

# Dancing Decibels

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## Cities of Noise

“Bangkok to be fashion centre of World”. Next week the headline will read Bangkok to be travel centre of the world, or Car Parts manufacturing Centre of the World. Checking a website which lists the achievements of the world’s cities I found that Bangkok is indeed listed. Apart from other activities best not spoken of, Bangkok is famed as the city having the friendliest stray dogs. True enough, but surely I thought Bangkok must be among the noisiest cities in the world. Not so, this is one of the most contested titles of all. The World Health Organization (WHO) is credited with ranking Tokyo, Nagasake, New York, and Buenos Aires as the top four. But India is strident in claiming precedence in the noise league for Mumbai, Delhi, and Calcutta. Spain, which qualifies as the second noisiest country in the world after Japan, claims that Madrid is on of the noisiest capitals. There is even a Philippina blogger who clearly unaware of the state of noise play in the world who claims that her city of Pagadian is the noisiest city in the world.

Mumbai backs its candidacy with an impressive claim of 92 decibels at Chatrapati Shiviji train terminus and the statistic that 60% of Mumbaikers above the age of 40 are partially deaf. It is further claimed that metropolitan areas in India usually register an average noise level of more than 90 decibels. Others claim that Calcutta, with a noise level of 88 decibels, is the noisiest city in India.

The Bangkok Metropolitan Authority maintains a website where daily noise figures in several locations in Bangkok are posted [http://gendb.pcd.go.th/Noise/en\\_noiselevel.asp](http://gendb.pcd.go.th/Noise/en_noiselevel.asp). Today, for example, the noise level in Din Daeng is posted as 72 decibels. This figure is high-lighted in red to indicate that it exceeds a standard of safety for the city, stated to be 70 decibels. The origin of the figure 70 decibels is obscure and appears to be unique to Thailand. It is certainly higher than standards quoted elsewhere. Standard levels of tolerance are being lowered continually, but figures of 65 decibels, 55 decibels for city noise are quoted.

## Decibels

The time has come to treat of decibels, whether to enter Bangkok into the contest for noisy metropolis status or just to understand the language of noise levels and its harmful effects. The human ear is an organ of astonishing range, it can detect sounds over a range of one million million degrees of intensity. To describe the intensity of sound over such a vast range would require juggling with huge numbers whose meaning we could never grasp. And so, sound is described as the logarithm of the actual number. The cat is out of the bag, as soon as the word logarithm is mentioned one half of the human race closes down before the unfathomable. But we can take another path. Just as we become accustomed to rate temperature by degrees centigrade based on our experience of

hot and cool seasons, open air and air conditioned rooms without ever studying the thermodynamic basis of temperature, we can build up a sense of noise levels by linking decibels to sounds with which we are familiar, without ever adverting to mysterious logarithms. Other than that all we require are certain rules of thumb to handle and combine decibels. Finally, if we graduate to the use of a sound meter we can switch it on, point it at the offending source of noise, and read off the level in decibels with the best of them.

Begin with the most common experience of all. Someone is talking to us in a normal level voice against a quiet background. We are standing a meter distance apart and we can hear clearly what is being said. The level of sound is 55 decibels, or, for short 55 dB. There we have a standard of measurement. Suppose the speaker raises her voice so that we can just detect that it is louder. The level of sound is now 58 dB. Suppose that her voice is raised from the original level so that we would estimate that she is now speaking twice as loudly as before. The level of sound is now 65 dB. Note that our perception of loudness doubled from 55 dB in not 110 dB, that is not how it works. If her voice level was indeed 110 dB she would be screaming at her highest pitch. If you are one of those annoying people who want to know why this is so, then you must study what is called the logarithmic scale! But you can live without it and talk noise as wisely as another.

To fill in the gaps in knowledge, I suggest a few other noise levels in decibels. Theoretically, the absolutely lowest audible sound is 0 dB, but that level is outside the human range. A whisper which you can barely hear, or leaves rustling, are 30 dB. For ease of reference we can include them in a simple table:

	Noise source	dB level	Sensation
1	Gentle Whisper	30	Very quiet
2	Noise level in library		Quiet
3	Hum of Refrigerator	45	
4	Quiet Office	50	Background noise
5	Speech at 1 metre	55	Comfortable
6	A few people talking Noisy office	60	Bothersome
7	Washing machine	65	!
8	Vacuum cleaner, sewing machine	70	Interferes with telephone conversation
9	Alarm clock with bell	80	Annoying
10	Screaming child, Noisy Motorbike	90	Very annoying
11	Old diesel bus	100	Can damage hearing in two hours
12	Motor bike without muffle, Night club music	110	Can damage hearing in 30 minutes

13	Gunshot Jet plane taking off	140	Danger
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Finally, a useful rule of thumb. The level of noise which you perceive depends on how far away you are from the source of noise. If you double the distance the noise you perceive is reduced by 6 dB. Thus, when you are separated from a speaker by 1 metre and hear the voice at a level of 55 dB, the level of sound becomes 55dB – 6 dB when the person is 2 metres away from you, or 49 dB, 55dB – 12dB or 43 dB when the speaker is at a distance of 4 metres, and so on.

By using the simple table provided you can estimate dB levels of other sounds by judging where they would rank. For instance the sound of an idling car might be somewhere between 6 and 7, possibly 63 dB.

### **Ready to Go**

With the simple tools introduced above we are ready to understand the health risks of various noise levels, the prevalence of black holes of noise in the city of Bangkok.

Finally, on reflecting on the possible claim to the noise status of Bangkok, I realise that we already have all the natural advantages of uneven road surfaces, narrow streets lined with reflective buildings, and above all a population attached to noise as a fun value. But, on comparison with Calcutta, the single major difference between the two cities is the distaste of Bangkok drivers for using the horn of their cars. If we all make an effort and sound off our horns when our car is stuck in traffic, or just to make our presence felt on the street, I am certain that Bangkok would quickly jump to an unchallenged status as noisiest city on the globe. All we need are those blaring horns which are such a factor in Hispanic and other Asian cultures.