

Paper first delivered to the Innovation and Improvement Conference held in Victoria in March 2004, and reissued for the British Columbia Superintendents' Conference November 2007

“Lieutenant Peter Puget, the grain of the brain and modern society’s failure to understand adolescents”

I was preparing to write a semi-technical paper for the Conference Brochure when I received a request from the British Columbia Schools Trustees Association to publish in the same Brochure an earlier paper of mine – “Battery Hens or Free Range Chickens”. Having acceded to this request I then cast around for a different, perhaps more novel way of presenting my ideas.

The Pacific North West has fascinated me from the time I first visited Vancouver and Victoria 35 years ago, and subsequent family holidays in Seattle have increased my affection. Shortly after moving our family home from Virginia back to Bath, England four years ago, my wife and I, on a Sunday afternoon walk, stopped off at a little village churchyard a couple of miles from here where the church warden said; “If you come from America you’d better go and look at the grave outside of Rear Admiral Sir Peter Puget – the man who discovered Pacific North West.” Thrilled to discover such a local connection with British Columbia I have frequently pondered how a man from here, little more than 200 years ago, could have been able to place his name so firmly on that great waterway around which the economy of the Pacific North West now hinges. That got me started on a novel way of describing why I am convinced schools have not got their treatment of adolescents right. Please read on.

* * *

Like many others in December 2003 I was fascinated by the film “Master and Commander” featuring the adventures of a late 18th century Georgian warship, as told by the novelist Patrick O’Brien. As luck would have it, only a week after having seen the film I was in Portsmouth, England, taking an American visitor to see HMS Victory, now the sole survivor not only of the Battle of Trafalgar but also of service in North American waters in the 1770s and 80s. The ship is meticulously preserved and the guides most knowledgeable. “Yes”, said our guide, “The directors of that film spent an enormous amount of time here checking on all kinds of details about naval life in the late 18th century. You can be pretty certain that the interpretation of what things were like is as accurate as possible. Remember”, he said, “the young Horatio Nelson joined the navy at the age of 12 and as the young mid-shipman in that film who, when he thought he was about to die, pleaded with his friend that if his body were to be buried at sea they would not put the last of the sail-maker’s stitches up his nose, we have a fair approximation of the young Nelson.” Which made me think of Peter Puget, a man buried up the road from here, who was a direct contemporary of Nelson.

That made me think more deeply about the film. Captain Aubrey and the Doctor were very obviously well educated men. The Captain knew how to get the best out of seamen. Living in the close quarters of a wooden warship you get plenty of opportunity to appreciate the individual qualities of the sailors, and he used both praise and toughness judiciously. The men respected their Captain, indeed would have sailed anywhere with him, but both Captain and men recognised the divide which was between them... a divide which was one of applied intelligence, reflected perhaps simplistically as a class divide. It was more complex than that. The film pays considerable attention to the young midshipmen. Young they certainly were – 11 or 12 years of age and hardly out of puberty; “squeakers” they were called. The Captain

took a very special, almost avuncular, interest in these young men. In truth he most certainly saw himself in them for he too had joined the navy at such a tender age and under the intensive tutelage of the first lieutenant he had learnt the complex skill of navigating with the use of a sexton (something I'm told is more complex than trying to do trigonometry without a piece of paper to note down intermediate steps, and conducted – more often than not – with a mighty wind blowing). Midshipmen learnt to climb the rigging in a full gale, to trim the sails along with the men, and they were taught to command. The ability to command a ship, as they quickly learnt, meant winning and holding the respect of the men who expected to see in the young officers people of real authority and personal stature and who certainly knew exactly what they were doing. Their entire adolescent energy was spent learning to perform complicated tasks – boredom they did not know and pocket money they did not have.

When the ship was broadside on to a French war ship, a cannon ball was no respecter of class – officers and men alike went down like ninepins. Yet when an enemy ship was captured Captain Aubrey apparently had no qualms about putting on board a skeleton crew of pressed seamen, under the command of a recently promoted midshipman half the age of the toughened sailors. Young midshipmen had to learn command quickly.

In the weeks before seeing the film I had been checking the manuscript of a book I had just written – “Both Sides of the Coin; Reuniting Thinking with Doing”. Two thoughts were still running through my mind as I walked around the Victory; as the Industrial Revolution had gathered pace so the age-old practice of apprenticeship had started to disappear. People no longer had skills that they could usefully transfer to their children. Secondly I had been amazed to discover what rotten places were the few boarding schools that then existed in England – places which history now refers to as Public Schools. These were the schools to which the aristocracy sent their sons, in a real sense to keep them out of the way until they were old enough, at 17 or 18, to have a commission bought for them in one of the elite regiments in the army. Eton was the most prestigious of these schools, but it was a harsh, unforgiving and terribly unenlightened place where the curriculum was almost exclusively based on Latin and Greek, and where classes were sometimes as large as 200 and bullying was rife, persistent and frequently sadistic. The pupils were bored out of their minds much of the time, desperate to ape their elders in the sexual adventures told in “Fanny Hill”, published in 1749, and so dissatisfied with their lot that the pupils of Eton and Winchester rebelled nine times over a 30 year period needing two battalions of armed soldiers in 1818 to get them back into school. They dynamited the lock of the door of the headmaster's study and locked a wild mastiff in his desk. Sensitivity and inquisitiveness was bred out of such boys and replaced with a toughness and a faith in giving orders which served them well on the battlefields that imperialistic England was soon to find around the world – they lived in a world with the sharpest of divides between officers and men. In no sense were such army officers and men ever in the military equivalent of “the same boat together”.

Which takes me back to those young midshipmen who, in “Master and Commander” spoke with almost too polished educational accents, and whose physical stature seemed to reflect breeding and gentility. These were, we now know, the sons of the lesser gentry and clergy – men who had no craft skills to transfer to their sons, and insufficient money to buy them privilege first through Eton and then through a military commission. Their fathers were educated men who wanted a profession for their sons but had no money to buy this. The navy provided the one opportunity to learn both a professional skill, and to develop something of a social acceptability. Impoverished fathers, therefore, looked for uncles or patrons who were captains willing to take onto their ship youngsters of promise.

Nelson was typical, as was probably Peter Puget. Nelson's father was a country rector of limited means but with a great affection for the young Horatio. In his country rectory Horatio

learnt not only to read but under his father's instruction he studied Greek and Latin, both the language and the literature. At the age of 12, a classical education behind him, Nelson joined his Uncle William Suckling's ship, HMS Reasonable, and within little more than 18 months had sailed both to the West Indies and to Antarctic waters. While the sons of the wealthy stagnated at Eton, plotting rebellion against teachers and how to cheat at class tests, 12, 13 and 14-year-old midshipmen were learning to pilot their ships around the world, and to manage the complexity of a Georgian warship (the most sophisticated organisational hierarchy of its time), and to think on their feet. Not for nothing did the Navy, the backbone of British imperialistic expansion, become known as the Senior Service. Its secret – it knew that it needed potential officers who had had an excellent grounding in what we would now simplistically call “basic skills”, but to the Georgians meant also a familiarity with classical and biblical knowledge, and who then used their adolescent energy to learn complex skills on the job, and under the constant watchful eye of senior officers, men who were excellent role models to their apprentices.

Which brings me to these waters between this beautiful city of Victoria and the throbbing industrial might's of Seattle, now world famous for Microsoft, Boeing and Starbucks, to Puget Sound, and to the mainland metropolis of your province, Vancouver. Who were these men who so effectively stamped their name on the Pacific Northwest? Certainly they were not the first Europeans to venture onto this coast; Francis Drake was here in the 1580s, and Captain Cook visited in 1779. The Spanish coveted these parts and claimed authority under the papal edict of 1494 that led to the challenge to English trading rights at Nootka Sound in 1790. The English government would have none of this. Which was why, in April 1792, Captain Vancouver was despatched from England by the Admiralty in the small sailing schooner HMS Discovery to map and take possession of the seaways and islands in these parts.

Peter Puget was his lieutenant, the man responsible for sailing the ship across the north and south Atlantic, around the Cape of Good Hope and, taking advantage of the prevailing winds, right across to Australia and then further across the Pacific. Puget was the sixth of seven sons of an impoverished Huguenot refugee living in England. Like Nelson he learnt much from his family (family meant much to him as his gravestone describes him dying “in the arms of his family” in November 1822) but funds were short in this poor, Protestant family and Peter joined the Navy in 1778 at the age of 12 as “a ships boy” – the lowest possible status. He did extremely well, quickly becoming a midshipman and in 1790 he was promoted lieutenant. Vancouver found him a most able navigator and fine and trusted companion and recommended his promotion to Commander in 1795 and to Captain in 1797. Eventually this former ships boy from a good family and a highly effective apprentice learning so much of his skill “on the job”, was made a Knight Commander of the Bath, and died a Rear Admiral.

The relevance of Peter Puget, and others of his ilk, to this conference? I think a careful study of these men and the circumstances that bred them can most usefully put the flesh onto what recent studies are showing about the relationship of the biological changes in the adolescent brain, and the skills and attitudes developed in the earliest years of life. Let me explain: In those decades before the Industrial Revolution was to change not only man's way of making things, but of also how man did business with his and her fellows, I believe we can see (in a biological sense) the flowering of those innate skills that evolution ensures are transferred from one generation to another that enable humans to so interact with their environment that they literally “grow their own brains”. Men and women in 1791 had to use every one of their multiple intelligences most days if they were going to survive. In the ships of the Georgian Navy we have the most sophisticated set of such arrangements that the world, up to that time, had ever required. The officers of those days were the direct descendents of William the Conqueror's sea captains – men who understood wind and time, navigation by the stars, the

resilience of oak planks and hard oakum, and the breaking point of men. Peter Puget would have found a conversation with an 11th century sailor easier than with a steamship captain of 50 years later, for by the mid-19th century most people were becoming sufficiently specialist in their daily activity to be effectively ignoring many of these attributes which in previous times ensured their full and complete development. In my terms these young midshipmen, and the lives they lived, represented the ultimate achievement of the old apprenticeship system and the development of the “all round” man. Their whole way of learning went “with the grain of the brain”.

The description of Peter Puget as “a former ships boy from a good background” actually explains a lot. It was the research undertaken in the state of Michigan by the Kellogg Foundation, and highlighted at the White House Conference on Early Child Development in 1997 that best illustrated this for me. In a massive, state-wide enquiry into the best predictors of success at the age of 18 it was found that, four times more important than any other factor, was the quantity and quality of dialogue in the child’s home before the age of five; peer group and individual reading all were found to be more significant than the role of the elementary schools. Numerous neurological studies since then have shown that, while we each inherit brains shaped by our own evolutionary ancestors, the details of how these brains function is an absolute function of how we use them. “Use it, or lose it” was the popular strap line. It remains a correct summary, for as we link up parts of our brains to solve a particular problem so we create possible networks also for solving some other, as yet undefined problem. “We design and build our houses, and then our houses go on to shape our lives”, is another good analogy. In recent years neurobiologists have been able to show a significant increase in the size of that part of the brain used by London taxi drivers to find their ways around the tortuous back streets of London. The same goes for concert pianists and those parts of their brain concerned with particular keys.

Matt Ridley, in the splendidly simple title for his book last year “Nature via Nurture” caught this new understanding perfectly. Every one of us is endowed at birth with what I fancifully describe as a shelf full of “do it yourself” guides which an inquisitive person, faced with a particular challenge, can pull down, recall the wisdom of our ancestors and discover the tools - the processes - to deal with any new challenge. The more varied these challenges, the more evolutionary D.I.Y. guides we will have used and the richer will our own brain have become. By the age of 12 Nelson, and probably Peter Puget, would have internalized the processes of classical and biblical thought; by 13 or 14 they would have done the same with trigonometry, geography, and much of the lessons of the sea, and by 15 they were fast becoming men of stature.

The research by Hart and Risley into Meaningful Differences in the everyday Experience of Young American Children is fascinating in this respect. Reflecting on why it was, with some of the most expensive and extensive programmes aimed at enhancing the language skills of youngsters coming to school with weak language skills, improved performance gradually declined with time, these researchers sought, in a long-term study, to relate children’s skills to the language level found in the home. To desperately simplify a massive set of their findings the study showed that parents who talked a lot with their children when young created children with extensive language skills, while however good were the language enhancement schemes for the less talkative in school, such children almost invariably regressed to talk in a manner, and deliver vocabulary, that was the mean for their own home. The research stated; “Moreover the amount of talking the family did seemed to be part of the culture being transmitted to the child. After the children learnt to talk and had all the skills needed to talk more than the family, they did not; the amount they talked stopped increasing as soon as they began to talk the amount typical of the family.”

In this regard what was most significant in explaining the adult activity of Peter Puget and Horatio Nelson was probably the quality and quantity of dialogue in their genteel, if moderately impoverished, homes. The Hart and Risley figures show that, by the age of three, the child of professional parents had a vocabulary larger than the parents of a welfare child. Such professional children talk a lot and know how to form a conversation; once learnt they don't lose this ability, but if they don't get it young it would be very hard to develop later on.

Something else stands out. Both Puget and Nelson's parents had to be careful with their money. Already in the late 18th century there was emerging the phenomena so well recognised now, two hundred years later, of the "spoilt brat"... the child of rich parents who have lavished on their offspring all those things they would have liked to have had as children, but didn't. Hart and Risley again; "Parenting in a society without television, toy stores, gas powered lawn mowers and sugar-coated cereals was easier by far than today. Technology has removed parents' need for children's help, the traditional means by which parents transmitted across generations the importance of work, and has left parents to guide their children as best they can through a maze of continuously available entertainment." Nelson and Puget had few toys, and recreation for a sailor meant building exquisite "ships in bottles". There were no toy shops, and there was always much necessary work for young children to do.

Children in 21st century British Columbia still have brains which are pre-programmed to work in the way that Confucius identified two and a half thousand years ago. "Tell me and I forget/Show me and I remember/Let me do and I understand". Nelson learnt to sail by "messing about in boats" in ways which would horrify safety conscious English parents, and Captain Cook learnt the skills that brought him to Puget Sound a dozen years before Puget himself, in a similar direct way.

There were fewer distractions in those days, and the link between cause and effect two hundred years ago was strong. Now, in the city of Birmingham in England a recent survey showed that 80% of three year olds had television in their own bedrooms, while in March last year an independent newspaper reported that half the five year olds starting school lacked the speaking and listening skills needed to cope in a classroom. "A cultural change means that parents no longer believed conversation was essential to their children's education", explained a commentator who described family communication as "the daily grunt". "There is an ethic", he said, "among parents which says 'don't worry, schools will do it all for you'." That was not the experience 200 years ago of a child like Peter Puget.

"What on earth can schools do about this?" an overwrought teacher said to me at a conference recently, "after all we can't do the parents job for them!"

I could not let her off as easily as she hoped. Gently I explained that the parents of today were, all too frequently, our pupils less than twenty years ago, and that in our secondary schools sitting as pupils today are the parents whom elementary schools will be facing in less than ten years time.

For the best of reasons schools have willingly attempted to supplement what parents in recent years have failed to do. This is now turning into a massive disaster. Teachers can teach in schools, and parents can provide love and sustenance outside; the two should complement each other – neither can replace the other. In a period when the art of parenting has been lost I would argue that it is the task of schools to rebuild such skills by stressing to the present generation of adolescents that this becomes their task in the future, and not the ongoing task of teachers.

Urgently we have to reverse the assumption that schools can, and should, do it all. If we are to have a chance of doing this then we must ensure that the next generation of parents don't think like this. I'm not talking simply about domestic science lessons, cookery, or even baby care. I'm talking about ensuring that the next generation understands the dynamics of human behaviour and how these are developed, in ways we have never made explicit in the past.

Let me further explore some of Hart and Risley's findings. Children whose parents are on welfare have a far lower level of contact with their parents. The research would seem to suggest that welfare parents give only some six positive feedbacks per hour to their children below the age of three, whereas professional parents make thirty such affirmations every hour. Welfare children hear twice as many negative comments as they do positive ones. Nelson and Puget were the lucky ones. They had the interaction in their early years with their parents, which I surmise is what separated them from the sons of the common seamen who might not even have known their parents. Quality home experience is so important in the early years that today's adolescents need lessons in understanding how the brains of their future children will grow. They need to know that childcare is so much more than a matter of diapers and baby foods.

Further light is thrown both on Puget and Nelson, and the dilemmas we face in our own society by the research of Bowler, Gintes and Osborne. Published in December 2001 this was an article entitled "The Determinants of Earning; a behaviourist approach". In this Paper the authors sought to explain why it was that some people earned more than others – a topic of real interest by anybody's standards! Their conclusions were fascinating; over 50% of the variables could not "be attributable to educational attainment, cognitive ability, experience and other recognised and measurable variables." It went on to explain that in understanding these salary differences such things as socio-economic background, years of schooling and standardised IQ tests are not as significant as motivational traits of industriousness, delayed gratification, punctuality, perseverance, leadership and adaptability. In my terms, therefore, the reason that Peter Puget probably became a Lieutenant in eight years (and put his name on the map for eternity) was not so much due to his cognitive ability but to his industriousness, resolution, adaptability and delayed gratification.

In the modern world where are these skills developed? Let me briefly touch on the work of Mihaly Csikszentmihalyi, from Chicago. He has spent much of his lifetime studying the behaviour of adolescents, and what he calls "flow" – the psychology of engagement with everyday life. His prime interest is what makes adolescents "tick", and what their sometimes-bizarre behaviours tell us about the nature of their brains. From other studies by neurobiologists about the process of synaptogenesis we learn that the brain goes through three periods of massive synaptic reorganisation during a life span. We are each born with a surfeit of potential synapses, in crude terms we are born with enough synapses to enable us to deal with every eventuality that ever befell our ancestors. In the first six months of life the young baby neurologically prunes those synapses that seem inappropriate, leaving it with the amazing ability to learn from its environment almost through a process of osmosis. We see this in the young child's ability to learn language without formal instruction, and to have a precocious appetite for things it finds interesting.

The second period of synaptogenesis is that of adolescence (the third is senility 60 or 70 years later, which need not concern us here). In her recent book "The Primal Brain" published last year Barbara Strauch outlines much of this research. As the adolescent brain carries out this second major "tidying up" of its synapses, some of their behaviours seem weird, irrational and even terrifying. It's almost as if some children are deliberately trying to throw away everything they were taught in the past. In one sense that is exactly what they are doing – replacing what they were taught with what they want to learn for themselves. This seems, yet

again, to be evolution playing out in a single generation the whole experience of our ancestors; what matters for the survival of each and every one of us is what we have learnt as a result of the development of our own critical faculties – not simply what we were taught by someone else. However good our teachers may be, as the old Hebrew proverb has it, they don't live in the same world as the learner.

Csikszentmihalyi had made a particular study of how children are best prepared for the world of work. His findings reached the same conclusion as Confucius all those years ago, and certainly give substance to the explanation as to why some people earn more money than others. Very broadly those youngsters who make the best transfer to adult life are those who, as adolescents, were most involved in, and responsible for, themselves. Adolescence is a time to demonstrate that you have learnt so much from your early life experience that you now need to demonstrate that you can do it yourself.

Which is exactly what those Georgian midshipmen were doing.

Csikszentmihalyi explores the biological state of “Flow”. To simplify this, it goes something like this. Under normal conditions the harder you work the more tired you feel, until the moment when you just stop or sleep overtakes you. There is a time however in adolescence when it seems that emotional and intellectual interest in a topic can combine to thrust the adolescent brain into a kind of fifth gear, or overdrive. The brain, like the car, goes much further on less gas, and in doing so creates less pollution and less demand for the user to take a break. Some readers of this article will be well familiar with this from their own adolescent experiences where a particular project kept them up all night, where even feeling tired.

I would argue, though it still needs a massive longitudinal study to prove this, that youngsters such as Peter Puget and Horatio Nelson would have had so many experiences of this kind as young midshipmen that their brains were for ever altered in such a way that as adults they could readily access the state of flow. Again, a significant number of the readers of this paper will be able to do this as well. It is a very valuable activity. Too few modern adolescents have such opportunities.

What I shall argue at the conference lunch is that our present form of education has become so dominated by the processes of simulated learning within structured schooling that we are in grave danger of producing an over-schooled but under-educated generation of youngsters. We are in danger, as I see it, of producing vast numbers of young people who can carry out brilliant analysis of a whole range of issues but who lack that very special quality of flow which biology has endowed each one of us with the potentiality for if... and it has to be a big “if”... we are allowed to have our own head in our teenage years, and learn to put into practice (including learning from the mistakes we will inevitably make) what previously were only someone else's ideas put into our heads through instruction.

Remember that line of Confucius's epigram? “Let me do, and I understand”. That's what our young people desperately need. If our elementary education is as good as we think it is, then why do we hold on to our teenagers in secondary schools as if we didn't trust them? If Peter Puget or Horatio Nelson could come back and sit in some of our classrooms as 13-year-olds I guess they would give us hell! They would be so full of questions, and so impatient to get on and do something, that it would be a tight call between them walking out on us, or we expelling them.

Come to think of it... didn't something like that happen to Bill Gates?

May you never hear the names of Vancouver or Puget again without questioning your assumptions about adolescents!

PS:

Just before making a final check of this article the postman delivered another history of Peter Puget from a second-hand bookshop in Seattle. From this I learnt that Rear Admiral Sir Peter Puget lived the last few years of his life eighteen doors down from where I now live in this splendid terrace of Georgian houses. We were almost neighbours, given 180 years time difference. An extraordinary coincidence.

* * *

John Abbott
 President
 The 21st Century Learning Initiative (UK)
 3 Grosvenor Place, London Road
 BATH, BA1 6AX UK
 Tel: +44 (0) 1462 481107
 Fax: +44 (0) 1462 481108
 Email (US): info@21learn.org
 Email (UK): jabbott@rmplc.co.uk
 Website: <http://www.21learn.org>

References:

The Patrick O'Brien novels, and "*Master and Commander*" in particular.

"*Both Sides of the Coin; Reuniting thinking with doing*", an as yet unpublished manuscript written by John Abbott.

The Kellogg Foundation Study of Predictors of Success in the State of Michigan, quoted at the Whitehouse Conference on Early Childhood Development in 1997.

Bowler, S and Gintes and Osborne "*The Determinants of Earnings*" *Journal of Economic Literature*, December 2001.

Coleman, E.C. "*Captain Vancouver*" 2000, Caedmon of Whitby.

Csikszentmihalyi, Mihaly, "*Being Adolescent*" Basic Books 1984; "*Finding Flow*" Basic Books 1997; "*Becoming Adolescent*" Basic Books 2000.

Greenspan, S "*The Growth of the Mind*" 1997

Hart, Betty and Risley, Todd "*Meaningful Differences in the everyday experiences of Young American Children*", 1995 and 2003, Paul Brookes Publishing Company.

Ridley, Matthew "*Nature via Nurture*" 2003.

Strauch, Barbara "*The Primal Brain*" 2003 Doubleday.

Wing, Robert C. "*Peter Puget*" 1979, Greybeard Publishing.

Vincent, Edgar "*Horatio Nelson; Love and Fame*" 2003, Yale University Press.