

# Expertise at the boundary: *Vox expertorum*

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## What kind of guru, are you, anyway?<sup>1</sup>

1. Much has been said about the nature of professionalism within the surveying profession; Justice Coté of the Alberta Court of Appeal summarized the debate in 2006.<sup>2</sup> The more relevant debate now is on the nature of expertise, and on the role of Alberta Land Surveyors as boundary experts.<sup>3</sup> ALSs rightly hold themselves out as experts in establishing and re-establishing boundaries, as expected by the public. The *Land Surveyors Act* and the courts allow for such an exalted role; indeed, both grant to ALSs the exclusive right to survey parcel boundaries. However, “the possession of power necessarily implies great responsibility,” as first recognized in debates to suspend *habeas corpus* in the United Kingdom.<sup>4</sup> For those more familiar with the origins of Spiderman’s social conscience, “with great power there must also come – great responsibility.”<sup>5</sup>

2. This great responsibility is that ALSs both understand (know) and apply (use) legal boundary principles. These principles run the gamut from recognizing the doctrine of original monumentation, to using the hierarchy of evidence only when there is ambiguity, to requiring that erosion result only from the slow, gradual and imperceptible encroachment of water, to not apportioning accretion across parcel bounds, and so on. And yet, anecdotal evidence suggests that expertise is somewhat sketchy, if an ALS routinely surveys accretion across section lines and if field-work is discounted, to give but two recent examples. On the latter, the Director of Practice Review lamented in 2009 that: “If we don't spend any time on the site we will lose our status as experts and become simply supervisors of experts.”<sup>6</sup>

3. Certainly, the evidence suggests that a loose grip on boundary expertise is not uncommon elsewhere. At a recent meeting in another jurisdiction, a land surveyor argued strenuously that a riparian boundary was fixed in location at a time of extreme low water; that is, at the lowest point in the 20-odd year period over which reliable records had been kept. When questioned as to the principle that allowed for such an opinion, he argued for two boundaries – extreme low water for land use purposes and bank for title purposes. When questioned as to how a parcel could – simultaneously – have two different boundaries, he left the meeting.<sup>7</sup>

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<sup>1</sup> Zappa. *Cosmik Debris*. From: *Apostrophe*. 1974.

<sup>2</sup> Justice Coté. Ethics and the professional land surveyor. *ALSA Report of Proceedings*. pp.128-138. April 2006. The debate on professionalism is part of a larger critique, for “measurement is another fetish of professionalism.” Smith. *Are we too professional? The Economist – Intelligent Life*. p.126. Winter 2009.

<sup>3</sup> There has been little discussion since: Doig. Expert evidence. *The Canadian Surveyor*. v.29 – n5. p.494. 1975

<sup>4</sup> United Kingdom Parliamentary Debates on the *Habeas Corpus Suspension Bill*. June 27, 1817.

<sup>5</sup> Lee. *Amazing Fantasy #15*. August 1962.

<sup>6</sup> Everett. First impressions. *ALS News*. v.38-2. pp.27-28. June 2009.

<sup>7</sup> It is unseemly to identify such land surveyors throughout this screed. They know who they are.

## The 10,000 hour rule:

4. Being an expert is hard-work, and requires some 10,000 hours of study.<sup>8</sup> This amount of work has been demonstrated across a range of expertise – composer, basketball players, fiction writers, ice skaters, concert pianists, chess players, master criminals and others. Such study takes many forms – at post-secondary educational institutions, while articling, while practicing one's craft, and through continuing education (as represented, for instance, by AGM seminars).

5. Let's troll through the reservoir of expertise principles, by looking at subjects other than boundary establishment and re-establishment – from football punditry to postmortem autopsies to riparian conflict management. Such analogical thinking is widely used because it “allows for comparison of similar objects and for the identification of patterns.”<sup>9</sup> To a wee extent we will discuss being an expert witness, but the focus is on being a boundary expert.

6. Expertise seems to fall along two axes. Along one axis is the level of knowledge held by the expert. Along the second axis is the significance of the subject. For instance, I have much knowledge of the *Doonesbury* comic strip, of the music of *Steely Dan* and of row-boats (more particularly wineglass wherries). However, it is difficult to suggest that such knowledge qualifies me as an expert, owing to the insignificance of such subject areas to the public. There are no academic qualifications, articling periods or examinations required before one can opine on the literary origins of the Steely Dan name, for instance.<sup>10</sup> Nor has the public created a self-governing profession, which in turn sets ethical standards akin to those set by ALSA, for the building and rowing of stitch-and-glue boats.

7. This seminar follows a three-part structure, by examining people:

- purporting to be experts in fields that require no expertise;
- purporting to have expertise in fields requiring expertise;
- with expertise in fields requiring expertise.

## The 38% rule:

8. Let's dispense with the trivial first – those claiming expertise in insignificant subject areas. Beware of false prophets beguiling you to the Land of False Profits. To wit: NFL football punditry. The newspapers are replete with “experts” at picking winners against the spread. However, their expertise turns out to be worse than chance. In a sample of 66 games (from weeks 4 to 8 of the 2009 season) the expert fared poorly against a coin toss:

- expert: 45% (30-36);
- coins: 52% (34-32).<sup>11</sup>

9. We are now assaulted by those claiming to be experts and by their proclamations tarted-up in the guise of expertise. If anybody can claim to be an expert, then expertise runs the risk of being degraded. Rutgers University in New Jersey offers a course in the English Writing Programme that demonstrates “201 ways to become an expert.” The course requires a 5-page analytical essay, a 15-page research paper and a 10-minute oral presentation.<sup>12</sup> Experts assert that when the ice melts on the North Saskatchewan River, bodies that have been trapped under the ice float to the surface: “Corpses turning

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8 Gladwell. *Outliers: The story of success*. Little, Brown & Company. c.2. 2008.

9 Cohen & Frank. Innovative approaches to territorial disputes: Using principles of riparian conflict management. *Annals of the Association of American Geographers*. 99(5). pp.948-955 at 950. 2009.

<sup>10</sup> See: Burroughs. *Naked Lunch*. 1959.

<sup>11</sup> Naylor was the expert. *The Globe & Mail*. The methodology was: heads = visiting team; tails = home team.

<sup>12</sup> Rutgers University. Course 355:201 – Research in the disciplines.

up in spring not uncommon: Experts.”<sup>13</sup> In keeping with the theme of spring cleaning: astonishingly, “a clean car, free of clutter and musty odours is more comfortable to drive in, healthier, and looks good too, experts say.”<sup>14</sup> Finally, the chemistry teacher/crystal meth cook/family man on *Breaking Bad* puts his assistant in his place: “They [the drug lords] want somebody with expertise; somebody who knows what he is doing.”<sup>15</sup>

10. Toadying to experts assumes that virtually anybody’s opinion on virtually any subject qualifies him or her as an expert. That is, that the simple act of proffering an opinion renders one an expert. This premise is founded on the conventional wisdom on opinion entitlement. However, a study conducted by Chicago’s School of Behavioural Science in 2007 concluded that 38% of people are not actually entitled nor qualified to have opinions.<sup>16</sup> That is, an opinion on the character or location of a boundary, unsupported by a keen grasp of the facts and the law, is worth little.

### **Anne Elk, the Hunting of the Snark & 37 million hits:**

11. It is not enough to assert that one is a land surveyor and that therefore one’s opinion is valid. Such actions are reminiscent of Anne Elk of Monty Python fame, whose theory about the brontosaurus was that they are “thin at one end, much much thicker in the middle and then thin again at the far end.”<sup>17</sup> It is not enough to cry that “that is my theory, it is mine, and it belongs to me and I own it.” One’s theory – as for one’s opinion – must have substance. This principle is immutable even in the face of repeated airings of a vacuous opinion. Opining frequently or loudly does not impart worth; this differs from the hunt for the Snark, “I have said it thrice: What I tell you three times is true.”<sup>18</sup>

12. Theories and opinions without substance are useless at best and damaging at worst. They merely pay lip service to rigour, without developing and implementing a methodology to test the theory or to substantiate the opinion. Beware of following in the footsteps of the experimenter who set out to test the assertion that growth is good merely by typing words into his internet search engine. In response to urban-growth-good he received 37 millions hits; in response to urban-growth-bad he received 13 million hits. Using his facetious methodology his conclusion was that urban growth is good.<sup>19</sup>

13. Rigour necessarily implies consistency across experts. Join me now on a thought experiment. Suppose that a series of real property report surveys are commissioned in an inner city neighborhood in a large city in Alberta. Further suppose that the parcels of 25 ft frontage were created by a plan of subdivision in 1907, at a time when each parcel corner was demarcated with a wooden stake (recall that parcel corners ceased to demarcated only in 1912). Consistency suggests that three recent RPR surveys over the span of, let’s say, 15 years should arrive at the same conclusion: that the experts’ opinion of the location of the side boundaries should be within the tolerances allowed by measurement science. In this exercise, what if RPR #1 accepted recent fences as the best evidence; RPR #2 proportioned between block corners; and RPR #3 used the original wooden stakes? Is each opinion valid, despite differing among them by some 1.5 ft? Is expertise being exhibited?

14. Imagine such inconsistency among opinions in other fields. Imagine a child suffering from shin-splints. What if Doctor #1 using methodology #1 rendered the opinion that the issue was gout; Doctor

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13 *Edmonton Metro*. p.1. May 20, 2009.

14 *Edmonton Metro*. p.12. March 24, 2010.

15 *Breaking Bad*. Episode shown April 18, 2010.

16 *The Onion*. Issue 43-21. May 23, 2007.

17 *Monty Python’s Flying Circus*. Episode 31. November 16, 1972.

18 Carroll. *The Hunting of the Snark*. Fit the First – The landing. 1876.

19 Stenson. Growth is good ... if you’re an asparagus. *Alberta Views*. p.15. April 2010.

#2 using methodology #2 rendered the opinion that the issue was bubonic plague; and Doctor #3 correctly diagnosed shin-splints? Is the public, let alone the child, being well-served by the experts? What of car mechanics diagnosing three different ailments (carburetor, fuel pump, brake fluid), when only one problem (spongy brakes) actually exists? What if a rogue scientist rejected the inductive method, conventional logic and verification to arrive at proof? Is his opinion that water boils at 547 degrees Fahrenheit valid, merely because it is his opinion?<sup>20</sup>

### **Sleeping on it & the wisdom of crowds:**

15. Three sets of findings from psychology and cognitive sciences should assist with proffering substantive opinions. The first is that there is, indeed, merit in sleeping on it. The average of two or more guesses from one person is better than the initial guess. There are two explanations for this phenomenon. The first is that one acquires more information after Opinion #1 and before Opinion #2. Perhaps one stumbles across an irrigation plan that has ties to a watercourse; perhaps aerial photography has been unearthed that shows an avulsive action; perhaps recently acquired field notes show that road allowances were commonly surveyed around watercourses. All such information – not hitherto available – should vary one's opinion. The second explanation is that Opinion #1 does not merely represent the best information available to the land surveyor, but represents a sample drawn from an internal probability distribution; one answer from a range of answers. Opinion #2 is a second answer from that same range of answers – based on the same information, and the average of the two opinions is more accurate than either individual opinion.<sup>21</sup> Furthermore, the longer that one sleeps on it, the better is the average opinion.

16. The second finding of note is that there is wisdom in crowds. Were I to ask a group of ALSs the best sources of information in researching a riparian boundary issue, then the collective answer would be better than if the question was posed simply to a single ALS. This phenomenon was first tested at the 1907 West of England Fat Stock and Poultry Exhibition. Some 800 people guessed the weight of a fat ox, after it was to be slaughtered and dressed. The true weight was 1198 lbs; the weights guessed by the contestants ranged from a low of 1074 lbs to a high of 1293 lbs. The median (average) weight was 1207 lbs – very close to the true weight.<sup>22</sup>

17. The corollary to the wisdom of crowds is that the wisdom of a crowd of experts is even greater. Thus, it was soon suggested that the reason for the median (guessed) weight being within 0.8% of the true weight was that the 800 guessers had expertise. Given the nature of people who attended such Exhibitions, many were probably butchers, farmers “or men otherwise occupied with cattle.” Such a *vox expertorum* (not a *vox populi*) had the training and experience to proffer an expert opinion.<sup>23</sup>

### **Mysteries, puzzles & the virtue of doubt:**

18. The third finding of note is that people (ALSs and non-ALSs alike) are burdened by having brains that seek generalization over ambiguity. This means that we seek patterns as a survival trait, even in the absence of any patterns. In an elegant experiment called probability guessing, subjects are shown a series of red and green cards, distributed so that they appear with different probabilities but otherwise without a pattern. Suppose they appear: R-R-R-R-G-R-R-G-G-R-R-R. Can you predict the next

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<sup>20</sup> *The Onion*. Issue 42-23. Rogue scientist has own scientific method. June 5, 2006.

<sup>21</sup> Vul & Pashler. Measuring the crowd within. *Psychological Science*. v.19 – n.7. pp.645-647. 2008.

<sup>22</sup> Galton. Vox populi. *Nature*. p.450. March 7, 1907.

<sup>23</sup> Perry-Coste. Letters to the Editor. *Nature*. March 28, 1907.

colour? There are two options. Either guess the most common colour, or guess a pattern. If red appears 75% of the time (as in this exercise), then you will be correct 75% of the time. If red randomly appears 75% of the time (as in this exercise) and you try to discern a pattern, then you will be correct only 60% of the time. People usually try to discern a pattern, and are routinely out-performed by rats.<sup>24</sup>

19. This slavish adherence to patterns leads us to believe that every issue or problem with which we are confronted is a puzzle that can be solved with more information. Sometimes, however, even the best expertise must yield in the face of a mystery that does not lend itself to explanation regardless of the amount of data. For an expert there are two approaches to mysteries, both of which embrace ambiguity and humility: “I don’t know” or “If x, then y.”

20. So, if you are given the task of determining the purpose of a riparian strip when it was created in the late-19<sup>th</sup> century, you might well be confronted with a mystery. That is, in this purely hypothetical example, what if there was much evidence of the existence and location of the strip but no evidence (nothing in the instructions, field notes, diaries, journals, reports, correspondence, plans) about its reason for being? Could it be a strip separating a larger non-riparian parcel from the water; could it be a strip that is part of the larger riparian parcel over which people can pass and re-pass; could it be for a third purpose? In the absence of evidence, this is a mystery. Such mysteries are rife. Experts admit that they don’t know whether the United States is burdened with more or fewer regulations than 40 years ago. Although several industries have been deregulated, rules on health, safety, the environment and security have multiplied.<sup>25</sup>

21. The virtue of doubt is trumpeted in *Voltaire’s Bastards*, which is a paean to taking one’s time. If the character or location of a boundary is particularly difficult to re-establish, then take your time. To do otherwise, “the specialist betrays society worst of all when he blithely reassures.” This, perhaps, is another way of suggesting that it should be slept on, for methodical participation is a “true characteristic of civilization.”<sup>26</sup> To rush to judgment on a complex issue is to be superficial and – likely – wrong: mere sophistry. That is, the expertise might sound all high-falutin’ but it is devoid of meaning, signifying nothing.

### **On being biased:**

22. What cautionary tales can be gleaned from other subject areas; those subjects significant enough to be worthy of expertise but in which experts have not followed fundamental principles? Such abdication of principle generally is a function of bias, and such bias takes two forms – financial and ideological. A cautionary tale of financial bias comes from the claim that smoking prevents Alzheimer’s disease. Newspapers sometimes report that it is true, and sometimes report that “experts are divided.”<sup>27</sup> A meta-analysis of the 43 papers published on the topic found that smoking significantly increases the risk of Alzheimer’s. However, 11 of the papers were written by people with affiliation to the tobacco industry. Those papers reported risks 1/3 lower than the other 32 papers, and showed that smoking had positive health benefits.

23. A cautionary tale of ideological bias is Climategate, in which the United Nations’ Intergovernmental Panel on Climate Change (IPCC) has been castigated. In November 2009, an

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<sup>24</sup> Mlodinow. *The drunkard’s walk*. Random House. p.6. 2008.

<sup>25</sup> Lexington. Of horses’ teeth and liberty. *The Economist*. p.44. October 27, 2007.

<sup>26</sup> Saul. *Voltaire’s Bastards*. Penguin Books. pp.576 & 584. 1992.

<sup>27</sup> Goldacre. Bad science: Alzheimer’s theory goes up in smoke. Citing a 2010 study by Janine Cataldo, et al. *Guardian/Observer*. p.17. March 2010.

unauthorized release of e-mails showed that the experts (climate scientists) associated with the IPCC had manipulated data to support the assertion that human-induced climate change is significant. Such data fit within the IPCC ideology, which relied on other fallacious expertise:

- an off-hand remark in a conversation between an glaciologist and a journalist in 1999 was the source for the IPCC claim that Himalayan glaciers will melt by 2035;
- a MSc thesis which quoted Swiss mountain guides was the source for the IPCC claim that global warming was leading to the loss of mountain ice in the Andes, Alps and Africa.<sup>28</sup>

24. The lessons from the IPCC melt-down are that it is not enough to claim to be an expert, and to be recognized by others (or by legislation) as an expert. To be an expert one must demonstrate rigorous, impartial, peer-reviewed expertise. To do otherwise is to forget the Emperors Clothes. Certainly the weavers claimed to be experts, and the court sycophants recognized the weavers as experts. Despite such claims and such recognition, the Emperor had no clothes. *Voltaire's Bastards* mocks the tyranny of such claimed/recognized expertise with the analogy of the flat-earth geographers. Suppose a group of geographers claim that their expertise has determined that the earth is flat in shape (and not an oblate spheroid), and they only talk to and are recognized by other believers in a flat earth, at conferences and in journals. Their expertise is not supported by the evidence, and is easily refuted and debunked by a traveler: "The last person they want to meet is someone who ... has sailed around the world."<sup>29</sup>

### **Conventional wisdom:**

25. Sadly, "dodgy purveyors of the serious arts and science" abound.<sup>30</sup> Sometimes experts mislead because they themselves are misled by relying on conventional wisdom. The conventional wisdom in the UK is that the "grumble point" (a sky factor of 0.2%) is the minimum amount of daylight required by inside workers (in offices, factories, stores). However the factor of 0.2 is based on no empirical investigations involving human perceptions of adequate light. Rather, the standard started life in 1914 as a rule of thumb, and failed to respond to subsequent expertise that it was too low.<sup>31</sup> So, beware of conventional wisdom – it might well be simple, convenient and comforting, but it is not necessarily true. Galbraith recognized that people have a tendency to associate truth with convenience, with what most closely accords with self-interest and personal well-being or promises best to avoid awkward effort or unwelcome dislocation of life.<sup>32</sup>

26. Such conventional wisdom reared its head recently in re-establishing a boundary in another prairie province. The parcel had been created in 1920, and its northerly boundary demarcated. A 1969 re-establishment of the boundary failed to find the original monument, and instead re-established and demarcated it some 1.5m south. This 1969 opinion was relied upon at least thrice in the next 40 years – the conventional wisdom was that it was the boundary of the parcel. And then a 2010 survey found the original 1920 monument 1.5m to the north. Reliance on a bad 1969 opinion has now resulted in an administrative log-jam involving three levels of government and a public utility corridor.

27. Just because something (such as the word contrafibularatories) is "common down our way," does not mean that it should be followed willy-nilly.<sup>33</sup> For example, in another jurisdiction, riparian boundaries are usually defined as at the edge of the water, with the exception of times of spring freshet

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28 Solomon. Beyond the Himalayas. *National Post*. p.FP-19. February 6, 2010.

29 Saul. *Voltaire's Bastards*. Penguin Books. p.476. 1992.

30 Binnie. The changing role of the expert witness. International Association of Procedural Law, Toronto. 2009.

31 Chynoweth. The origins and empirical basis for expert witness practice in rights to light litigation. UK.

32 Levitt & Dubner. *Freakonomics*. HarperCollins. p.90. 2005.

33 Curtis & Elton. *Blackadder the Third: Ink & incapability*. 1987.

and storm surges. This principle is sanctioned by the Supreme Court of Canada,<sup>34</sup> is reflected in the guidelines promulgated by the province, and is the general custom across the jurisdiction. However, land surveyors in one corner of the jurisdiction define riparian boundaries relative to another feature, and routinely ignore the water's edge. Such a technique might well be the conventional wisdom in that corner of the province, but it is at odds with the rest of the province. A land surveyor in that corner might well proclaim, relative to water's edge, that "we don't get much call for it around here," but that is not to discount that it is the boundary principle to be followed.<sup>35</sup>

### **Shoddy expertise:**

28. Journalism is also best with shoddy expertise, with no distinction apparent between disinterested reporting (so-called investigative journalism) and hit-jobbery (the classic smear campaign). Journalism has long held itself out as having two agendas – to seek out the truth and to sell newspapers. However, when Justice Soyomayor was nominated to the United States Supreme Court the experts in journalism took, out of context, comments that she made eight years before at Berkeley Law School to portray her as a racist and a bigot.<sup>36</sup> The story was not being told fairly - with balance and nuance – but unfairly, to advance a political agenda.

29. However, a more dramatic example of people purporting to have expertise is in forensic science and pathology. As superb evidence of the effects of biasing information, fingerprint experts evaluated a series of fingerprints to see if they matched. They were told that one set of prints came from the scenes of crimes, while the other set came from suspects. When they were given no contextual information they made no errors. However, when told that the suspects had each confessed, the experts were wrong in 17% of the cases, meaning that their objectivity was undermined by the contextual information.<sup>37</sup>

30. The undermining can have tragic consequences. Ontario's top pediatric pathologist testified in court in 200 criminal trials. However, in 2007 a review of 45 autopsies that he conducted showed that he erred in 20, and that at least 13 people had been wrongfully convicted because of his shoddy expertise. Owing to a combination of ego, notoriety, incompetence, recklessness, negligence and zeal, his expertise was unquestioned for years, for two reasons. First, he convinced his colleagues that he was brilliant and they were thus wary of questioning him, reminiscent of how the Emperor made it into the street naked. Second, there were few mechanisms for oversight wielded by either his employer or his professional association.<sup>38</sup> The result for M was that he was imprisoned for 12 years for the first degree murder of his niece, but "without the expert evidence there is no case ... and no evidence of a crime ... and he is clearly entitled to an acquittal."<sup>39</sup>

### **Generally accepted surveying principles (GASP):**

31. The nature of boundary expertise changes with the context of the boundary. For all domestic boundaries – such as all parcel boundaries within Alberta, be they rectilinear or riparian boundaries – the land surveyor must be impartial. However, international boundaries (boundaries between countries), and particularly such maritime boundaries, are a different beast. Given that the principle of

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<sup>34</sup> *Attorney General Ontario v. Walker*, [1975] 1 SCR 78.

<sup>35</sup> Monty Python. *Cheese Shop*. November 30, 1972.

<sup>36</sup> Bowden. Behind the story. *The Atlantic*. p.47. October 2009.

<sup>37</sup> The Justice Project. *Improving the practice and use of forensic science*. p.6. 2008.

<sup>38</sup> Makin. Pathologist was viewed as star in his field. *The Globe and Mail*. p.A7. April 25, 2007.

<sup>39</sup> *R v. M(W)*, 2007 CarswellOnt 6660, at para 21 (Ont CA).

equidistance is moderated by considerations of proportionality (both in regards to coastline and to maritime area), coastal base-lines and the weight to be given to islands, the expert advises and assists the advocate. There is more partiality as a function of more subjectivity.<sup>40</sup> For example, the Arbitration Panel for the offshore boundary between Newfoundland & Labrador and Nova Scotia first gave Sable Island full weight (thus favouring NS) before finally giving it no weight (thus favouring NL). Such subjectivity significantly affected the Panel's opinion as to the location of the boundary.<sup>41</sup>

32. For parcels boundaries within Alberta, of course, such weighting must be eschewed, with one exception. In offering an opinion as to the location (particularly the directions) of side boundaries when accretion is to be apportioned, the principle of equity (fairness) must be followed.<sup>42</sup> A good rule of thumb is that each parcel should have the same proportion of new (post-accretion) bank as it had old (pre-accretion) bank. This principle falls within Generally Accepted Surveying Principles (GASP), just as accounting principles fall within GAAP (generally accepted accounting principles) and income tax is assessed according to GAAR (general anti-avoidance rule – s.245).<sup>43</sup>

### **Cautionary tales from the boundary:**

33. Such generally accepted surveying principles can best be demonstrated, explained and opined on by land surveyors. This is a trite observation; only an ALS can survey a parcel boundary in Alberta. Sadly, there is some evidence of shoddy expertise by land surveyors here and elsewhere. The tailors who outfitted Gulliver in Lilliput were surveyors; their instruments were quadrants, rulers and compasses. Because they happened “to mistake a Figure in the Calculation,” Gulliver’s clothes were very ill made and quite out of shape.<sup>44</sup> Similarly, courts have long recognized that bias resides in land surveyors whose opinions are shaped by, and benefit their employer's ideology. In a riparian boundary dispute on Lake Erie, the court found that “the evidence of [the Ontario Surveyor General’s] two highest officers indicated an unfortunate bias towards the view that they were expounding.”<sup>45</sup> This lament has been echoed in the United States, where government expertise is subject to some question when political considerations are involved.<sup>46</sup>

34. A very recent boundary dispute displays the role of the land surveyor as expert, warts and all, for he was biased against any chance of overlapping parcels. A timber lease parcel was surveyed in 1903. Its southerly boundary was supposed to be the northerly boundary of a district lot, surveyed in 1911. Sadly, the 1911 surveyor created a 136m overlap between the two parcels; he began his survey too far north and not on the common boundary. In now re-establishing the boundaries of the district lot, the BCLS did not consider that the 1911 surveyor had erred, put full weight on the distances in the 1911 field notes and discounted “the evidence of at least two surveyors that they found an appropriately marked corner post elsewhere.”<sup>47</sup>

35. The role of the land surveyor as expert witness is to avoid “a protracted litigation out of all proportion to the importance of the subject-matter involved.”<sup>48</sup> Boundary disputes are particularly

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40 Pratt. The role of the technical expert in maritime delimitation cases. *Publications on Ocean Development*. v.53. pp.79-94. 2006.

41 *Award of the Tribunal in the Second Phase*. 2002.

42 *Andriet v. County of Strathcona No. 20*, 2008 ABCA 27

43 *Cophorne Holdings Ltd. v. Her Majesty the Queen*. Fed C.A. - May 21, 2009. Leave to appeal granted by SCC.

44 Swift. *Gulliver’s Travels*. 1735.

45 *AG Ontario v. Walker*, 1971 (Ont SC – High CJ), at p.26, para 76.

46 Flushman. *Water boundaries*. John Wiley & Sons. p.325. 2002.

47 *Hegel v. British Columbia (Forests)*, 2009 BCSC 863, at para 27.

48 *Yukon Gold Co. v. Boyle Concessions Ltd.*, 1917 CarswellBC 144 (SCC).



painful: “Feelings run high and disproportionate amounts of money are spent. Claims to small and valueless pieces of land are pressed with the zeal of Fortinbras’s army.”<sup>49</sup> Trials are time-consuming and expensive<sup>50</sup> with uncertain outcomes, and should be avoided in favour of a settlement, by:

- Producing such powerful oral and written opinions, sufficient to persuade the other party of the folly of proceeding to trial; or
- Recognizing the strength of the opinion of the expert retained by the other party, and thus persuading your client of the folly of proceeding to trial.

36. The role of an expert witness is to expose the truth by being impartial,<sup>51</sup> by advising the client that the answer might not be what is sought. A reasonable client will welcome such a warning and recognize the merits of settling out of court. The expert must be intellectually honest, question all assumptions, appeal to reason, debate the issues, identify all facts and point to any authority in support. Absent such rigour, the Courts prefer the evidence offered by the other party.<sup>52</sup> Land surveyors who purport to be experts on boundaries will be slapped by the courts if they are not relevant,<sup>53</sup> not prepared,<sup>54</sup> not focused on resolving ambiguities in parcel descriptions,<sup>55</sup> not rigorous and consistent,<sup>56</sup> and not unbiased<sup>57</sup>

### Ending on a high note:

37. To be clear: the land surveyor is regarded by the courts (and the public) as the expert on the principles to be followed in re-establishing a boundary. In a dispute over the location of a riparian boundary in the tidal regime (in West Vancouver), the court held in March 2010 in favour of the province, mainly because of the expertise shown by the Senior Deputy Surveyor General. The plaintiff landowner’s argument was discounted because he “did not provide any expert opinion evidence in support of his theory ...”<sup>58</sup>

38. Such boundary expertise by land surveyors is wide-spread, of course. The first survey of the international boundary between Canada and the United States was on the 45<sup>th</sup> parallel between the colonies of Québec and New York. In a brilliant exhibition of impartiality, Collins, Deputy Surveyor for Québec, demarcated the boundary some five miles north of his counterpart’s demarcation. Both Collins and Harper, professor of mathematics for New York, were well qualified, with much education and training. And yet, each made his colony smaller than did his counterpart, “which is perhaps unique in the history of boundary disputes.”<sup>59</sup> The two experts compromised – Collin’s instrument, a Hadley’s quadrant, had the better reputation for accuracy and so Collin’s line, which placed the boundary five

<sup>49</sup> *Alan Wiberly Building Ltd. v. Insley*, [1999] UKHL 15 (March 24, 1999).

<sup>50</sup> Lavina Lanty claimed the right to drive on the beach in front of her cottage. She lost. The court ordered that she pay the other party \$133,800; she also incurred the costs of her lawyer and her expert surveyor: *Lanty v. Ontario (MNR)*, 2006 CanLII 1452 (Ont SC).

<sup>51</sup> *R v. Douglas et al*, 2004 BCPC 279. Morton. Let’s ditch the battle of experts in court. Edmonton Journal. Feb 8, 2008.

<sup>52</sup> *Johnson et al v. Alberta*, 2001 ABQB 642, paras. 37 & 38. Affirmed 2005 ABCA 10.

<sup>53</sup> Do not be tempted to divert the trial with “surveying issues that may have presented problems more apparent than real”: *McLeay v Kelowna (City)*, 2003 BCCA 523.

<sup>54</sup> If not prepared, the expert runs the risk of misleading the court. The Crown’s expert wrongly informed the court that the Canada – United States boundary was south of the range markers in Boundary Bay. The Crown counsel tried unsuccessfully to remedy the error: *Regina v. Truong & Ung*, 2000 BCPC 0143.

<sup>55</sup> *Gibbs v. Grand Bend (Village)* (1995), 26 OR(3d) 644 (Ont CA).

<sup>56</sup> *Collingham v. Algonquin (Township)*, 2007 CanLII 1321 (Ont SC); *Lanty v. Ontario (MNR)*, 2006 CanLII 1452 (Ont SC); *Robertson v. Wallace*, 2000 ABQB 1021.

<sup>57</sup> Anderson. Defending ourselves against the threat of expert bias. *The Canadian Bar Review*. v.83 – n.2. pp.285-308. September 2004.

<sup>58</sup> *Lawrence v. British Columbia (AG)*, 2010 BCSC 309.

<sup>59</sup> Mayo. The 45<sup>th</sup> parallel: A detail of the unguarded boundary. *Geographical Review*. v.13 – n.2. p.258. April 1923.

miles north of Harper's line, was sanctioned. The location of this original monument continues to be the Canada – United States' boundary, at least along that section.

39. Water boundaries continue to be a fascinating (albeit, sometimes a vexing) field in which to display expertise. This is obvious than in the case of boundaries flooded by regulated watercourses. In such a case from Ontario, the plaintiff's boundary expert was quoted extensively for three pages, out a 17-page judgment. Not surprisingly, the court found for the plaintiffs and held that the non-riparian parcel's rectilinear boundary was fixed in location regardless of the action of the water.<sup>60</sup>

40. Closer to home, the issue was the apportionment of substantial accretion, owing to the recession of the waters of Cooking Lake by some 1,000 ft. At trial, all experts had the same opinion: that the parcels had riparian bounds and thus could gain through accretion. The Court of Appeal lauded the expertise of land surveyors twice:

- "the expert evidence of land surveyors is properly admitted ... and their professional judgment may be relied upon ... for purposes of allocating the accreted lands."
- the "professional judgments of expert surveyors, with full knowledge of the topography and other relevant considerations, will be required" in allocating the accretion.<sup>61</sup>

#### **Apparently, experts are human:<sup>62</sup>**

41. The brain is a very plastic organ, capable of acquiring, retaining and enhancing expertise with some plasticity. Two recent studies on grey and white matter, respectively, illustrate this brilliantly. Taxi drivers in London are required to train for two years on navigating around the city. During this period they acquire expertise, referred to as *The Knowledge*. Their brains accommodate this new expertise in mental mapping and navigation by changing the size and shape of the hippocampus.<sup>63</sup> Changes in white matter – neuronal activity along an axon – has been observed after teaching 24 adults to juggle over a six-week period. Structural changes were not correlated with training progress or performance level; the very act of acquiring any expertise changed the brain's wiring.<sup>64</sup>

42. Changes are thus a function of the amount of time spent training, so:

- Work hard - 10,000 hours to achieve expertise;
- Apply the principles to the facts or the facts to the principles (GASP);
- Avoid conventional wisdom;
- Ignore 38% of opinions as rubbish;
- Ruminant – Sleep on it;
- Confer – There is wisdom in crowds;
- Communicate succinctly;<sup>65</sup>
- Eschew bias - Be impartial;
- Innovate;
- Suppress ego & embrace humility – Some things are a mystery, not a puzzle.

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<sup>60</sup> *Gall v. Rogers*, 1993 CanLII 5446 (Ont SC), at para 14 & 18.

<sup>61</sup> *Andriet v. County of Strathcona No. 20*, 2008 ABCA 27, at para 4 & 77.

<sup>62</sup> Levitt & Dubner. *Freakonomics*. HarperCollins. p.7. 2005.

<sup>63</sup> Maguire, et al. Navigation-related structural changes in the hippocampi of taxi drivers. *Proceedings of the National Academy of Sciences*. v.97 – n.8. pp.4398-4403. April 11, 2000.

<sup>64</sup> Scholz, et al. Training induces changes in white-matter architecture. *Nature Neuroscience*. 2pp. 2009.

<sup>65</sup> Flew's paper – *Theology and falsification* (1950) - that demonstrated that the idea of God is philosophically meaningless because it cannot be falsified was a mere 1,000 words in length.