States, legislation saying that budgets ought to be increased is separate from the legislation that actually increases them. And the latter promptly got lost in the government's budgetary meltdown, as Congress year after year fails to approve final numbers for each fiscal cycle until months later than expected. When the fiscal 2008 numbers were approved last December, the funding that Congress had pencilled in for the COMPETES Act — and that the agencies had been counting on — had disappeared. The resulting turmoil has forced research agencies to put major initiatives on hold, to put employees at national laboratories on unpaid leave, and to pinch pennies everywhere.

Many of the *Gathering Storm* authors in Washington last week were understandably furious. Broken promises are demoralizing, to say the least, and make it impossible for agencies to plan or manage coherently. Still, many of *Gathering Storm*'s best ideas could be implemented without waiting for Congress to collectively grow up and show financial responsibility. These ideas include bolstering programmes to train maths and science teachers; getting more students to enrol in advanced courses in high school; providing special funds to help young scientists start their own labs; and making it easier for foreign-born scientists to enter the country. Such measures would still require action from Congress, the president, or both. But they might very well be faster and easier to implement than the kind of major national commitment outlined in the America COMPETES Act.

In addition, it is important for supporters of the competitiveness initiative to remember that they, too, have a responsibility, which is to keep on communicating to legislators and to the American public at large why America COMPETES is more than just a 'Full Employment For Physical Scientists Act'. As David Ferraro of the Seattle-based Bill & Melinda Gates Foundation pointed out at the conference, the hotel ballroom was an "echo chamber": Americans elsewhere don't necessarily buy the notion that pouring money into research is the best way to spend their tax dollars. Indeed, some researchers argue that the statistics showing that the United States is falling behind have been misinterpreted (see H. Salzman & L. Lovell *Nature* **453,** 28–30; 2008).

So, while the *Gathering Storm* goals are worthy ones (see *Nature* **437,** 1208; 2005), supporters would be well advised to broaden their message beyond the usual suspects. Members of Congress are not going to stay on target for long when their constituents have other pressing issues, such as the economy or the war in Iraq, on their minds. ■

Bountiful noise

Whether in music or in nature, noise can be full of riches. The trick is to recognize the treasures.

Laughter and hisses — that's how a London promenade concert audience greeted the world premiere of a revolutionary musical composition in 1912. The response was hardly unusual, given that audiences of the day were regularly having their assumptions challenged by composers bent on redefining Western music. But unlike other dissonant masterpieces of that era, such as Igor Stravinsky's *The Rite of Spring*, the *Five Orchestral Pieces* of Arnold Schoenberg still come across to many as little more than noise. There are reasons for that, as a series of essays on science and music launched in this issue will make clear. But then, as other articles in today's issue illustrate, 'noise' has its treasures too.

Schoenberg's composition deliberately defied all the prevailing standards of music. It was, in his own words, "devoid of architecture or construction, just an uninterrupted changing of colours, rhythms, and moods". But it did have an expressive purpose, he insisted: "The music seeks to express all that swells in us subconsciously like a dream." Indeed, for today's sympathetic listener, the musical elements are distinctively recognizable and the emotional charge is tangible. Yet the language is still a challenge.

Of course, as Philip Ball explains in an Essay in this issue (see page 160), even more traditional music defies all attempts to explain its function in terms of mathematical or cognitive 'naturalness'. Subsequent essays in the series will highlight both the universalities in music — for example, how a mother's lullaby and rocking during early childhood are thought to lay a foundation for humans' aural and physical responsiveness — and music's diversity: the range of cultural conventions in such apparently fundamental elements as pitch scales and perceptions of rhythm. Essayists will also describe, for example, the challenges in acoustics of allowing audiences to hear music to its best advantage.

Drawing on musicology, statistics, cognitive and evolutionary biology and acoustics, the series will help us understand why most of Schoenberg's music is more challenging than that of his contemporary and champion, Gustav Mahler — let alone the music of Johann Sebastian Bach. But it will also remind us that none of these disciplines has yet been able to answer the fundamental question: why does music have such power over us? Nor can they explain how avant garde composers in the 1950s were able to take noise itself and make something new and true with it. Anyone who has performed Karlheinz Stockhausen's *Kontakte*, for example, which pioneered much subsequent electronic music by presenting manipulated electronic noise amid the sounds of percussion and piano, will tell you that the piece has an incomprehensible power. Anyone with an open musical ear who has listened to György Ligeti's *Atmospheres* for orchestra will say the same.

"The average listener isn't the least worried that musicologists and scientists cannot explain why we enjoy music."

The average listener isn't the least worried that musicologists and scientists cannot explain why we enjoy music. What matters is that its true bounties are recognized, and then explored and analysed. That applies not only to noise-like music, but also to nature. In that spirit, we can celebrate the fact that seismologists have begun to recognize and unpick the value of the ambient hum of the planet (see page 146). And we can enjoy the positive benefits that noise seems to have on living cells (see page 150).

Above all, what matters is that analysis strengthens rather than weakens humankind's sense of wonder — even as the natural terrain of exploration gets messier and as great composers make understanding music even more challenging. ■