

## Re: How could they have been so wrong?

**Source:** <http://sci.tech-archive.net/Archive/sci.electronics.design/2004-08/3280.html>

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**Date:** 08/21/04

Date: Sat, 21 Aug 2004 03:28:08 GMT

Yes- this makes much sense- thanks for unraveling the stinking mess.

Herbert Blenner wrote:

- > *Congress chartered the National Research Council as a private and nonprofit*
- > *institution to advise the federal government on issues of science, technology*
- > *and health.*
- >
- > *In 1980, the Department of Justice requested the National Research Council to*
- > *review the methodology of BB&N and W&A. The council formed a Committee on*
- > *Ballistic Acoustics, commonly known as the Ramsey Panel, who ignored the*
- > *ballistic and acoustic evidence and reviewed technical aspects of the DPD radio*
- > *system. This panel concluded:*
- >
- > *"(iv) the conclusive acoustic evidence on the Dictabelt itself that the cross*
- > *talk recordings were made through a radio receiver with automatic gain control*
- > *(AGC). These different forms of evidence are all compatible with the recordings*
- > *being made at the same time, and some are incompatible with the hypothesis of*
- > *later superposed recordings by audio or direct electrical coupling."*
- >
- > *The fundamental problem with this conclusion is the presented evidence does not*
- > *show that the cross talk recordings were made through a radio receiver.*
- > *Although the Committee on Ballistic Acoustics should have tested heterodynes*
- > *for frequency modulation as conclusive evidence of the by-radio nature of the*
- > *cross talk, they pursued fallacious arguments. In fact, a quantitative detail*
- > *provided by the committee showed AGC acted on audio. Even worse, they*
- > *concentrated on attack characteristics that are ambiguous evidence of AGC*
- > *action and misinterpreted the decay characteristics, which showed AGC acted at*
- > *two or more places within the system. Not surprising the Committee on Ballistic*
- > *Acoustics began by confusing the subject that provided a technically correct*
- > *method of showing by-radio nature of the cross talk.*
- >
- > *"The by-radio nature of channel II cross talk is demonstrated by its detailed*
- > *behavior in the presence of channel I heterodynes when another channel I*
- > *transmitter is keyed on with a more powerful carrier signal. The frequency*
- > *offset between the two carriers gives rise to a heterodyne tone in the channel*
- > *I recording."*
- >
- > *In all receivers the presence of two radio signals of nearly equal and*

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- > *different frequencies produce a beating of signals at an audio rate. The*
- > *trigonometric identity for the addition of cosines (1) illustrates this*
- > *process.*
- >
- > 
$$\text{Cos}(bt) + N \text{Cos}(ct) = (N-1) \text{Cos}(bt) + 2 \text{Cos}[(b-c)t/2] \text{Cos}[(b+c)t/2]$$
- >
- > *The N coefficient of the Cos(ct) term represents a radio signal whose*
- > *amplitude is N times the other. Since the two radio frequencies, b and c, are*
- > *nearly equal, the Cos[(b-c)t/2] term describes the only audio frequency.*
- > *The absence of N as a factor preceding this audio term shows that the weaker of*
- > *the two signals determines the amplitude of the heterodyne.*
- >
- > *In a AM receiver, AGC action would reduce gain if N is much greater than one.*
- > *Under these circumstances AGC action would decrease the strength of the weaker*
- > *signal and proportionally reduce the amplitude of the heterodyne. Regardless of*
- > *the value of N the heterodyne in a AM receiver would be a pure tone without*
- > *harmonics.*
- >
- > *When two radio signals beat within the earlier IF stages of a FM receiver the*
- > *high gain of this amplifier levels the peaks of the cosine waveform. This*
- > *saturation produces sloppy square waves. The limiter stage following the IF*
- > *amplifier will remove any residual amplitude modulation unless the two radio*
- > *signals have nearly the same amplitude. Under these circumstance the FM*
- > *receiver produces a heterodyne that is rich in harmonics.*
- >
- > *In a FM system as used by the DPD, cross talk modulates the frequency of the*
- > *transmitter. When another station transmits concurrently and creates a*
- > *heterodyne, its frequencies shift in accordance with changes in loudness of the*
- > *cross talk at the transmitter. The Committee on Ballistic Acoustics ignored*
- > *this simple and conclusive test of the by-radio nature of the cross talk.*
- >
- > *Impervious to their oversight, the Committee on Ballistic Acoustics presented*
- > *indisputable evidence of AGC action on audio.*
- >
- > *"However, the channel I receiver was fitted AGC to hold the output level*
- > *approximately constant; as a result, the cross talk signals decrease in*
- > *intensity in a few tens of milliseconds (as does any residual transmission from*
- > *the original open microphone)."*
- >
- > *Gain control circuits sample several cycles of the activating signal while*
- > *changing gain. When radio signals activate AGC in receivers this adjustment*
- > *requires microseconds and the limited bandwidth of the audio stages would*
- > *stretch the response time to hundreds of microseconds. Clearly the explanation*
- > *for the interval of tens of milliseconds lies elsewhere.*
- >
- > *In a communications system, frequencies below one thousand hertz contain most*
- > *of the audio power. Now a gain control circuit requires many and perhaps tens*
- > *of milliseconds to sample a few cycles. Without doubt, the sluggish decrease in*
- > *cross talk intensity conclusively demonstrates the by-audio nature of the*
- > *change.*
- >

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- > *The Committee on Ballistic Acoustics mistakenly attributed every decrease in*
- > *cross talk volumes to AGC actions in response to heterodynes.*
- >
- > *In a FM system, received volume depends on the frequency deviation of the radio*
- > *signal within the receiver. When a second station switches on, it beats with*
- > *the first signal and halves the frequency deviation of the composite signal.*
- > *This conclusion follows from the identity for the addition of cosines, where*
- >  *$bt+m(t)$  replaces  $bt$  and  $N$  is set to one.*
- >
- >  *$\text{Cos}[bt+m(t)] + \text{Cos}(ct) = 2 \text{Cos}[(bt+m(t)-ct)/2] \text{Cos}[(bt+m(t)+ct)/2]$*
- >
- > *When the second transmitter keys out, the frequency variation doubles and*
- > *boosts power of the received audio by 6 decibel. In both cases, the limited*
- > *bandwidth of audio stages stretch response time to hundreds of microseconds.*
- >
- > *The multitude of signals on the five-minute Channel-I transmission gave astute*
- > *investigators many opportunities to test this theoretical predication. Weiss*
- > *and Aschkenasy reported:*
- >
- > *"At 133 seconds after the start of the stuck-microphone transmission, the level*
- > *of the noise drops by about 6 decibels (that is, to about one-fourth of its*
- > *previous level). At almost the same moment a voice can be heard, communicating*
- > *a brief but unintelligible message."*
- >
- > *Since keying on of a second transmitter decreases the received audio of the*
- > *first, this renders attack characteristics of AGC as inconclusive evidence,*
- > *especially when magnitudes of the decreases are unreported.*
- >
- > *The Committee on Ballistic Acoustics observed decay characteristics of AGC and*
- > *noted:*
- >
- > *"At the end of the channel I heterodyne, the AGC gradually increases the*
- > *receiver gain, and signals on the open-microphone transmission increase in*
- > *intensity in the recording."*
- >
- > *Bolt Beranek and Newman, BB&N, provided details on the decay of AGC action. :*
- >
- > *"In addition to having had similar effects on the waveforms recorded on Channel*
- > *1, the DPD recording shows evidence of a time constant in the 0.1 to 1.0 sec*
- > *range. This AGC does not occur in any of the Motorola transmitters. It could,*
- > *therefore, have been caused by the GE transmitter, by the receiver, or by the*
- > *recorder."*
- >
- > *Two components, a resistor and a capacitor, determine the time constant of AGC*
- > *decay. Generally manufacturers specify 10 percent tolerance on these parts.*
- > *This means a nominal decay constant of 0.2 second may vary between 0.18 and*
- > *0.22 second from one piece of equipment to another. Clearly the finding of 1000*
- > *percent span of time constants showed AGC action occurred in more than circuit.*
- >
- >
- > *Without doubt, the performance of the Committee on Ballistic Acoustics during*

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- > *their review of the acoustic evidence presented to the HSCA raises issues that*
- > *transcend the assassination of President Kennedy.*
- >
- > *Initially, Columbia University, Harvard University, the Lawrence Berkeley*
- > *Laboratory, the Massachusetts Institute of Technology and its Lincoln*
- > *Laboratory, Princeton University, Roll Laboratories, Trisolar Corporation, the*
- > *Watson Research Center and Xerox Palo Alto Research Center lent their names and*
- > *prestige to the report of the Committee on Ballistic Acoustics. These*
- > *endorsements contributed toward corrupting the minds of two generations of*
- > *assassination researchers.*
- >
- > *Unlike the National Research Council whose charter by Congress and nonprofit*
- > *status bestows a degree of immunity from civil actions, the surviving endorsers*
- > *of the report are liable for their earlier actions and continued silence.*
- >
- > *I call upon these endorsers to renounce their support of the Committee on*
- > *Ballistic Acoustics.*
- >
- > *Notes*
- >
- > *1. Derivation of the identity for the addition of cosines*
- >
- >  $\text{Cos}(X+Y) = \text{Cos}(X)\text{Cos}(Y) - \text{Sin}(X)\text{Sin}(Y)$
- >  $\text{Cos}(X-Y) = \text{Cos}(X)\text{Cos}(Y) + \text{Sin}(X)\text{Sin}(Y)$
- >
- > *Adding the identities for the cosine of two angles gives*
- >
- >  $\text{Cos}(X+Y) + \text{Cos}(X-Y) = 2\text{Cos}(X)\text{Cos}(Y)$
- >
- > *Substituting  $X = (b+c)t/2$  and  $Y = (b-c)t/2$  produces*
- >
- >  $\text{Cos}(bt) + \text{Cos}(ct) = 2\text{Cos}[(b-c)t/2]\text{Cos}[(b+c)t/2]$
- >
- > *Adding  $(N-1)\text{Cos}(ct)$  to both sides of the above identity gives the desired*
- > *result*
- >
- >  $\text{Cos}(bt) + N\text{Cos}(ct) = (N-1)\text{Cos}(ct) + 2\text{Cos}[(b-c)t/2]\text{Cos}[(b+c)t/2]$
- >
- >
- >
- >
- >
- >