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January 14, 2007

Geoff Leventhall, MSc, PhD
Consultant in Noise Vibration and Acoustics
150 Craddocks Avenue
Ashted Surrey KT21 1NL UK

Dear Dr. Leventhall,

Thank you for your several e-mails and faxes, in which you express concern about part of the following paragraph which was part of a talk I gave. I quote the paragraph in full here to maintain the meaning and context of the part that concerns you:

Describing and documenting symptoms is the province of physicians. So is research on the causes of diseases. Deciding whether people have significant symptoms is not within the expertise of engineers or specialists in acoustics, even when the symptoms appear to be caused by noise. We physicians appreciate the noise data which engineers provide, but this data has nothing to do with whether people have symptoms or not. One British acoustics expert, Dr. Geoff Leventhall, is especially outrageous in this regard, insisting that people “can’t” have symptoms because turbines “don’t,” he says, produce low frequency noise. His fallback, for which he is well paid by the industry, is that people make up their complaints. But he’s not trained to distinguish whether people are making up their complaints, or to know about the range of physical, psychiatric, and neurological symptoms people might have. A related point: the hallmark of a good doctor is one who takes symptoms seriously and pursues them until they are understood (and ameliorated). This includes symptoms related to the brain, our most complex organ – symptoms which may be neurologic, psychiatric, or physical.

You inquired about the sentence containing quotation marks, asking where I got this quotation. Quite clearly, though, “can’t” and “don’t” do not comprise a meaningful quotation. It is not a direct quotation. I used the quotation marks for emphasis and a sense of irony, and also to imply that this is your usual, well-understood position deduced from a variety of sources (see below).

To support my use of quotation marks in this way, I quote here from the *Chicago Manual of Style*, considered the definitive technical reference for writers and editors in the United States:

Quoted phrases. 6.49 Often, however, an author wishes to single out a word or phrase, not quoting it from a specific document as in the example just given but referring to a general background which will be recognized by his reader. Here quotation marks are also appropriate:
Myths of “paradise lost” are common in folklore.

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In Tate's "alteration" the ending of *Lear* is changed so that Cordelia survives and marries Edgar.¹

Irony. 6.51 Words used in an ironic sense may be enclosed in quotation marks:

Five villages were subjected to "pacification."

The "debate" resulted in three cracked heads and two broken noses.

Such use of quotation marks should always be regarded as a last resort, to be used when the irony might otherwise be lost. Skillfully prepared for, an ironic meaning seldom eludes the reader even though quotation marks are not used.²

The irony I accentuate with the quotation marks is the message of the whole paragraph, wherein I point out the need to credit people's symptoms even if they conflict with an accepted theory for how the symptoms might be linked to physical phenomena – your theory, in this case, being that the noise and vibration measured near wind turbines is insufficient to cause the symptoms people describe. When phenomena and experience do not fit with a theory, all aspects of the problem warrant reexamination. The symptoms may not be credible, the noise or vibration measurements may be flawed, or the theory linking the two may be wrong.

The ironic part is finding a man of science (yourself) engaged in explaining away observations that don't fit a theory, rather than challenging the theory; and having an acoustician (yourself) suggesting to a medical doctor (Dr. Harry) the probable origin of symptoms which she, and not you, has observed in her patients, and which she is professionally trained to recognize and understand.

When I gave the talk which included this paragraph, I held up both hands as I said "can't" and "don't" with index and middle fingers held up and crossed, indicating with gesture the same irony, emphasis, and general reference that the quotation marks represent in the written text. (Perhaps this gesture is an Americanism.)

What I wrote was thus not a direct quotation, but a summary or précis of what you have conveyed in writing in a variety of sources. I will quote examples of your statements below.

I think Dr. Frits van den Berg would understand my approach (basic sensory phenomena first), because he used the same approach for noise complaints. He started with the fact that people were complaining of noise from turbines farther away than predicted by acoustic models. Instead of upholding the model and deciding that people were mistaken, he took the complaints seriously, made measurements, and revised the model.³

¹ *A Manual of Style*, Twelfth Edition, Revised. 1969. University of Chicago Press, Chicago and London, p. 143.

² Ref. 1, p. 144.

³ van den Berg, GP. 2004. "Effects of the wind profile at night on wind turbine sound." *Journal of Sound and Vibration*, 277:955-970. van den Berg, GP. 2006. "The sound of high winds: The effect of atmospheric

To support my statements that you “insist... that people ‘can’t’ have symptoms because turbines ‘don’t’ ... produce low frequency noise” and “people make up their complaints,” you might recall the following, which you wrote:⁴

Wind turbines were not included in the review of low frequency noise, as they were not considered to cause low frequency noise at problem levels. (p. 2)

As some complainants [about wind turbines] may be incorrectly referring to the low frequency modulation as low frequency noise [from wind turbines], it is important to understand that it does not contain low frequencies. (p. 2)

When a group of residents decide to object to a development, they often support each other with strong emotions, which can sometimes lead them astray. The emphasis on low frequency noise is an example of this. Over the past 30 years there has been a great deal of confusion and misinformation about low frequency noise, mainly in the popular media. Much of it can best be described as "hot air", but complainants' uncritical acceptance of what they have read in unreliable sources has two unfortunate effects. (p. 6)

Referring to “Dr Osborne and Dr Harry in the UK,” (p. 6)

Their patients may well have been experiencing adverse symptoms, but we have to keep in mind that people who have failed, for whatever reason, in strong objections to a development, build up in themselves a level of unfulfilled expectations and consequent stress, which peaks after the failure and can overload their coping capabilities. This leads them to lay the blame on whatever straw they can clutch. This is especially so in group activities, where mutual support may turn to a mutual, interacting misery, which worsens the situation. (p. 7)

The very low levels of low frequency noise and infrasound which occur from wind turbines will not normally cause problems. If problems have occurred, it is possibly for some other stress-related reason. (p. 7)

The rational study of low frequency noise, its effects and criteria for control, has been bedevilled by exaggerations, half truths and misrepresentations, much of it fomented by media stories over the last 35 years. The result in the UK, and it is probably similar in other countries, is that an incorrect concept, "low frequency noise is a hazard", has taken root in the national psyche, where it lies dormant waiting for a trigger to arouse it. The current trigger is wind turbines. Previous ones have been gas pipelines and defence establishments. When this is

stability on wind turbine sound and microphone noise.” PhD dissertation, University of Groningen, The Netherlands. <http://irs.ub.rug.nl/ppn/294294104>

⁴ “Notes on Low Frequency Noise from Wind Turbines with special reference to the Genesis Power Ltd Proposal, near Waiuku NZ.” Prepared for Genesis Power/Hegley Acoustic Consultants by Dr Geoff Leventhall, 4th June 2004. Pages as noted.

coupled to the failing, which we all have, of generally believing what we want to believe, it is seen that it is not easy to persuade lay people of the truths of low frequency noise which can be summarised as:

- High levels of low frequency noise are required for perception, increasing as the frequency reduces.
- The ear is the most sensitive receptor in the body. If you cannot hear it you cannot feel it.
- Continuous audible low frequency noise can be a nuisance, as can any other noise, but it must be above threshold for this to occur.
- Where problems often arise with predominantly low frequency noise is because the A-weighted assessment methods do not cater for it. This leads to the noises being dismissed as not a nuisance, leaving unhappy complainants in a stressed state.

However, the above points must be considered in the light of the very low levels of low frequency noise from wind turbines. (p. 10)

From another source:

In fact, Dr. Leventhall has since said in personal communication that “I can state quite categorically that there is no significant infrasound from current designs of wind turbines. To say that there is an infrasound problem is one of the hares which objectors to wind farms like to run. There will not be any effects from infrasound from the turbines.

The turbines produce a modulated higher frequency – the swish, swish – which people may not like, but this is not infrasound. There is no low frequency in it.

There is negligible infrasound and very little low frequency noise from wind turbines – a few low level tones from the gearbox. Whatever might be making people ill it is not low frequency noise – there just isn’t enough of it from modern wind turbines.”⁵

To support my statement that you are “paid by the industry,” you may recall the following:

- The report you prepared, “Notes on Low Frequency Noise from Wind Turbines with special reference to the Genesis Power Ltd Proposal, near Waiuku NZ. Prepared for Genesis Power/Hegley Acoustic Consultants by Dr Geoff Leventhall, 4th June 2004”
- Your statement in the Malone (NY) Telegram in a letter on 9/12/05: “I am not ‘an employee of Noble [Environmental Power, LLC],’ a term which implies dependence on them for my income. I am an independent noise and vibration consultant and Noble is one of my many clients, contributing a very small part of my turnover.”

⁵ Low Frequency Noise and Wind Turbines Technical Annex. British Wind Energy Association, February 2005.

- Your appearance as a noise consultant in such public documents as Noble's Environmental Impact Statements.

I would like to point out that one of the “truths of low frequency noise” which you have trouble persuading “lay people” to accept—“If you cannot hear it you cannot feel it”⁶—is not a “truth.” It is your interpretation and opinion – again, your theory. This opinion or theory of yours is opposed by a substantial body of medical research centered in Portugal, supported by the government and military establishment there, and including an international group of researchers.⁷

I trust this explains the quotation marks. I anticipate posting this letter on my website alongside the testimony I made to the NY State Assembly Energy Committee last March, as a clarification. I can also forward it to the committee, if you wish.

In the United States, where this letter is originating, the writer of a letter owns the natural copyright on its contents. If you wish to reproduce or share this letter with anyone, you must reproduce it in full.

Sincerely,

A handwritten signature in black ink that reads "Nina Pierpont". The signature is written in a cursive, flowing style.

Nina Pierpont, MD, PhD

⁶ Reference 3, p. 10.

⁷ Branco M, and M Alves-Pereira. 2004. “Vibroacoustic disease.” *Noise and Health* 6 (23):3-20; Alves-Pereira M. 1999. “Noise-induced extra-aural pathology: A review and commentary.” *Aviation, Space, and Environmental Medicine* 70 (3 Pt 2):A7-21; Martinho Pimenta AJ et al. 1999. “Balance disturbances in individuals with vibroacoustic disease.” *Aviation, Space, and Environmental Medicine* 70, no. 3, section II:A96-99; Marciniak W, et al. 1999. “Echocardiographic evaluation of 485 aeronautical workers exposed to different noise environments.” *Aviation, Space, and Environmental Medicine* 70 (3 Pt 2):A46-53. This is a selection from many papers.

A Manual of Style

Twelfth Edition, Revised

FOR AUTHORS, EDITORS, AND COPYWRITERS

The University of Chicago Press

CHICAGO AND LONDON

1969 edition

- 6.45** *Technical terms.* A technical term, especially when it is accompanied by its definition, is usually set in italics the first time it appears in a discussion:

Tabular matter is copy, usually consisting of figures, that is set in columns.

Ground and polished *thin sections* permit microscopic examination of the cellular structure of some fossils.

- 6.46** *Technical terms in special senses.* Often it is better to apply a standard technical term in a nonstandard way than to invent a new term. In such instances the term is often enclosed in quotation marks:

In offset printing “proofs” of illustrations come from the dark-room, not the proof press.

the “Levalloisian” culture complex of Tanzania [application of a European term to an African site]

- 6.47** *Philosophical terms.* By convention in works of philosophy and theology, terms having special philosophical or theological meaning are often enclosed in single quotation marks. Following punctuation is placed outside the quotation marks:

If such procedure is justifiable, ‘agrees with’ must carry the sense of ‘is consistent with’.

‘being’ ‘nonbeing’ ‘the divine’

QUOTED PHRASES

- 6.48** Words and phrases quoted from another context, of course, are usually set in quotation marks:

The “pursuit of happiness” is an end more often mentioned with approbation than defined with precision.

Such uses are discussed in chapter 10.

- 6.49** Often, however, an author wishes to single out a word or phrase, not quoting it from a specific document as in the example just given but referring it to a general background that will be recognized by his reader. Here quotation marks are also appropriate:

Myths of “paradise lost” are common in folklore.

In Tate’s “alteration” the ending of *Lear* is changed so that Cordelia survives and marries Edgar.

WORDS USED AS WORDS

6.50 References to words as words are italicized, as are terms singled out as terms:

The distinction between *farther* and *further* should be preserved. Use of the word *desuetude* when the word *disuse* will serve is often pretentious.

The term *gothic* means different things to typographers and paleographers.

IRONY

6.51 Words used in an ironic sense may be enclosed in quotation marks:

Five villages were subjected to “pacification.”

The “debate” resulted in three cracked heads and two broken noses.

Such use of quotation marks should always be regarded as a last resort, to be used when the irony might otherwise be lost. Skillfully prepared for, an ironic meaning seldom eludes the reader even though quotation marks are not used.

SLANG

6.52 Words classed as slang or argot may be enclosed in quotation marks if they are foreign to the normal vocabulary of the speaker:

Alfie was accompanied by his “trouble and strife” as he strolled down the Strand.

Had it not been for Bryce, the “copper’s nark,” Collins would have made his escape.

USE OF “SO-CALLED”

6.53 When the expression *so-called* is used with a word or phrase, implying that something is popularly or (sometimes) mistakenly given such-and-such designation, the designation itself should not be enclosed in quotation marks or set in italics. *So-called* is sufficient to mark off the usage as a special one:

The so-called shadow cabinet was thought to be responsible for some of the president’s more injudicious decisions.

A so-called right of sanctuary was offered in justification of the minister’s failure to surrender the escaped felon.