* Vol.5 Nos.2-3 (June/September 2010), pp.356-361

²⁰ Chiao et.al., *Theory and methods*, p.356.

²¹ Marina Martínez Mateo et.al., “Concerns about cultural neurosciences: A critical analysis,” *Neuroscience & Biobehavioral Reviews* Vol.36 No.1 (January 2012), pp.152-161

²² Emma Cohen et.al., “Cross-Cultural Similarities and Differences in Person-Body Reasoning: Experimental Evidence From the United Kingdom and Brazilian Amazon,” *Cognitive Science* Vol.35 No.7 (September/October 2011), pp.1282-1304

²³ Cohen et.al., *Cross-Cultural*, p.1299.

²⁴ Behaviours which are similar, e.g. infanticide, are different for two closely related species. Jonathan Marks, “The Scientific and Cultural Meaning of the Odious Ape–Human Comparison,” in George Ellison and Alan H. Goodman (eds.), *The Nature of Difference: Science, Society and Human Biology*, Society for the Study of Human Biology Series 46 (Boca Raton, Florida: CRC Press, 2006), pp.35-51. Cf. also Jonathan Marks, *What it Means to be 98% Chimpanzee: Apes, People, and Their Genes* (Berkeley: University of California Press, 2003).

is, the feature may be generated by passive heredity in the lineage from an ancestral form, then it can only have meaning as a metaphor.²⁵

But the “social brain” hypothesis has its challenges. It does not account for grade shifts, where some lineages demonstrate high socio-cognitive abilities with much smaller brains, e.g. most outstandingly, fish.²⁶ Some see low empirical support for functional similarities between the social brains of nonhuman and human animals. A confusing element is that different species have traditionally been studied by various methods. Single cell recordings are the main method in monkeys while functional brain imaging is mainly used in humans.²⁷

Hence, there is a great deal of empirical research which shows the importance of the social in human lives. Next we examine another significant dimension, namely what comes early in life and before the fully-fledged adult understanding of person: language.

Acquiring Language

The processes of acquiring language are complex. From birth to two years old, there is incredible development in the human cortex with maturing, overgrowth and pruning of synapses within specific brain areas and layers.²⁸ The newborn “who is totally dependent on caregivers for survival, turns into a walking, talking, thinking, self-aware being.”²⁹ Before children speak meaningfully, they amass much auditory knowledge.³⁰ Spectral and temporal cues in speech must be processed in the range of tens of milliseconds. But in the first months of life, the auditory system especially of the cortex continues maturing. It appears astonishing how efficiently infants begin linking sounds with the contextual information that surrounds them, and processing

²⁵ Marks, *The Scientific and Cultural Meaning*, p.47

²⁶ van Schaik, Isler & Burkart, *Explaining brain size*, p.277

²⁷ de Gelder & Partan, *The neural basis*, p.642.

²⁸ Also shaped by neurotransmitter activities and the environment. Laurel J.Trainor, “Event-Related Potential (ERP) Measures in Auditory Development Research,” in Louis A.Schmidt and Sidney J.Segalowitz (eds.), *Developmental Psychophysiology: Theory, Systems, and Methods* (New York: Cambridge University Press, 2008), pp.69-102. See also Diane L.Santesso, Louis A.Schmidt and Laurel J.Trainor, “Frontal brain electrical activity (EEG) and heart rate in response to affective infant-directed (ID) speech in 9-month-old infants,” *Brain and Cognition* Vol.65 No.1 (October 2007), pp.14-21

²⁹ Trainor, *Event-Related Potential (ERP) Measures in Auditory Development Research*, p.69

³⁰ Silvia Ortiz-Mantilla, Jarmo A.Hämäläinen and April A.Benasich, “Time course of ERP generators to syllables in infants: A source localization study using age-appropriate brain templates,” *NeuroImage* Vol.59 No.4 (15 February 2012), pp.3275-3287

the dynamic spectral and/or temporal changes in auditory input indispensable for acquiring language.³¹

A much-debated question is, “how do young babies discover the finite set of phonetic units of their native language from the infinitely varying stream of sounds and sights around them?”³² A recent study used functional near infrared spectroscopy (fNIRS) to examine the neural networks and tissue that support early phonetic processing capacity in young bilingual babies as compared to monolingual babies. Under 6 months babies have a capacity to discriminate all of the world languages’ phonetic contrasts, Native and Non-Native (foreign language) phonetic contrasts not heard before. But by 10-12 months, babies lose the ‘universal’ capability.³³

One idea is that the unique human skill of linguistic communication is determined by ‘linguistic’ genes and expressed in neurons to form domain-specific linguistic centres in the brain. Linguistic communication is defined as “the ability to produce a practically infinite number of meaningful messages using a finite number of lexical items.”³⁴ Only humans are capable of producing a practically infinite number of messages using a finite number of lexical items (syntax of language). Not even chimpanzees, with their very agile hands and skills of mimicry, can form the simplest sentences in the way that deaf individuals with sign language.³⁵ Despite their cognitive abilities, none of the higher apes have learned a grammatical system comparable to human languages.³⁶

Some researchers think it is unlikely that pre- and postnatal auditory environments alone are adequate to produce this complicated organisation in a few weeks.³⁷ The human infant’s brain capacities depend on brain circuits being close to that of adults.

³¹ Ortiz-Mantilla, Hämäläinen & Benasich, *Time course of ERP generators*, p.3275

³² Indeed, “after nearly a half century of research, it is now understood that this process is monumentally important to discovering the ‘building blocks’ of human language.” L.A.Petitto et.al., “The “Perceptual Wedge Hypothesis” as the basis for bilingual babies’ phonetic processing advantage: New insights from fNIRS brain imaging,” *Brain and Language* Vol.121 No.2 (May 2012), pp.130-143 (p.130)..

³³ Petitto et.al., *The Perceptual Wedge Hypothesis*, p.131

³⁴ Yuri I.Arshavsky, “Two functions of early language experience,” *Brain Research Reviews* Vol.60 No.2 (May 2009), pp.327-340 (p.327)

³⁵ Arshavsky, *Two functions of early language experience*, p.328.

³⁶ Jacques Mehler, Marina Nespore and Marcela Peña, “What Infants Know and What They have to Learn about Language,” *European Review* Vol.16 No.4 (October 2008), 429-444

³⁷ G.Dehaene-Lambertz et.al., “How Does Early Brain Organization Promote Language Acquisition in Humans?” *European Review* Vol.16 No.4 (October 2008), pp 399-411

In humans, the functional properties in superior temporal regions and their links to remote areas could be vital for learning language. This implies a sturdy genetic bias for speech processing.

Listeners have to concurrently extract separate kinds of information to recognise linguistic units, their positions in a sequence, the relationships between them; then bind these altogether. It has been demonstrated that newborns have such fundamental abilities.³⁸ A study of newborns found that their brains can encode relational and sequential information in language structure, integrating them into a coherent structural pattern. Human infants already possess several of the perceptual and combinatorial capabilities needed for efficient language acquisition at birth.³⁹

Babies learn at many levels: phonetic, lexical, syntactic but it is also more than computation. Nine month old American infants were exposed to native Mandarin Chinese speakers over twelve experimental sessions.⁴⁰ Later the infants experienced the same foreign-language speakers and content through audio or audiovisual means. One study tested whether phonetic learning occurs merely by hearing a language. The results showed that between 9 and 10 months old, infants learnt a foreign language phonetically from a live person, but not prerecorded sources. What does a live person offer that a DVD does not? It was suggested that specific social cues may be decisive. A living human produces interpersonal social cues that draws infant attention and motivates learning.⁴¹

A captivating phenomenon is infants' facility to generalise structural regularities onto sentences they have not heard before, going beyond the received input. This indicates proficient learning, perceptual and processing capabilities.⁴² In the auditory domain, newborn infants are sensitive to particular input configurations. From a

³⁸ Judit Gervain, Iris Berent and Janet F. Werker, "Binding at Birth: The Newborn Brain Detects Identity Relations and Sequential Position in Speech," *Journal of Cognitive Neuroscience* Vol.24 No.3 (March 2012), pp.564-574

³⁹ Gervain, Berent & Werker, *Binding at Birth*, p.573

⁴⁰ Patricia K. Kuhl, Feng-Ming Tsao and Huei-Mei Liu, "Foreign-language experience in infancy: Effects of short-term exposure and social interaction on phonetic learning," *Proceedings of the National Academy of Sciences of the United States of America* Vol.100 No.15 (22 July, 2003), pp.9096-9101

⁴¹ Kuhl, Tsao & Liu, *Foreign-language experience in infancy*, p.9100

⁴² Judit Gervain, et.al, "The neonate brain detects speech structure," *Proceedings of the National Academy of Sciences of the United States of America* Vol.105 No.37 (16 September 2008), pp.14222-14227

neurodevelopmental viewpoint, the newborn brain is not undifferentiated, instead it has some of the functional specialisations typical of the mature brain.⁴³

A complementary but different approach to language acquisition concentrates on perceptual and memory functions that limit how serially presented materials e.g. speech utterances are processed. Initially non-linguistic mechanisms were recruited by the language faculty; these now constrain the types of regularities language learners can acquire from their input.⁴⁴

This early phase of life which features acquiring language is significant to communication and cognitive development, and is enabled by the growing brain. Such maturing continues beyond infancy.

The Young Brain and Mind

Contemporary science and other fields are increasingly studying childhood, teenagers, youth and young adulthood.⁴⁵ Beyond infancy there are continuing changes in the brain over the lifespan: cortical volume,⁴⁶ white matter maturation⁴⁷ including during adolescence.⁴⁸ The plasticity of the brain means that there can be modifications to brain structure, generally grey matter volume following learning experiences.⁴⁹

For centuries, scientists have investigated the anatomical and physiological grounds for intellectual ability. Brain imaging studies of intellectual ability have generally employed large-scale measures, such as total brain volume or regional grey or white

⁴³ Gervain, et.al, *The neonate brain*, p.14227

⁴⁴ A Ansgar D.Endress, Marina Nespors and Jacques Mehler, "Perceptual and memory constraints on language acquisition," *Trends in Cognitive Sciences* Vol.13 No.8 (August 2009), pp.348-353

⁴⁵ O.M.Mahmood et.al., "Adolescents' fMRI activation to a response inhibition task predicts future substance use," *Addictive Behaviors* Vol.38 No.1 (January 2013), pp.1435-1441. See also Rafael Luchinger et.al., "EEG-BOLD correlations during (post-)adolescent brain maturation," *NeuroImage* Vol.56 No.3 (1 June 2011), pp.1493-1505;

⁴⁶ Armin Raznahan et.al., "How Does Your Cortex Grow?," *The Journal of Neuroscience* Vol.31 No.19 (11 May 2011), pp.7174-7177

⁴⁷ Lars T.Westlye et.al., "Life-Span Changes of the Human Brain White Matter: Diffusion Tensor Imaging (DTI) and Volumetry," *Cerebral Cortex* Vol.20 No.9 (September 2010), pp.2055-2068

⁴⁸ Christian K.Tamnes et.al., "Brain Maturation in Adolescence and Young Adulthood: Regional Age-Related Changes in Cortical Thickness and White Matter Volume and Microstructure," *Cerebral Cortex* Vol.20 No.3 (March 2010), pp.534-548.

⁴⁹ Anthony J.Krafnick et.al., "Gray matter volume changes following reading intervention in dyslexic children," *NeuroImage* Vol.57 No.3 (1 August 2011), pp.733-741. In some cases there are increases in gray matter density within one week after onset of training. (p.734)

matter volumes (by lobe).⁵⁰ Cortical thinning in portions of the prefrontal cortex may be another measure; these support higher intellectual abilities.

In anatomic studies, connectivity can involve a physical link between brain areas which share common developmental trajectories. In brain function, connectivity describes the relationship between differing parts of the brain that are active concurrently in a task.⁵¹ The notion of the ‘journey as well as the destination’ exemplifies the dynamic nature of brain and cognitive development in children, and the critical phase of structural and functional neural development during adolescence.⁵²

Functional brain development in adolescence also extends to social cognition. It is noted how a number of developmental neuroimaging studies of social cognition have been undertaken by various laboratories across the globe. There is noticeable consistency with respect to the direction of change in medial prefrontal cortex (mPFC) activity. Why mPFC activity decreases between adolescence and adulthood during mentalising tasks is not yet understood. But two non-mutually exclusive explanations have been proposed. First, a possibility is that the cognitive strategy for mentalising changes between adolescence and adulthood. Second, a possibility that the functional change with age is caused by neuroanatomical changes at this time.⁵³

Adolescence is a period of rising psychiatric illnesses like mood and anxiety disorders, psychosis, eating disorders, personality disorders and substance abuse. The pathophysiology of these disorders is thought to be due to irregularities of the neurobiological, maturational changes that occurs normally in the adolescent brain.⁵⁴ This theme is conceptualised as 'moving parts get broken'.⁵⁵ There are considerable

⁵⁰ Suzanne Goh et al., “Neuroanatomical correlates of intellectual ability across the life span,” *Developmental Cognitive Neuroscience* Vol.1 No.3 (July 2011), pp.305-312.

⁵¹ Jay N.Giedd and Judith L.Rapoport, “Structural MRI of Pediatric Brain Development: What Have We Learned and Where Are We Going?,” *Neuron* Vol.67 No.5 (9 September 2010), pp.728-734.

⁵² Giedd and Rapoport, *Structural MRI*, p.733

⁵³ Sarah-Jayne Blakemore, “Development of the social brain in adolescence,” *Journal of the Royal Society of Medicine* Vol.105 No.3 (March 2012), pp.111-116.

⁵⁴ Tomáš Paus, Matcheri Keshavan and Jay N.Giedd, “Why do many psychiatric disorders emerge during adolescence?” *Nature Reviews Neuroscience* Vol.9 No.12 (December 2008), pp.947-957.

⁵⁵ Paus, Keshavan & Giedd, *Why do many psychiatric disorders*, p.954. Some research uses animal models, for example, Brian Bingham et al., “Early Adolescence as a Critical Window During Which Social Stress Distinctly Alters Behavior and Brain Norepinephrine Activity,” *Neuropsychopharmacology* Vol.36 No.4 (March 2011), pp.896-909

changes during adolescence to neural systems that subserve higher cognitive functions, interpersonal relationships, cognitive control of emotions, and risk-versus-reward appraisal and motivation. When suboptimal in timing or scale, these changes increase the risk of addictive, affective and cognitive disorders.⁵⁶

There is increasing relevance of neurosciences to youth justice,⁵⁷ e.g. in 2005 the United States Supreme Court banned the death penalty for offenders under the age of 18 years. The Court held that while the execution of juveniles was once thought acceptable in American society, a national consensus had emerged that they lack the biological, emotional, and maturity needed to be fully culpable for violent acts committed. New brain imaging evidence suggests that the adolescent brain is not as well developed as the adult brain.⁵⁸

The neuroscientific model is viewed as the first new ‘grand theory’ of adolescence in the last 50 years.⁵⁹ It holds that early adolescence is marked by a striking rise in appetitive drive that stays comparatively unchecked until self-regulatory systems mature. This is thought as uncannily to be like the basic Freudian model of adolescence, by substituting ‘appetitive drive’ to ‘libido’ and ‘self-regulatory systems’ to ‘ego development’.⁶⁰

Together with their brains, the minds and mental health of young people are a concern.⁶¹ One of the greatest paradoxes is that “while material well-being and physical health have dramatically improved, the mental health of young people in transition from childhood to adulthood has been steadily declining, and this from a

⁵⁶ Paus, Keshavan & Giedd, *Why do many psychiatric disorders*, p.954.

⁵⁷ For example, April R. Bradley et.al., “Juvenile Competency and Responsibility: Public Perceptions,” *Journal of Applied Social Psychology* Vol.42 No.10 (October 2012), pp.2411–2432; Terry A. Maroney, “The False Promise of Adolescent Brain Science in Juvenile Justice,” *Notre Dame Law Review* Vol.85 No.1 (November 2009), pp.89-176

⁵⁸ See discussion of Jay D. Aronson, “Brain Imaging, Culpability and the Juvenile Death Penalty,” *Psychology, Public Policy, and Law* Vol.13 No.2 (May 2007), pp.115–142

⁵⁹ After psychoanalytic theory, Erikson’s theory of identity development, and Piaget’s theory of cognitive development. Laurence Steinberg, “A behavioral scientist looks at the science of adolescent brain development,” *Brain and Cognition* Vol.72 No.1 (February 2010), pp.160-164. The emergent neuroscientific perspective could be a new structure to model the normative and atypical development of adolescence.

⁶⁰ Steinberg, *A behavioral scientist*, p.162.

⁶¹ Patrick McGorry, “The mental health of young people: a new frontier in the health and social policy of the 21st century,” *Early Intervention in Psychiatry* Vol.5 Suppl.1 (February 2011), pp.1-3

low base.”⁶² Others look to modern Western culture contributing to a crisis of meaning with various symptoms. The most ominous is the increase of teenagers with slight or nil eagerness for the passage into adulthood,⁶³ and the sureness of previous generations to gain independence, a job, marriage and family, is not universally seen.

Critical Comment

These neuroscientific studies need careful reading.⁶⁴ Data exists in an atmosphere of contested discourses. The leading discourse understands the teenage years as a distinct phase, dissimilar from childhood and adulthood, and inherently troublesome.⁶⁵ Another discourse highlights the essential continuity between young and old, the cultural constructions of youth/adolescence. There is empirical evidence that teenagers are mostly happy, well adjusted, are in good relationships with parents and other adults, and are optimistic about their futures.⁶⁶

Adolescence can be situated between ‘natural’ physiological puberty and the adult status, a ‘cultural’ construct, as well as a universal stage in human development.⁶⁷ It is explained how there is a need for a period of preparation between infant dependency and full social insertion, marked by conflicts and crisis, determined by nature. However, there has been research in social sciences on the variability and plasticity of adolescence, arguing that it is a social construction determined by culture.⁶⁸

Social and biomedical research follows two main trends: the neurobiology of the teen brain and cultural studies about the ‘digital generation’. A proposed socio-cultural framework starts with the term adolescence, derived from the Latin *adolescere*, ‘to develop towards maturity’ and ‘to grow’ as in the individual aspect of transition into adult life. The start of adolescence is associated with puberty, from the Latin *pubertas*, meaning ‘the virile age’ of male and female sexual maturity. ‘Youth’ then

⁶² McGorry, *The mental health of young people*, p.1. McGorry adds that society too loses, through reduced human capital, ‘mental wealth’ and productivity in the broadest sense.

⁶³ John Carroll, *Ego & Soul: The Modern West in Search of Meaning* (Sydney: HarperCollinsPublishers, 1998), p.1

⁶⁴ Howard Sercombe, “The Gift and the Trap: Working the ‘Teen Brain’ Into Our Concept of Youth,” *Journal of Adolescent Research* Vol.25 No.1 (January 2010), pp.31–47

⁶⁵ This discourse is over one hundred years old. Sercombe, *The Gift and the Trap*, pp.42-43

⁶⁶ Sercombe, *The Gift and the Trap*, p.43

⁶⁷ Carles Feixa, “Past and present of adolescence in society: The ‘teen brain’ debate in perspective,” *Neuroscience and Biobehavioral Reviews* Vol.35 No.8 (August 2011), pp.1634-1643

⁶⁸ Feixa, *Past and present*, p.1635

is the collective aspect of these changes, which today is a long period of psychosocial moratoria.⁶⁹

Five models of adolescence have been identified: *puber* from the primitive stateless societies; *epebe* from ancient states; *young boy* or *young girl* from pre-industrial rural societies; *teenager* from the first industrialisation process and *young people* from post-industrial societies. In the 2010s, youth as time of training and leisure is beginning to not make sense when the passing rites are supplanted by impasse rites: transition stages become intransitive stages. The young reside with their parents after their thirties, they enter the labour world at a discontinuous pace, they require lifelong training, they delay reproduction and invent new youth cultures that are trans-generational. Could it be the death of adolescence?⁷⁰

Some see no reliable social scientific data to support the idea of the ‘adolescent brain’ that all young people, by virtue of the ‘adolescent brains’ or otherwise, are ‘different’, ‘risk-takers’ ‘anti-social’ ‘irrational’ or ‘immoral’.⁷¹ This is similar to prejudice in the notions of the ‘female brain’, the ‘Jewish brain’, the ‘Negro brain,’ used to account for these groups and their apparent problems. Young people have opportunities to learn through experience. If ‘teenage brain’ claims are serious, then policy ideas would include the need to increase the age of compulsory schooling to, say, 23 or 25; the same with the voting age; increasing the age of sexual consent and legal liability. It would also mean keeping young people in the Children's Court until they are 23 or 25 and increasing the age at which they can legally drink to 23 or 25.⁷²

Another approach is that in adolescence there emerges the ability to create four kinds of coherence in the life story: temporal sequencing, cultural concept of biography, causal coherence, and thematic coherence. These are the cognitive tools needed for autobiographical reasoning and life narratives.⁷³ During grade school, temporal sequencing of distant experiences starts to develop, then a cultural concept of biography is acquired by about age ten. Other studies show the emergence of an

⁶⁹ Feixa, *Past and present*, p.1635

⁷⁰ Feixa, *Past and present*, p. 1641

⁷¹ Judith Bessant, “Hard wired for risk: neurological science, ‘the adolescent brain’ and developmental theory,” *Journal of Youth Studies* Vol.11 No.3 (2008), pp.347-360

⁷² Bessant, *Hard wired for risk*, p.358

⁷³ Tilmann Habermas and Susan Bluck, “Getting a Life: The Emergence of the Life Story in Adolescence,” *Psychological Bulletin* Vol.126 No.5 (September 2000), pp.748–769.

integrated person-concept in early adolescence, able to be used to integrate various episodes, resulting therefore in causal coherence. There is data for the emergence in mid- to late adolescence of biographical concepts of how individuals change because of to life experiences while still being the same individual.⁷⁴

But not all the young are healthy. There is research for example, on the young who have suffered head trauma and traumatic brain injury (TBI).⁷⁵ TBI is recognised to be the principal cause of neurological disability in childhood; 1 in 30 children suffering a TBI before the age of 16 years and incidences reported vary between 100–300 per 100,000 per year for children and young adults.⁷⁶ It ranges from concussion to persistent vegetative state, with mild TBI affecting children's neuropsychological and neurobehavioural functioning such as cognitive, academic and social difficulties. Moderate to severe TBI children have an elevated risk of having negative sequelae.⁷⁷

Many children too are profoundly and irreversibly neurologically damaged.⁷⁸ Children who will “never be able to speak, to walk, to sit up, or to feed themselves. Sometimes they are blind or deaf. Their intellectual abilities are extremely limited, often so much so that they have never been able to recognize their own parents. The cause of their condition is often anoxic brain injury or head trauma, or perhaps, less commonly, a genetic condition with neurological effects.”⁷⁹

On this, some have turned to Wittgenstein's *Philosophical Investigations*, ‘My attitude towards him is an attitude towards a soul. I am not of the opinion that he has a soul’.⁸⁰ The thought is to treat a severely neurologically damaged child as a person – “or, in Wittgenstein's more apt phrase, as a ‘soul’ – [it] involves taking up a certain

⁷⁴ Habermas & Bluck, *Getting a Life*, p.761

⁷⁵ For example, Katie Byard, Howard Fine and Jonathan Reed, “Taking a developmental and systemic perspective on neuropsychological rehabilitation with children with brain injury and their families,” *Clinical Child Psychology and Psychiatry* Vol.16 No.2 (April 2011), pp.165-184; Thomas Kapapa et.al., “Head Trauma in Children, Part 3: Clinical and Psychosocial Outcome After Head Trauma in Children,” *Journal of Child Neurology* Vol.25 No.4 (April 2010), pp.409-422.

⁷⁶ Byard, Fine & Reed, *Taking a developmental and systemic perspective*, p.165

⁷⁷ Byard, Fine & Reed, *Taking a developmental and systemic perspective*, pp.165-166

⁷⁸ Carl Elliott, “Attitudes, Souls, and Persons: Children with severe neurological impairment,” *Mental Retardation and Developmental Disabilities Research Reviews* Vol.9 No.1 (2003), pp.16-20

⁷⁹ Elliott, *Attitudes, Souls, and Persons*, p.16

⁸⁰ PI § 178

attitude toward him.”⁸¹ ‘Attitude’ means an implicit outlook, e.g. accorded respect, addressed with a name rather than a number. As with adult brain decline, considered in an earlier chapter, the atypical young brain raises questions of identity, dignity and the embodied soul of a person; in this case, a person who may have many more years of life, in contrast to the elderly and those close to death.

The above discussion focused on the young brain and mind, yet human beings have a spiritual side and this is explored below in the young soul.

Soul of the Young

Families, education systems and society strive to prepare young people for this-life and Christians especially look also to the next-life. This preparation can involve a sense of vocation and the traditional notion of saving one’s soul. Some contemporary empirical research reflects such spiritual interests, providing further scope for engagement with Christian thinking.

Children have spiritual experiences, report near-death experiences,⁸² and dream ‘divine dreams’.⁸³ Faith begins in children, and grows through adolescence.⁸⁴ Usually, adolescence is a sensitive period for spiritual development, conversion and religious commitment.⁸⁵ Religion means institutionalised, formal structures, and belonging to groups which search for the sacred as a shared experience. Spirituality is often characterised as a relationship of transcendence with a higher being,

⁸¹ Elliott, *Attitudes, Souls, and Persons*, p.17

⁸² For example, Mary Lynn Dell and Allan M. Josephson, “Working With Spiritual Issues of Children,” *Psychiatric Annals* Vol.36 No.3 (March 2006), pp.176-181; Daniel G.Scott, “Retrospective spiritual narratives: exploring recalled childhood and adolescent spiritual experiences,” *International Journal of Children’s Spirituality* Vol.9 No.1 (April 2004), pp.67-79; Elisabeth Kübler-Ross, *On Children & Death, How children and their parents can and do cope with death* (New York: Touchstone, 1997), pp.206-220

⁸³ Kate Adams, “The dreaming child: dreams, religion and religious education,” *British Journal of Religious Education* Vol.30 No.1 (January 2008), pp.59–67

⁸⁴ Deborah Court, “What Happens to Children's Faith in the Zone of Proximal Development, and What Can Religious Educators Do about It?,” *Religious Education* Vol.105 No.5 (October-December 2010), pp.491-503

⁸⁵ Danielle Magaldi-Dopman and Jennie Park-Taylor, “Sacred Adolescence: Practical Suggestions for Psychologists Working With Adolescents' Religious and Spiritual Identity,” *Professional Psychology: Research and Practice* Vol.41 No.5 (October 2010), pp.382–390; Marie Good and Teena Willoughby, “Adolescence as a Sensitive Period for Spiritual Development,” *Child Development Perspectives* Vol.2 No.1 (April 2008), pp.32–37

frequently more experiential and meaningful.⁸⁶ Spirituality is also relevant for adolescents with developmental disabilities.⁸⁷

A sensitive period in relation to adolescence is “a span of time that is optimal for developing a certain skill, capacity, or behavior.”⁸⁸ In this sensitive period, an individual is mostly susceptible to environmental factors that advance those capabilities, as when learning a second language, which is optimally before puberty. Cognitive, neurological and intrapersonal developments may render adolescents more likely to explore religious and spiritual ideals and experiences.⁸⁹ While prefrontal cortex immaturity and intense emotions could explain adolescent risk taking and problem behaviours, these same features could also make adolescents more likely to engage in spiritual experiences, which may be a positive behaviour that fosters well-being in some.

Clearly studies about spirituality, personal beliefs, the sense of the divine, and related areas show that adolescents have spiritual interests.⁹⁰ In studies of Generation Y (born 1981-1995) spirituality has been identified as important.⁹¹ A person’s spirituality is understood as “a way of life - a view of the world and a set of values and practices.”⁹² It may be derived from ‘New Age’ spirituality; traditional world religion; a blend of both; or a wholly secular view.

⁸⁶ That is, spirituality in this relationship sense usually extends beyond formal religious services and affiliation, to have closer meaning for the person . Magaldi-Dopman & Park-Taylor, *Sacred Adolescence*, p.383

⁸⁷ Martha Geiger, “Through the Eyes of Children: Theological Lessons with and from Children with Severe Communication Disabilities,” *Journal of Religion, Disability & Health* Vol.16 No.1 (2012), pp. 102-113

⁸⁸ Good & Willoughby, *Adolescence as a Sensitive Period*, p.32

⁸⁹ Good & Willoughby, *Adolescence as a Sensitive Period*, p.36

⁹⁰ Mark D.Regnerus and Jeremy E.Uecker, “Finding Faith, Losing Faith: The Prevalence and Context of Religious Transformations During Adolescence,” *Review of Religious Research* Vol.47 No.3 (March 2006), pp.217-237

⁹¹ Andrew Singleton, Michael Mason and Ruth Webber, “Spirituality in adolescence and young adulthood: a method for a qualitative study,” *International Journal of Children’s Spirituality* Vol.9 No.3 (December 2004), pp.247-262; Michael Warren, “Young People and the Spiritual Quest,” *Doctrine and Life* Vol.55 No.6 (July-August 2005), pp.2-14

⁹² Michael Mason, Andrew Singleton and Ruth Webber, “The spirituality of young Australians,” *International Journal of Children’s Spirituality* Vol.12 No.2 (August 2007), pp.149–163 (p.150); See the study in detail, Michael Mason, Andrew Singleton and Ruth Webber, *The spirit of Generation Y: Young People’s Spirituality in a Changing Australia* (Mulgrave, Victoria: John Garratt Publishing, 2007), pp.301-352

The notion of spirituality varies among researchers, and not all of these are of equal significance to adolescents.⁹³ Some look to a pluralist concept since spirituality is an attribute of all human beings, a more open and pluralistic over exclusive interpretations of distinct religious traditions. Experiences of suffering also find meaning in the spiritual journeys for the young.⁹⁴

Three dimensions of spirituality that emerged from a study of adolescents' understanding of spirituality were, "a transcendent perspective, a sense of meaning and purpose and a connection with the inner self. A clear connection was found between the three dimensions of spirituality and resilience."⁹⁵ Spirituality nurtured resilience by offering a sense of comfort and security via a relationship with higher power, the chance for more self-awareness and self-efficacy through connections with the inner self and a sense of coherence, purpose and optimism due to a belief that everything happens for a reason.⁹⁶

A study in the United Kingdom identified several soul/spirit relationships: there were 177 male students and 208 female; 173 students described themselves as Christian, 104, as Muslim, 104 as having no religion, 3 as Pagan and 1 as Rastafarian.⁹⁷ Strict inclusion (e.g. 'the spirit is your soul'), Function (e.g. the spirit guides your actions), Cause/effect (e.g. the spirit makes us human), Spatial (e.g. the spirit is inside), Sequence (e.g. 'the spirit lives on after you die'). A summation of spirit/spirituality as primarily about holding beliefs, of pertaining to 'eternal spirit', is that "after death the spirit goes on to a new life in a new place that may be heaven or hell. Its destiny reflects the quality of the life lived and is decided by God."⁹⁸

⁹³Arndt Büssing et.al., "Aspects of spirituality in adolescents," *International Journal of Children's Spirituality* Vol.15 No.1 (February 2010), pp.25-44 (p.27). See also Karen-Marie Yust, Brendan Hyde and Cathy Ota, "Cyber spirituality: Facebook, Twitter, and the adolescent quest for connection," *International Journal of Children's Spirituality* Vol.15 No.4 (November 2010), pp.291-293

⁹⁴ Sue M.Collis, "The analysis of young people's experiences of domestic violence: spiritual and emotional journeys through suffering," *International Journal of Children's Spirituality* Vol.14 No.4 (November 2009), pp.339-353

⁹⁵ Mary Raftopoulos and Glen Bates, "'It's that knowing that you are not alone': the role of spirituality in adolescent resilience," *International Journal of Children's Spirituality* Vol.16 No.2 (May 2011), pp.151-167 (p.163)

⁹⁶ Raftopoulos and Bates, *It's that knowing*, p.163

⁹⁷ Barbara Wintersgill, "Teenagers' perceptions of spirituality – a research report," *International Journal of Children's Spirituality* Vol.13 No.4 (November 2008), pp.371-378.

⁹⁸ Wintersgill, *Teenagers' perceptions of spirituality*, p.374

Research has also examined the school and its teachers, both significant influences on the spiritual development of children and teenagers.⁹⁹ In Catholic and other Christian churches, faith and religious identity are grounded in belonging to the religious community but there is a drift of young people with close family connections away from the worshipping community.¹⁰⁰ Young people are encouraged towards Christian discipleship, conversion and the universal call to holiness, and union with the Triune God: continual transformation is the final goal of promoting Christian spirituality in adolescents. Spirituality grows best through religious experiences.¹⁰¹

In summary, although the above scientific studies measure variables associated with spirituality, they do not directly measure the soul. However, as noted, in the Catholic tradition the soul is united with the body as a living human being. From this perspective the development and care needed by the young brain and mind is also needed by the young soul. Consequently, the soul of the young needs development and care, just as the young brain and mind.

Time, Life and Vocation

Another way to gain a richer existential perspective of the human person is to look at the whole of life, which is oriented to a life beyond this life. Longitudinal studies investigate matters over time. Developmental neuroscience, for example, examines changes in the brain, and physical and cultural environment influences on behaviour; while behaviour modifies the brain and the environment.¹⁰² This system of brain, behaviour, and environment, is constant and none of the elements are reducible to another in individual lives.¹⁰³ This self-regulation involves concepts of ontogeny, maturation and senescence; and the operations of age-graded brain mechanisms due to neurochemical, neuroanatomical, and neuronal functions.

⁹⁹ John W. Fisher, "Investigating the importance of relating with God for school students' spiritual well-being," *Journal of Beliefs & Values* Vol.31 No.3 (December 2010), pp.323–332

¹⁰⁰ Richard M. Rymarz and John Graham, "Drifting from the mainstream: the religious identity of Australian core Catholic youth," *International Journal of Children's Spirituality* Vol.11 No.3 (December 2006), pp.371–383

¹⁰¹ Arthur David Canales, "A noble quest: cultivating Christian spirituality in Catholic adolescents and the usefulness of 12 pastoral practices," *International Journal of Children's Spirituality* Vol.14 No.1 (February 2009), pp.63–77 (p.75)

¹⁰² Ulman Lindenberger, Shu-Chen Li and Lars Bäckman, "Delineating brain-behavior mappings across the lifespan: Substantive and methodological advances in developmental neuroscience," *Neuroscience & Biobehavioral Reviews* Vol.30 No.6 (2006), pp.713-717.

¹⁰³ Lindenberger, Li and Bäckman, *Delineating brain-behaviour*, p.713.

For example, diffusion tensor imaging (DTI) tractography has been used to study brain development in a large group of 103 healthy subjects with 221 scans from childhood to young adulthood (5–32 years), analysing within-subject diffusion parameter changes over 1–6 year intervals. It found evidence for continued white matter ‘wiring’ development after adolescence.¹⁰⁴

In other research the notion of clinical staging is contrasted to conventional diagnostic practice.¹⁰⁵ The difference is that staging defines at a specific point in time the extent of progress of a disorder, and where a person presently is along that continuum. Early and milder clinical phenomena are differentiated from what is associated with illness extension, progression and chronicity. A staging framework is relevant to adolescence and early adulthood when most adult-type disorders first emerge.

Theories about lifelong human development include ‘agency within structures’ to ‘biocultural co-constructivism’. The theoretical consensus is that development is formed and constrained by interplays between biological, psychological, sociological, demographical, and other factors.¹⁰⁶

Besides neurological approaches, there are some others. Lifespan psychology’s central notion is that development entails constant adaptation to evolving individual and environmental situations. One idea of life-span development psychology is “the study of constancy and change in behavior throughout the life course (ontogenesis), from conception to death. The goal is to obtain knowledge about general principles of life-long development, about interindividual differences and similarities in development, as well as about the degree and conditions of individual plasticity or modifiability of development.”¹⁰⁷

¹⁰⁴ Catherine Lebel and Christian Beaulieu, “Longitudinal Development of Human Brain Wiring Continues from Childhood into Adulthood,” *The Journal of Neuroscience* Vol.31 No.30 (27 July 2011), pp.10937-10947.

¹⁰⁵ Patrick D. McGorry, “Staging in Neuropsychiatry: A Heuristic Model for Understanding, Prevention and Treatment,” *Neurotoxicity Research* Vol.18 Nos.3-4 (November 2010), pp.244-255

¹⁰⁶ Michel Oris et al., “Linked Lives and Self-Regulation. Lifespan - Life Course: Is it really the same?,” *Advances in Life Course Research* Vol.14 Nos.1-2 (March-June 2009), pp.1-4.

¹⁰⁷ Cf. the influential German psychologist Paul Baltes (1939-2006), Paul B. Baltes, “Theoretical Propositions of Life-Span Developmental Psychology: On the Dynamics Between Growth and Decline,” *Developmental Psychology* Vol.23 No.5 (September 1987), pp.611–626 (p.611)

Alternately, life course sociology focuses on the opportunities and restraints imposed by social structures: interactions between individual, family and historical times. Major questions include whether social forces are determinants in the construction and reproduction of inequalities; similarly, how extensive is the capacity of individuals to act independently, to make their own choices and master their own life trajectories.¹⁰⁸

Lifespan psychologists typically attend to individual resources and the self-regulatory processes used to select, optimise, and compensate; to change developmental goals, and control development.¹⁰⁹ Lifespan psychology and life-course sociology may differ on the issue of self-regulation, or linked lives. The latter is where an individual's life is influenced by and bound to the situation, needs, and choices of others.¹¹⁰

Another line of research centres on the German notion of *Sehnsucht* or life longings.¹¹¹ Life longings are “emotionally rich mental representations of ideal, if not utopian, alternative states and expressions of life.”¹¹²

It is thought that human personality develops in three aspects:

- behaviour and dispositional traits: the person as actor
- striving, characteristic goals and motives: the person as agent
- narrating and integrative life stories: the person as author.

It is pointed out that “human beings begin life as social actors. By mid-childhood, they have become social agents. It is not until adolescence or young adulthood, however, that they become self-authors in society.”¹¹³

¹⁰⁸ Oris et.al., *Linked Lives*, p.1.;

¹⁰⁹ Oris et.al., *Linked Lives*, p.1

¹¹⁰ As explained in, Richard A. Settersten Jr., “It takes two to tango: The (un)easy dance between life-course sociology and life-span psychology,” *Advances in Life Course Research* Vol.14 Nos.1-2 (March-June 2009), pp.74-81

¹¹¹ Susanne Scheibe et.al., “Is Longing Only for Germans? A Cross-Cultural Comparison of *Sehnsucht* in Germany and the United States,” *Developmental Psychology* Vol.47 No.3 (May 2011), pp.603–618; Dana Kotter-Grühn et.al., “What is it we are longing for? Psychological and demographic factors influencing the contents of *Sehnsucht* (life longings),” *Journal of Research in Personality* Vol.43 No.3 (June 2009), pp.428-437

¹¹² Kotter-Grühn et.al., *What is it we*, p.428.

It is no longer current to think that the individual moves through clearly-defined stages of personality development.¹¹⁴ There is a more continuous course of development, according to temperament and trait models with few or moments of sudden change or expected epochs of transition.

However, there is sufficient direction and structure for identifying developmental milestones to gauge progress. Five developmental milestones are:

age 2,
the transition to adolescence,
emerging adulthood,
midlife,
and old age.¹¹⁵

A Christian interpretation

‘Life as a gift’ is a theme also found in Christian bioethics,¹¹⁶ health care,¹¹⁷ even literature.¹¹⁸ Benedict XVI has spoken of “the astonishing experience of gift” where gratuitousness is variedly apparent in people’s lives. The human being is “made for gift, which expresses and makes present his transcendent dimension.”¹¹⁹ Life is “a joyful task to be accomplished in a spirit of solidarity.”¹²⁰

A vocational culture sees life as vocation. The “culture of vocation” was first spoken about by John Paul II in the Message for the XXX World Day of Prayer for vocations (8 September 1992).¹²¹ Father Pascual Chávez Villanueva explains that in

¹¹³ Dan P. McAdams and Bradley D. Olson, “Personality Development: Continuity and Change Over the Life Course,” *Annual Review of Psychology* Vol.61 (2010), pp.717-542 (p.527)

¹¹⁴ McAdams & Olson, *Personality Development*, p.529.

¹¹⁵ McAdams & Olson, *Personality Development*, p.530

¹¹⁶ Congregation for the Doctrine of the Faith, *Dignitatis Personae*, cited earlier; Gerald Gleeson, “Are People More Important Than Their Bodies?,” *The Australasian Catholic Record* Vol.86 No.2 (April 2009), pp.173-188

¹¹⁷ For instance, Carol Taylor, C.S.F.N. “Roman Catholic Health Care Identity and Mission: Does Jesus Language Matter?,” *Christian Bioethics* Vo.7 No.1 (2001), pp.29-47

¹¹⁸ William Franke, “Primordial Sacrifice, Typology and the Theological Vocation of Literature: Extending Gian Balsamo's Interpretation of Joyce and Christian Epic,” *Literature and Theology* Vol.20 No.3 (September 2006), pp.251-268

¹¹⁹ Pope Benedict XVI, *Caritas in Veritate*, n.34, p.62

¹²⁰ Pope Benedict XVI, *Caritas in Veritate*, n.78

¹²¹ Pascual Chávez Villanueva, “‘Come and see’ (Jn 1,39) The need for vocation ministry,” *Acts of the General Council of the Salesian Society of St. John Bosco* Vol.XCII No.409 (January-April 2011), pp.3-48 (p.16)

the course of their lives, Christians understand the significance of life, enlightened by faith and a search for the meaning of life. Vocation involves a 'call' and is fundamental to a person's fulfilment.¹²² Chávez cautions that this extends beyond the satisfaction of an individual's needs before all else. Each life is unique and part of a network of interdependent relationships which leads to an ethic of responsibility and commitment.¹²³ The moral dimensions can lead towards the Transcendent since in persons there is found something that is mysterious, unconditional and immaterial.¹²⁴ In infinite mystery, Christ can satisfy. Life and salvation depend on personal choices made and the values pursued (Mark 8:35-36).

Some attitudes which give life a vocational culture are:

- The use of reason and contemplation to search gradually for meaning in the immediate, the medium term and particularly the ultimate purpose of things.¹²⁵
- Acceptance of limitations, openness to transcendence beyond the human, welcoming mystery and the sacred in objective and subjective aspects. This requires the use of intelligence, the exercise of will, to seeking the hearts' desires in relationships and undertaking various enterprises.
- An 'ethical' mentality enlightened by a values and moral conscience, able to direct oneself towards the good, centred on the person.
- A planning mentality to assist where a lack of meaning results in indifference about the future. Without a sense of history, there are no goals which are attractive enough to pursue.
- Commitment to solidarity, which responds to problems such as underdevelopment, hunger and exploitation through aid and voluntary service. This culture of solidarity is often weakened or marginalised by powerful socio-economic factors which overlook the interdependence of humanity.¹²⁶

None of the research referred to in this chapter contradicts this Christian

¹²² Chávez, *Come and see*, p.17.

¹²³ This transcends any subjective view of life which places the individual at the centre but invites self-giving in interpersonal relationships. Chávez, *Come and see*, p.18

¹²⁴ Chávez, *Come and see*, p.19. These imply respect, selflessness, love, the promotion of moral and spiritual values

¹²⁵ Chávez, *Come and see*, pp.22-23

¹²⁶ Chávez, *Come and see*, p.24. Individuals are only themselves when accepting responsibility for the destiny of all human beings in a spirit of solidarity.

interpretation of the human life. As noted previously, scientific research informs and adds to the Christian understanding. And it is reasonable to claim that the two approaches are fundamentally complementary.

All the research thus far occurs with conscious subjects. This next section proposes further areas which reaches far into the mind and brain and takes places usually in the other states of consciousness.

DREAMS

Dreams are associated with the soul as the human unconscious,¹²⁷ and a traditional way of accessing divine realities.¹²⁸ Others dreams include problem-solving dreams,¹²⁹ and dreams confused with reality ('waking dreams').¹³⁰ Dreams are one of several sleep-related experiences or nocturnal altered-consciousness phenomena.¹³¹ Sleep-related experiences can be situated within clinical factors like traumatic and life stress, psychological distress, altered-consciousness tendencies, e.g. dissociation.¹³²

Human sleep happens in stages:¹³³ stages 1 and 2 sleep (light sleep), stages 3 and 4 (slow wave sleep: SWS), and rapid eye movement (REM) sleep. REM sleep is

¹²⁷ Michael H.Stone, "Dream Analysis in the Psychodynamic Psychotherapy of Borderline Patients," *Psychodynamic Psychiatry* Vol.40 No.2 (2012), pp.287–302; Raymond L.Lee, "Forgotten Fantasies? Modernity, Reenchantment, and Dream Consciousness," *Dreaming* Vol.20 No.4 (December 2010), pp.288–304

¹²⁸ Drago A.Giulea, "The Noetic Turn in Jewish Thought," *Journal for the Study of Judaism* Vol.42 No.1 (January 2011), pp.23-57. See also Dorothea Marie Epple, "Encounter with Soul," *Clinical Social Work Journal* Vol.31No.2 (June 2003), pp.173-188; Kelly Bulkeley, *Transforming Dreams Learning Spiritual Lessons from the Dreams You Never Forget* (New York: Wiley, 2000), pp.29-30.

¹²⁹ George W.Baylor, "What Do We Really Know About Mendeleev's Dream of the Periodic Table? A Note on Dreams of Scientific Problem Solving," *Dreaming* Vol.11 No.2 (June 2001), pp.89-92 and Deirdre Barrett, "Comment on Baylor: A Note About Dreams of Scientific Problem Solving," *Dreaming* Vol.11 No.2 (June 2001), pp.93-95

¹³⁰ George Christos, *Memory and Dreams: The Creative Human Mind* (Sydney: University of New South Wales Press, 2003), pp.105-155

¹³¹ Dalena van der Kloet et.al., "Fragmented Sleep, Fragmented Mind: The Role of Sleep in Dissociative Symptoms," *Perspectives on Psychological Science* Vol.7 No.2 (March 2012), pp.159-175

¹³² Nirit Soffer-Dudek and Golan Shahar, "What are sleep-related experiences? Associations with transliminality, psychological distress, and life stress," *Consciousness and Cognition* Vol.18 No.4 (December 2009), pp.891-904

¹³³ Yasutaka Kubota et.al., "Dorsolateral prefrontal cortical oxygenation during REM sleep in humans," *Brain Research* Vol.1389 (10 May 2011), pp. 83-92

characterized by rapid eye movement (REM). As sleep stages progresses, there is a subjective loss of self-awareness Sleep research involves the body, brain and is complex.¹³⁴ During REM sleep self-awareness partially and transiently reappears, mostly in relation to dreams.¹³⁵

Dreaming is part of human sleep, and the ability to recall a dream also depends on sleep.¹³⁶ The consolidation of newly acquired information in memory benefits from sleep.¹³⁷ One study found almost complete disappearance of dream recall after a recovery night subsequent to one night of sleep deprivation. Interpretative hypotheses proposed include retrieval failure, lower accessibility of dream contents and lower effectiveness of declarative memory.¹³⁸

The adaptive role of rapid eye movement (REM) sleep appears to be a complete mystery.¹³⁹ Some argue that *sleep* and its phases of REM and non-REM sleep has a biological function, an adaptation which builds, restores and conserves; whereas *dreaming* is a nonadaptation.¹⁴⁰ In evolutionary biology a nonadaptation is a concomitant of a trait selected for and also there are no other independent modifications or positive selections active on the trait. For example, the human chin, the colour of bones, and the sound of a heart beating are nonadaptations. and epiphenomenal which accompanies sleep serendipitously.¹⁴¹

The study of dreams in philosophy of mind and cognitive sciences is recent.¹⁴² But despite the fascination of dreams for modern Western culture, the story of the discovery of REM (rapid eye movement) sleep, and the exploration of the psychophysiology of dreaming, there is little influence in mainstream philosophy of

¹³⁴ Thien Thanh Dang-Vu et.al., “Functional Neuroimaging Insights into the Physiology of Human Sleep,” *Sleep* Vol.33 No.12 (December 2010), pp.1589–1603; Douglas Benjamin Kirsch, “There and Back Again: A Current History of Sleep Medicine,” *Chest* Vol.139 No.4 (April 2011), pp.939–946

¹³⁵ Kubota et.al., *Dorsolateral prefrontal*, p.88

¹³⁶ Luigi De Gennaro et.al., “Recovery sleep after sleep deprivation almost completely abolishes dream recall,” *Behavioural Brain Research* Vol.206 No.2 (20 January 2010), pp.293-298.

¹³⁷ Susanne Diekelmann, Ines Wilhelm and Jan Born, “The whats and whens of sleep-dependent memory consolidation,” *Sleep Medicine Reviews* Vol.13 No.5 (October 2009), pp.309-321;

¹³⁸ De Gennaro et.al., *Recovery sleep*, p.298

¹³⁹ Jerome M.Siegel, “REM sleep: A biological and psychological paradox,” *Sleep Medicine Reviews* Vol.15 No.3 (June 2011), pp.139-142.

¹⁴⁰ Owen Flanagan, *Dreaming Souls: Sleep, Dreams and the Evolution of the Conscious Mind*, Philosophy of Mind Series (New York: Oxford University Press, 2000), p.116

¹⁴¹ Flanagan, *Dreaming Souls*, p.115

¹⁴² John Sutton, “Dreaming,” in John Symons and Paco Calvo (eds), *Routledge Companion to Philosophy of Psychology* (London and New York: Routledge, 2009), pp.522-542.

mind. Although epistemologists still use dreaming to focus concerns about scepticism, the psychology of dreams remained until recently a marginal subject in philosophy and the cognitive sciences alike.¹⁴³

Dreams in early literature, the arts, and philosophy, were considered religious, mythic or messages from the gods.¹⁴⁴ Much later came the psychoanalytic dream theories and the unconscious; then with brain studies and sleep laboratories,¹⁴⁵ other theories developed. Dreams may seem bizarre but neurophysiology and concepts of logic can be applied to understand them.¹⁴⁶

Reviewing scientific studies of dreams is difficult as dream data comes only via reports. It is hard to experiment with dreams hence it is a challenge to make predictions.¹⁴⁷ Neuronal activity, brain development and brain damage are linked to dream forms retrospectively, instead of dream content of specific dreams. For example, subjects awakened from other phases of sleep, particularly but not exclusively during REM sleep, report full-fledged dreams with vivid, sensorimotor hallucinatory experiences in a narrative structure. The dreamer is conscious (has vivid experiences), is distant from the environment (asleep), but somehow the brain is creating a story containing actors, scenarios, and producing hallucinatory images.¹⁴⁸

S.Freud and C.C.Jung both famously studied dreams, though later diverged in their thinking.¹⁴⁹ One account suggests that Freud's methods were those of the left brain, time sequences, cause and effect, and logic; whereas Jung's methods were those of the right brain. While Freud's system also turned to right brain phenomena such as emotions, his interpretation of such phenomena used a left brain approach. By

¹⁴³ Sutton, *Dreaming*, p.522

¹⁴⁴ Laura Palagini and Nicholas Rosenlicht. "Sleep, dreaming, and mental health: A review of historical and neurobiological perspectives," *Sleep Medicine Reviews* Vol.15 No.3 (June 2011): pp.179-186. Attention turned from psychology and subjective dream content as the prevailing model of dream analysis, to neurobiology as dreaming became linked with the physiology of REM sleep and NREM sleep.

¹⁴⁵ Palagini & Rosenlicht, *Sleep, dreaming, and mental health*, p.183

¹⁴⁶ J.Allan Hobson et.al., "Dream Logic - The Inferential Reasoning Paradigm," *Dreaming* Vol.21 No.1 (March 2011), pp.1-15

¹⁴⁷ Yuval Nir and Giulio Tononi, "Dreaming and the brain: from phenomenology to neurophysiology," *Trends in Cognitive Sciences* Vol.14 No.2 (February 2010), pp.88-100

¹⁴⁸ Nir & Tononi, *Dreaming and the brain*, p.88

¹⁴⁹ Barbara Stevens Barnum, "Why Freud and Jung Can't Speak: A Neurological Proposal," *Journal of Religion and Health* Vol.45 No.3 (September 2006), pp.346-358.

contrast, Jung concentrated more closely on right-brain controlled phenomena and its expressions such as mystery, myth, and relations of the self to Source (God).¹⁵⁰ Whatever their differences, the psychoanalytic and depth psychology traditions respectively assign an important role to the unconscious.¹⁵¹

Freud's ideas have been extended and re-interpreted.¹⁵² In the Jungian tradition dreams are used in spiritual guidance, for symbols and archetypes.¹⁵³ Moreover, American and French literature has discussed experiments, questionnaire studies and 'neurocognitive-like' theories of the dreaming process.¹⁵⁴

The behaviorist school of psychology denied the validity of mental phenomena in scientific investigation. It used a phenomenological description of the characteristics of dreams instead of the dream symbols or meaning for a certain dreamer. In cognitive science, the term 'phenomenological' refers to systematic study of the qualitative characteristics of mental experience, in contrast to symbolic or interpretative methods aiming to decipher hidden meanings in the manifest content of dreams which psychoanalysis aims at.¹⁵⁵

Contemporary theories of dreaming include theories of neuroscientific psychoanalyst M.Solms.¹⁵⁶ Dreaming here is mostly dissimilar to waking consciousness, as apparent (manifest) features of dreams are bizarre, e.g. incongruous characters and plots, nonsensical changes in time and place. Dreams function to preserve sleep in unconscious needs. Individual dreams contain meaningful information about the dreamer but are deficient when explaining dreams shared by all people, e.g., teeth

¹⁵⁰ Barnum, *Why Freud and Jung Can't Speak*, p.357

¹⁵¹ For a personal account in the psychoanalytic tradition see Louis Hagood, "Awakening to Dreams," *Journal of Religion and Health* Vol.45 No.2 (Summer 2006), pp.160-170. For a critical look at Freud and the unconscious, see Grant Gillett, *The Mind and its Discontents*, Second Edition, International Perspectives in Philosophy and Psychiatry series (Oxford and New York: Oxford University Press, 2009), pp.96-109

¹⁵² For example, James S.Grotstein, "Dreaming as a 'curtain of illusion': Revisiting the 'royal road' with Bion as our guide," *The International Journal of Psychoanalysis* Vol.90 No.4 (August 2009), pp.733-752.

¹⁵³ For example, Jeremy Taylor, "Dreams and Spiritual Guidance," in Robert Frager (ed.), *Sharing Sacred Stories: Current Approaches to Spiritual Direction and Guidance* (New York: The Crossroad Publishing Company, [2007]), pp.18-35.

¹⁵⁴ Sophie Schwartz, "A Historical Loop of One Hundred Years: Similarities Between 19th Century and Contemporary Dream Research," *Dreaming* Vol.10 No.1 (March 2000), pp. 55-66.

¹⁵⁵ Schwartz, *A Historical Loop*, pp.57-58

¹⁵⁶ Oliver H.Turnbull and Mark Solms, "Awareness, Desire, and False Beliefs: Freud in the Light of Modern Neuropsychology," *Cortex* Vol.43 No.8 (2007), pp.1083-1090,

falling out. Some claim that there are stable neuropsychological grounds for many of Freud's ideas, which were first proposed firstly from clinical observations, including dreams.¹⁵⁷

Many of these ideas are opposed by sleep scientist J.A.Hobson,¹⁵⁸ who is strongly opposed to any revival of psychoanalysis. He comments that Freud was wrong and so are "misguided neo-Freudians", those who desperately try to save Freudian psychoanalysis from speculative philosophy.¹⁵⁹

There are also the neurocognitive ideas from psychologist G.W.Domhoff¹⁶⁰ for whom dreams are a faithful mirror of waking life as they are coherent, and have internally plausible narrative sequences over the typical illogical sequences of bizarre images. This is seen in content analysis which demonstrates continuity between dream content and waking life. Domhoff even describes dreams as "an fMRI of the mind at night. They are the quintessential cognitive simulation because they are experienced as real while they are happening."¹⁶¹

Philosophical issues include questions about identity and self.¹⁶² For example, are dreams experienced while asleep or are they made up upon waking? And, can humans be immoral during dreaming?¹⁶³ Similarly, one can note that dreaming is what comes from an automatic system which undertakes functions like sleep and sleep-cycling: were these selected for a conscious system designed for consciousness functions in wakefulness?

¹⁵⁷ Mark Solms and Oliver Turnbull, "To sleep, perchance to REM? The rediscovered role of emotion and meaning in dreams," in Sergio Della Sala (ed.), *Tall Tales about the Mind and Brain: Separating Fact from Fiction* (Oxford and New York: Oxford University Press, 2007), pp.478-500.

¹⁵⁸ J.Allan Hobson, "Wake Up or Dream On? Six Questions for Turnbull and Solms," *Cortex* Vol.43 No.8 (2007), pp.1113-1115.

¹⁵⁹ Hobson, *Wake Up or Dream On*, p.1113. Turnbull and Solms reply in Oliver H.Turnbull and Mark Solms, "Big Issues, Little Issues... and Non-Issues," *Cortex* Vol.43 No.8 (2007), pp.1116-1121. W.G.Domhoff's comments on the differences between anti-Freudian theorist Hobson and psychoanalytic theorist Solms in William G.Domhoff, "Refocusing the Neurocognitive Approach to Dreams: A Critique of the Hobson Versus Solms Debate," *Dreaming* Vol.15 No.1 (March 2005), pp.3-20

¹⁶⁰ G.William Domhoff, "Dream Content is Continuous with Waking Thought, Based on Preoccupations, Concerns, and Interests," *Sleep Medicine Clinics* Vol.5 No.2 (June 2010), pp.203-215.

¹⁶¹ Domhoff, *Dream Content*, p.214

¹⁶² Cf.Xiaoqiang Han, "A Butterfly Dream in a Brain in a Vat," *Philosophia* Vol.38 No.1 (January 2010), pp.157-167. For example, "If one falls into sleep and has a dream, one ceases to be thinking. That is, while the dreamer is indeed the cause of his dream, he is not the subject of dreaming in the way he is the subject of thinking when he is awake." (p.165)

¹⁶³ Flanagan, *Dreaming Souls*, p.163

For one writer in this area, we are “dreaming souls” and the brain “is the seat of the soul whether we are asleep or awake.”¹⁶⁴ For others, ‘soul’ appears to imply a non-transcendental entity that survives death. It is wondered whether God is revealed in dreams, and if the dream world constitutes its own universe; what is the source of the dream: is it outside of the self, is it God, other minds or spirits?¹⁶⁵

It has been claimed that the spiritual content of dreams can be identified and measured.¹⁶⁶ Dreams have meaning in relation to conscious religious life.¹⁶⁷ In one study, religious believers and agnostics were asked about God speaking to them in a dream and commanding them to do either an enjoyable activity like travel the world, or dislikeable, e.g. self-sacrifice.¹⁶⁸ The results were that people from various cultures believe that dreams offer meaningful insight into the self and the world, although not all dreams hold similar meaning and insights. Dreams inconsistent with existing desires and beliefs are less likely to influence daytime life.¹⁶⁹ In another study, if a dream was perceived as sacred: divine or of the transcendent, the more valuable it was in relation to a stressor in life.¹⁷⁰

Critical Analysis

The scholarship of the sciences, social sciences, depth psychology and social-developmental psychology, all illuminate a view of life across time. These scientific approaches counter the individualist emphasis of neuroscience by employing a more

¹⁶⁴ Flanagan, *Dreaming Souls*, p.195

¹⁶⁵ Christopher Dreisbach, “Dreams in the History of Philosophy,” *Dreaming* Vol.10 No.1 (March 2000), pp.31-41, especially pp.38-39; Kelly Bulkeley, “Dreaming and god concepts,” *Religion* Vol.41 No.1 (March 2011), pp.75-78

¹⁶⁶ Stanley Krippner, Christophe Jaeger and Laura Faith, “Identifying and Utilizing Spiritual Content in Dream Reports,” *Dreaming* Vol.11 No.3 (September 2001), pp.127-147. The authors point out, “as there has been little rigorous research on the content of spiritual dreams, this research study was designed to answer the following question: ‘Can the spiritual content of dream reports be identified and measured?’” (p.130). This is answered positively, using the Casto Spirituality Scoring System

¹⁶⁷ Kelly Bulkeley, “The Religious Content of Dreams: A New Scientific Foundation,” *Pastoral Psychology* Vol.58 No.2 (April 2009), pp.93-106. In this paper Bulkeley analyses two long-term dream journals. The dream contents were quantitatively studied for age, personality, gender, culture and so forth and firm associations were found between such factors and the contents of dreams.

¹⁶⁸ Carey K. Morewedge and Michael Norton, “When Dreaming Is Believing: The (Motivated) Interpretation of Dreams,” *Journal of Personality and Social Psychology* Vol.96 No.2 (February 2009), pp.249–264.

¹⁶⁹ Morewedge & Norton, “When Dreaming Is Believing,” p.259

¹⁷⁰ Russell E. Phillips and Kenneth I. Pargament, “The Sanctification of Dreams: Prevalence and Implications,” *Dreaming* Vol.12 No.3 (September 2002), pp.141-153. Sanctification is defined as “the perception of an object as having spiritual significance and character. This construct is viewed from a psychospiritual perspective rather than a traditional theological point of view.” (p.142)

narrative and communitarian outlook. The soul of the young and young minds draws our attention back to social realities away from the brain. The temporal dimension of a human life “personalises” the vast time in evolution to an individual inter-relating within a society and culture.

The social elements needs not be opposed to individualist methods. In the previous chapter we saw the tension between scientific evolutionary psychology which sought to undermine the supposedly incorrect social science and cultural portrait of human nature (as blank slate). Likewise above, the differences between lifespan psychology and lifecourse sociology highlight differing vantage points of study. But there is little dispute about the importance of society and culture for humans who are social beings. It is language which connects social beings.

Turning to language, in the traditional Christian view, the soul and intellect are traditionally involved with human language. In St. Augustine, for example, language is situated within life, desire, God, and silence.¹⁷¹ In stillness, the tumults of the flesh and of earth, even the soul cries, “if any could hear, (...) 'we made not ourselves, but He made us that abideth for ever'.”¹⁷² That is, human language is situated among the things of this world; it is as “hushed” so that the Word may speak.¹⁷³

Augustine explained how language can be understood in terms of a three-level Platonist hierarchy of God, soul and body.¹⁷⁴ In the moment of intellectual vision, the soul inwardly touches the eternity of divine Truth. This descends to a lower level when it imprints its traces on the soul's memory, which Augustine later calls *verbum interius*. Next it is brought down to the lowest level when it is manifested in words reachable to the body's senses.

P.Cary argues that this commanding view of the experience of understanding has been influential in the West for centuries, resulting in the separation of thought and

¹⁷¹ Vincent Pollina, “Syntax, Confession, and Creation: Reflections on Dante, Augustine, and Saussure,” *MLN, Supplement* Vol.124 No.5 (December 2009), pp.S96-S114

¹⁷² *Confessions* IX, 10, 25. Pollina, *Syntax, Confession, and Creation*, p.S101

¹⁷³ Pollina, *Syntax, Confession, and Creation*, p.S102

¹⁷⁴ For the Christian Neoplatonist, the inner word is higher and closer to God than sensible, bodily things, including the words of language. Phillip Cary, “The Inner Word Prior to Language: Augustine as Platonist Alternative to Gadamerian Hermeneutics,” *Philosophy Today* Vol.55 No.2 (May 2011), pp.192-198

language. It led many to think that at the centre of the hearts or minds of human beings the divine may be experienced in ways too deep for words. Cary thinks this interpretation of experience, and that of the divine, is a mistake, “but it is certainly not a trivial one... It is an epochal and innovative approach to semiotics that has led to the conviction, still widely taken for granted today, that language is merely an inadequate outward expression or sign of a deeper, more inward, pre-verbal experience.”¹⁷⁵

Tommaso also portrays humans as rational and with immaterial intellects, differentiated from other animals. For him, language-use is the leading manifestation of the principle of rationality and many Thomists view it as a distinctive property of human beings.¹⁷⁶ But there is disagreement among scholars about the common notion that language-use solely reveals important things about the intellect. There are linguistic functions undertaken by the inner senses, e.g. the cogitative power.¹⁷⁷

One analysis finds several senses of ‘word’ (*verbum*) in Tommaso.

The ‘word of the heart’ is proper to the intellect: the concept, intention, or ratio formed by the intellect.

The ‘interior word’ is proper to the imagination: the image of the ‘vocal word’ formed by the imagination when people speak to themselves.

The ‘vocal word’ is proper to the voice for expression yet to the auditory faculty for apprehension: spoken out in human utterances.¹⁷⁸

The ‘written word’ is proper to vision or tactility, e.g., Braille.

The Thomistic tradition understands *verbum mentis* as that *by which* an object is known, not *that which* is known, or that which is in the mind and expressed differently in different languages.¹⁷⁹

¹⁷⁵ Cary, *The Inner Word*, p.197

¹⁷⁶ Daniel D.De Haan, “Linguistic Apprehension as Incidental Sensation in Thomas Aquinas,” *Proceedings of the American Catholic Philosophical Association* Vol.84 (2010), pp. 179-196

¹⁷⁷ De Haan, *Linguistic Apprehension*, p.180

¹⁷⁸ De Haan, *Linguistic Apprehension*, p.184.

¹⁷⁹ The species of the object of perception or cognition is grasped through the *verbum mentis*. David Vessey, “Gadamer, Augustine, Aquinas, and Hermeneutic Universality,” *Philosophy Today* Vol.55 No.2 (May 2011), pp.158-165 (p.161)

This chapter's cited neurolinguistic studies of language acquisition continue to fascinate researchers about how humans acquire language and communicate by speech. These empirical accounts coherently report results from investigations of brain and mind, without any reference to the soul. What is missing however is the subjective dimension, the person who uses language to communicate intelligibly. Including the spiritual principle, as the Catholic tradition does, would help unite the personal aspect of language and speech with the objective findings.

On the matter of time, evolution works during time and history. God works through time too but also transcends time.¹⁸⁰ The Christian liturgy¹⁸¹ recounts a story but also makes it present. Eschatology upends any possessiveness of time and place, because humans live between two times: the otherness of the past which returns, and openness to a present which proceeds to an unknown future. Time is always "the most mysterious and enigmatic of all God's gifts. Yet gift it remains."¹⁸²

The traditional Catholic account of the human body and soul can further provide a wholistic counterbalance to reductionist tendencies in neuroscience; and is interested in neuroscience's study human development, and the whole of life. A broader view of the human person is closer to the discourse level of magisterium: life, unity of soul/body, heart, and spirituality.

The ideas of Tommaso, for example, may help us to exercise caution in our reliance on empirical scientific studies, which have to use reductive methods. This chapter enlarges the traditional way of explaining body and soul. His thinking is less reductive, while empirical science has to use reductive methods. Yet the sciences may be perceived as needing caution in interpretation, e.g. sleep research may empty out the subjective audio-visual content of sleep, where a person's sleep is an object of study and the sleeper is not dreamer.

¹⁸⁰ Time, eternity and God raises many questions for philosophy, for example, Edward Epsen, "Eternity Is A Present, Time Is Its Unwrapping," *The Heythrop Journal* Vol.51 No.3 (May 2010), pp.417-429. See also Stanisław Ziemiański, "Time and its Philosophical Implications," *Forum Philosophicum* Vol.13 No.1 (Spring 2008), pp.69-82; M.B.Pranger, "Time and Narrative in Augustine's *Confessions*," *The Journal of Religion* Vol.81 No.3 (July 2001), pp. 377-393

¹⁸¹ Michael Barnes, "Time and a Certain Sense of God," *The Way Supplement* Vol.96 (1999), pp.7-16.

¹⁸² Barnes, *Time*, p.16.

The spiritual tradition of the Catholic Church also emphasises the heart, in the biblical sense of the depths of one's being, where the person decides for or against God.¹⁸³ This is the realm of the soul and dreams could be thought of as that part of human nature which is open to divine influence. Dreams in this sense have been called 'personal scriptures' since the events, characters and symbols are unique to the individual.¹⁸⁴ Some see a profound link with the sacred, gained through insights not in the conscious mind but unconsciously via dreaming. This is regarded as a move toward wholeness or salvation.

The Judeo-Christian scriptures show God communicating in symbolic language through visions and dreams. For many, the dream content is not random but a gift from God, revealing or fostering moves towards wholeness.¹⁸⁵ Indeed the bible contains a long history of sleep and dreams,¹⁸⁶ sent by God for particular revelations or events. In the Book of Genesis, Adam's rib is removed to create Eve through a deep sleep (Genesis 2:21).¹⁸⁷ Some dreams are nightmares. Job has problems sleeping due to pain, and he also has nightmares: "When I think, 'My bed will comfort me, my couch will share my sorrow,' you frighten me with dreams and terrify me with visions" (Job 7:13, 14).¹⁸⁸ The Gospel of Matthew describes the dreams of Joseph and Pilate's wife.¹⁸⁹

In Christian spirituality dreams are one way the Lord helps people on the path to spiritual maturity.¹⁹⁰ Dreams can prompt attention to the mystery that is God, to offer spiritual consolation, encourage 'pray-ers' to be listeners, and teach people to trust in

¹⁸³ *Catechism of the Catholic Church*, no.368; p.94

¹⁸⁴ Craig M. Mueller, "Dreams and Spiritual Direction," *Presence: The Journal of Spiritual Directors International* Vol.4 No.3 (1998), pp.15-23.

¹⁸⁵ Mueller, *Dreams and Spiritual Direction*, p.16

¹⁸⁶ Sonia Ancoli-Israel, "'Sleep Is Not Tangible' or What the Hebrew Tradition Has to Say About Sleep," *Psychosomatic Medicine* Vol.63 No.5 (September/October 2001), pp.778-787

¹⁸⁷ Ancoli-Israel, *Sleep Is Not Tangible*, p.779. Ancoli-Israel thinks that "this reference to sleep suggests that sleep represents different levels of consciousness, including that level of consciousness (or unconsciousness) achieved with anesthesia." (p.779)

¹⁸⁸ Ancoli-Israel, *Sleep Is Not Tangible*, p.785

¹⁸⁹ Robert Jeffery, "And Finally...Dreaming," *The Expository Times* Vol.121 No.12 (September 2010), p.636. Jeffery points out that "it is only in St Matthew's Gospel that there is an emphasis on dreams. Not only does Joseph have meaningful dreams, but so does Pilate's wife. Joseph's name is significant. He is a descendant of King David, thus, in Matthew's eyes, enabling Jesus to be called the son of David. This Joseph is also a dreamer." (p.636)

¹⁹⁰ Jennifer Constantine Jackson, "Dreams in Prayer and Discernment," *Review for Religious* Vol.66 No.1 (2007), pp.19-29. Jackson traces the history and cites authors such as John A. Sanford and Morton Kelsey and its relevance to Ignatian spiritual direction.

the Lord.¹⁹¹ This contrasts the observation that many presume the notion of finding religious meaning or reality in dreams is a fallacy from the Dark Ages.¹⁹² This misapprehension diverges from the biblical tradition, Fathers of the Church for instance Saint Gregory Nazianzen,¹⁹³ and more recently the Italian Saint Giovanni Bosco, Anglican minister and author of the hymn “Amazing Grace”, John Newton who left slave trade, and Carmelite nun Saint Thérèse of Lisieux.¹⁹⁴ Although this religious understanding of dreams is not fully supported by scientific studies, neither is it contradicted by them. And, as noted above, at least some studies suggest the traditional view contains some real insights into the nature of the human person.

Conclusions

Judging by the body of scholarship, there is greater research interest in the social, cultural and the linguistic aspects of life. The ability to see the developing human brain and to track changes to structure and function is a rather recent phenomenon especially in the last 15 years.¹⁹⁵ Currently there are 1.2 billion people who are 10-19 years year old,¹⁹⁶ and there has been historically a shortage of data and analyses on adolescents.

These are significant areas which affect the mind/soul of a person and his or her life, situated in an interpersonal existential perspective. Some points of contact which may open dialogue between religious and scientific views are: dreams and the soul with attention to the subjective experience rather than experimental sleep research; acquiring language as a socio-neurocognitive phase of development which could include how language about God is discovered; and how a maturing brain and mind is essential for a young person’s body *and* soul. Just as the body grows from infant to

¹⁹¹ Jackson, *Dreams in Prayer*, pp.26-28. The exploration of dreams in prayer can be “unique expressions of the life of the Spirit in the church....at the same time, we continue to be called to greater participation in the life of Christ.” (p.28)

¹⁹² Morton T.Kelsey, *God, Dreams and Revelation, a Christian Interpretation of Dreams*, revised and expanded edition. (Minneapolis, MN: Augsburg Fortress, 1991), p.17

¹⁹³ Morton T.Kelsey, “Foreword: The Dream as Religious Experience,” in Eugene M.Brown (ed.), *Dreams, Visions & Prophecies of Don Bosco*. (New Rochelle, NY: Don Bosco Publications, 1986), pp.ix-xl (p.x)

¹⁹⁴ Kelsey, *Foreword: The Dream as Religious Experience*, pp.xxix-xxx

¹⁹⁵ Sarah-Jayne Blakemore, “Imaging brain development: The adolescent brain,” *NeuroImage* Vol.61 No.2 (June 2012), pp.397-406

¹⁹⁶ Claudia Cappa et.al., “Progress for children: a report card on adolescents,” *The Lancet* Vol.379 No.9834 (23-29 June 2012), pp.2323-2325 (pp.2323-2324).

adult, so too the mind matures and the brain changes;¹⁹⁷ but brain deficits and mental disabilities do not deprive individuals of their transcendent dignity even in the young.

The psychophysical unity of the person means that the soul is part of that growth process. The sciences can provide the lead in this discussion, and may also learn from the development of the young in faith.¹⁹⁸ John Paul II says that the hope of a better world is reborn with every new generation, so long as they are given the benefit of an adequate education drawing its inspiration from the Gospel.¹⁹⁹

An apposite image for the proposed dialogue might be the journey. Ancient Egyptian beliefs concerning the journey of the soul after death are well known.²⁰⁰ Later, Philo wrote about journey of the soul through the incorporeal and corporeal worlds; this involved personal responsibility for decisions and actions of the individual.²⁰¹ In the Patristic period there are images of progressive union with the Divine, including a journey of prayer and the sacramental elements.²⁰²

The medieval 'Age of Faith' had hopes and fears about the Other World but also notions about pathways.²⁰³ There were allegories of the way traversed in this life, for example about *homo viator* [traveller or wayfarer 'man'] and *peregrinus in terris*

¹⁹⁷ Salomé Kurth et.al., "Mapping of Cortical Activity in the First Two Decades of Life: A High-Density Sleep Electroencephalogram Study," *The Journal of Neuroscience* Vol.30 No.40 (6 October 2010), pp.13211-13219; Maria Boersma et.al., "Network analysis of resting state EEG in the developing young brain: Structure comes with maturation," *Human Brain Mapping* Vol.32 No.3 (March 2011), pp.413-425

¹⁹⁸ Pope Benedict XVI, "Message of His Holiness Benedict XVI for the beginning of the General Chapter XXVI," in Salesians of Don Bosco, '*Da mihi animas, cetera tolle*', *Documents of the General Chapter XXVI of the Society of Saint Francis of Sales* (Rome: Direzione Generale Opere Don Bosco, 2008) co-published as *Acts of the General Council of the Salesian Society of St. John Bosco* Vol.LXXIX No.401 (May 2008), pp.89-93

¹⁹⁹ John Paul II, "Message of His Holiness John Paul II for the beginning of the 23rd General Chapter," in SDB, *Educating Young People*, nos.311-314, pp.175-177 (p.175)

²⁰⁰ Apart from the ancient Greek philosophers such as Plato, see too Andrew Robinson, "Jean-François Champollion and ancient Egyptian embalming," *The Lancet* Vol.379 No.9828 (12-18 May 2012), pp.1782-1783

²⁰¹ Archie T. Wright, "Some Observations of Philo's *De Gigantibus* and Evil Spirits in Second Temple Judaism," *Journal for the Study of Judaism* Vol.LXXXVI No.4 (November 2005), pp.471-488.

²⁰² Kristina Robb-Dover, "Gregory of Nyssa's 'Perpetual Progress'," *Theology Today* Vol.65 No.2 (July 2008), pp. 213-225

²⁰³ Peter Dinzelbacher, "The Way to the Other World in Medieval Literature and Art," *Folklore* Vol.97 No.1 (1986), pp.70-87; Sylvie Supper (transl. Sr. Emmanuel Cazabonne), "Spiritual Joy in the Works of Saint Bernard," *Cistercian Studies Quarterly* Vol.39 No.4 (2004), pp.357-370

[pilgrim on earth].²⁰⁴ Popular traditions mention the bridge to the Other World, the ladder, a boat-trip, even a journey on horseback, and the vehicle of the cart.²⁰⁵

The journey theme is suited to the development of faith.²⁰⁶ Modern use of archetypes, myths, symbols are applicable to the questing and journey motif.²⁰⁷ If scientific and social studies can be view the human life across time in a journey, then a there are good prospects for dialogue.

Part II Retrospective

Part II has explored five areas of neuroscience and associated subjects that can contribute new insights on the soul. Yet, while neuroscientific methods cannot be ignored as a powerful account of the brain's involvement in all aspects of human living, it has been subject to philosophical analysis and critique by Bennett and Hacker and others. The science is sound; however dualist errors have been identified in neuroscience's philosophical claims, e.g. speaking about the brain as if it were a person.

Close scrutiny is also required when neuroscience investigates spiritual and religious experiences. Some neuroscientists interpret their findings in such ways to eliminate any need for a soul. Others, however, have concluded that people really have experienced a reality beyond themselves.

Brain experiments about embodied religious experience are fascinating, nevertheless the brain cannot be depended upon when it, or the body, start to degenerate. Head trauma and neurological diseases cause damage to the brain and frequently results in troubled minds, maybe 'lost souls' as it were.

On the other hand, since souls are united to bodies, it is important to consider the evolutionary background to the physical nature of human beings. Comparative

²⁰⁴ Dinzelbacher, *The Way to the Other World*, p.70

²⁰⁵ Dinzelbacher, *The Way to the Other World*, pp.76-79

²⁰⁶ Felicity B.Kelcourse, "Finding Faith: Life-Cycle Stages in Body, Mind and Soul," in Felicity B.Kelcourse, (ed.) *Human Development and Faith: Life-Cycle Changes of Body, Mind and Soul* (St.Louis, Missouri: Chalice Press, 2004), pp.59-90, pp.64-65

²⁰⁷ Corelyn F.Senn, "Journeying as Religious Education: The Shaman, The Hero, The Pilgrim, and the Labyrinth Walker," *Religious Education* Vol.97 No.2 (Spring 2002), pp.124-140

studies with other animals, and evolutionary psychology, are valid and important ways of studying human persons. They firmly anchor the mind and brain in nature and time.

Having a temporal vision of body-soul is foundational to understanding human beings over their lifetimes. A more wholistic existential outlook can be gained by examining society, language, and the young brain/mind and soul.

Returning to Part I, on Catholic teachings and thought about the soul, a number of relevant points can be made. The experimental methods equip neuroscience to be a physicalist discipline, untroubled by any peripheral issues about the soul except for those neuroscientists who choose to enter into metaphysical territory. Some make claims of denial of the soul, yet others make affirmative remarks.

The traditional Catholic view is that the human body shares in the dignity of "the image of God": it is a human body precisely because it is animated by a spiritual soul.²⁰⁸ Accordingly the tradition ought to be keenly interested in the brain and how it might relate to the soul, particularly when Catholic teachings are expressed in largely philosophical concepts and language, not born out of the neuroscientific age. As noted in Part I, there are conferences and writings which strive to enter into such dialogue.

Part of the Catholic contribution is its respect for the dignity of the person. It can question the centrality of the healthy brain and show how a Christian community champions supportive care for all human beings, including those with neurodegenerative conditions. This stems from the Catholic belief in the transcendence of human souls. This furnishes a new factor of uniqueness in the human spiritual nature. Human dignity is another reasonably uncontentious area for mutual discussion with scientists.

Two other emerging interfaces for dialogue are identity and journey. Given the philosophical tensions between a biological "brain view" and a psychological "continuity view," the spiritual principle in human beings, united with the body in

²⁰⁸ *Catechism of the Catholic Church*, no.364; p.93

health and sickness, is a valid basis to discuss self and identity questions. Secondly, the metaphor or image of the journey could unify ideas about human life from the stages which include language acquisition, to the developing brain, mind, and soul into adulthood.

In the next part we present an updated Catholic understanding of the soul in light of modern science and related philosophy.