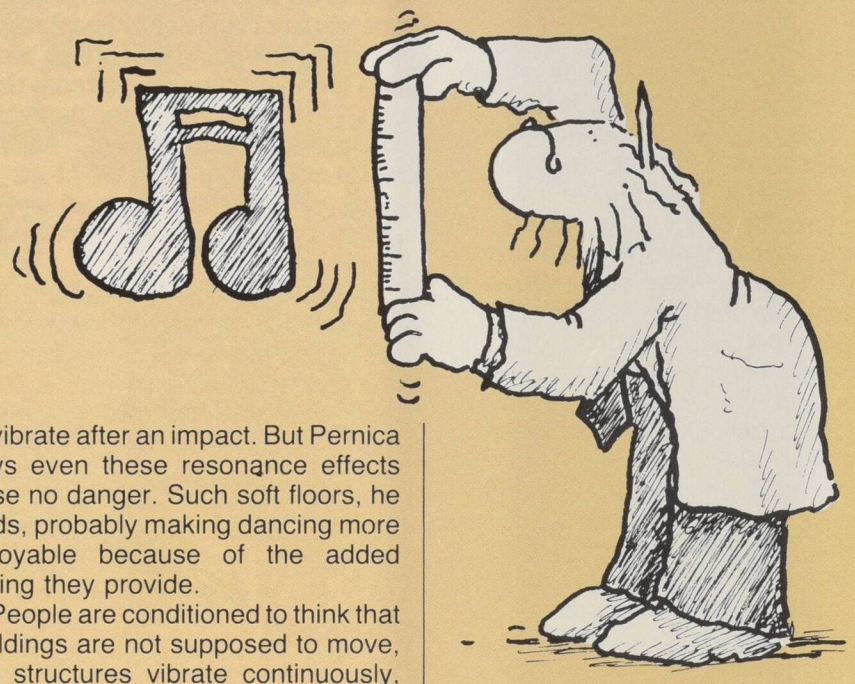
produced by the enthusiastic up and down movements of the audience.

In designing buildings, engineers have always taken into account the capacity to withstand static load, but up until about ten years ago little consideration was given to dynamic load. Buildings do not normally have to resist the force caused by thousands of people hopping up and down to the same beat.

Despite the fears and the fact that the arena's beam supports are far apart which makes it a so-called soft floor, Pernica found that the static and dynamic loads produced during the rock concert were well within the safety limits of the design loads set by the National Building Code.

He also figured out that the ideal dance tune for audience participation (not too fast, not too slow) has about 2½ beats per second, otherwise known as 2½ Hz. This happens to match a natural resonance frequency of the arena floor — that is, the rate at which the floor most easily continues to vibrate after an impact. But Pernica says even these resonance effects pose no danger. Such soft floors, he adds, probably making dancing more enjoyable because of the added spring they provide.



People are conditioned to think that buildings are not supposed to move, but structures vibrate continuously, most of the movement so minute that it goes unnoticed. It is only when such vibrations become visibly evident that people tend to worry. However, Pernica reaffirms that even during a rock concert when the floors can be seen vibrating, typical arenas are structurally secure.

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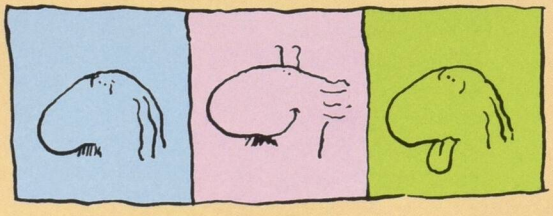
Colour, Lighting, and Health

Emotions are often described in terms of colour: "feeling blue," or "seeing red." Colour does have an impact on human physiology but it is a great deal more complex than the idea that blue is a "sad" colour and red is an "angry" one. A University of Alberta Visual Arts professor has just completed a study on the effects of both colour and lighting on the staff and students of four Edmonton-area elementary schools. He has found that "beneficial" colour schemes need to be complemented by "good" lighting in order to achieve the greatest effects on people.



With the help of a grant from the Alberta Department of Education, Dr. Harry Wohlfarth was able to design different lighting and colour schemes in four schools with the same type of architecture and student populations.

The control school kept the colour scheme of whites, beiges, browns, and oranges, as well as the fluorescent lighting common to many Canadian schools. Of the three other schools, one was painted with a specially designed colour scheme based on the results of previous colour studies, the second school had full-spectrum lighting (the closest to natural daylight) installed, and the third school had both the colour and lighting changed.

Wohlfarth then monitored the IQs, academic performance, attitudes, moods, noise levels, disciplinary and attendance records of the students, as well as the blood pressure of both students and staff.

Some of the preliminary results of the study show that in the school where both colour and lighting were changed, blood pressure was significantly lower than in the control school. In fact, one staff member's blood pressure was lowered so much he was able to cease taking medication for high blood pressure. Background noise levels were 12 per cent lower in the completely changed school. Wohlfarth attributes this to increased concentration by the students on their schoolwork.

Comparison between the two schools where only colour or only lighting was changed showed that the improved lighting benefitted blood pressure and mood while the improved colour scheme benefitted attendance and reduced disciplinary incidents.

Wohlfarth feels that without proper lighting the effects of harmonious colour schemes are sharply decreased. This could be because shades of colours are altered by fluorescent lighting. For instance, yellow is considered a far more agressive colour than blue, but each colour has both disturbing as well as calming shades. Therefore poor lighting might assist those staring at blue walls to "see red."

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