to design the *process* of composition. Among the tools we can use is the incorporation of randomness in meaningful ways."

One of the more interesting functions of Truax's programming language, which breaks down into several 'pods' for various applications, is to develop 'tendency masks': parameters *within* which random values can be generated. The boundaries can change over time, so that, for example, a piece can start out with a series of random pitches in a low octave and gradually get higher, without sacrificing the random quality of the sound. A special application of the tendency mask is a 'trajectory map' which indicates left-to-right and front-to-back location in space of a sound event.

Back at the Media Centre, the lecture hall is once again packed, this time for a *MIDI* demonstration by Ralph Dyck, a well-known Los Angeles studio musician (Elton John, Toto, Average White Band) and now also a designer for Roland. On stage with him are assorted synthesisers, a couple of Roland electronic pianos and an IBM PC. In a laid back, sardonic tone, he tells us that he's been 'kluging' synthesiser interfaces for years but since each design was unique to a specific application, they were all 'dead ends'. *MIDI*, he hopes, will change all that. "What you're seeing now is already obsolete," he says. "It's slow, it has no editing capabilities and it only uses one data channel."

For his first demonstration, he plays on the piano keyboard, but we hear the notes from one of the synthesisers. The second demo is a piece recorded on the computer and played on the piano. He won't tell us who recorded it but after a few bars it becomes obvious: Oscar Peterson. "He's digitised," Dyck smiles. "We can analyse his playing at any time, slowing it down without changing the pitch. We're setting up a 1200 baud transfer network for *MIDI* data: Oscar could play a track in Toronto and phone it in to a Toto session in LA. "Everyone's nervous about paying $4 a minute in the studio," he says. "With *MIDI*, the producer and the synthesist can get together at home with a rough mix and work out the voicings and the parts and then record all of them into a microcomputer. When the musician gets into the studio, all he has to do is set up and push the 'start' button."

The third demonstration manages to convince almost everybody. Dyck sets up two synthesisers, one generating brass sounds, the other strings, and instructs them to respond to key-velocity data at two different levels. He pays a chord progression on the piano, then repeats it a little louder. The brass comes in, giving the sound a nice fat character and spreading it out across the stereo image. Then he plays it again, still louder, and the strings, an octave above and below, soar. The audience, having just experienced a new definition for the phrase 'conducting from the keyboard', quietly freaks out.

Second night

At the MacMillan Planetarium, located across a narrow channel from downtown Vancouver, conference delegates line up to buy tickets for the wine-and-beer cash bar while they stuff themselves on obscenely rich (and free) cakes and chocolates. After an hour or so, the whole crowd moves upstairs.

Half the group goes inside the dome for the specially-commissioned planetarium show, while the rest of us are more interested in catching the sunset over the city and figure we'll wait for the second show. The planetarium staff have pulled out a bunch of stock slides and fired up a couple of lasers but even given the quickie-production approach, the show is pretty impressive. The first piece of music is *Phone* by the absent John Chowning. The last piece, on the other hand, grabs everybody.

Love in the Asylum, by Michael McNabb, may be one of the most emotionally-effective pieces of electronic music ever devised. String-like pulses build to a frightening climax, horrifying pseudo-human cries emanate from various corners of the dome and the whole thing finally collapses into a beautifully-crafted pseudo-calliope—which seems to use no real pitches or natural sounds; rather, it recreates the *impression* you would get hearing a calliope at a great distance. Charles Ives would be proud. The visuals are just fine, too: green and red lasers chase each other around patterning higher and tighter as the music builds and then disappear, leaving a grainy, sepia-toned 360° image of a sleazy country carnival.

After the show, everyone crowds around the planetarium's new computerised image console and the operator, obviously delighted at the attention, launches into a zippy dissertation on its workings.

Day the last

The programme in the lecture hall promises 'When is it art, and what is technology doing to it?'. Certainly a question for the ages. One of the speakers is composer Herbert Brün who, after 20 years in the field, is one of the undisputed fathers of computer music.

Brün speaks with a thick German accent but his command of language is described by one observer as 'Way beyond English'. The way he uses his adopted tongue is mighty [illegible] Victor Borge—full of outrageous puns, bitter irony and wild similes—but unlike that Great Dane, this man is dead serious.

"With most compositional systems," he contends, "it's difficult to avoid drones, sequences and infinite loops. MUSIC V (a popular mainframe composition program) is ingenious but it helps to perpetrate existing compositional techniques, which are obsolete."

In the process of creating an alternative, he decided "People who are always squeaky-cleaning never see the message in the dust." Therefore, he named his new composing language 'Sawdust'.

"I don't like sentences like 'You're late, Herbert', or 'I told you so'," he proclaims. "I can't shoot the people who say them, so I decided to bury the phrases alive; musicologists won't touch anything that's buried alive." He proceeds to play a piece composed with Sawdust called *I Told You So* which consists of little FM-like structures that follow the spoken pattern of that hated phrase. Unfortunately, the sound system is breaking up something fierce, so he stops the tape. "Some other time," he mutters.

He's not done. The audience fires questions at him, like "What about aesthetics?"

"Aesthetics is the listener liking himself in the presence of art," he rejoins. " 'I didn't like myself while I was listening to your piece', is the beginning of a worthwhile discussion. 'Your piece is lousy,' is not."

Across the hall in the Media Centre's Cinema, Bob Moog, Bill Buxton and Rensselaer Polytechnic Institute video freak Tom DeWitt are setting up for one final performance. A half hour after the scheduled starting time, Moog is still fiddling with a device that sounds suspiciously like a *Theremin*.

Finally, he begins with a brief history of control devices for electronic instruments. "Leon Theremin experimented with different control devices," he says. "The sound-producing circuits were not as important as the electro-mechanical devices used to control them. He devised a dance platform whose capacitance varied with how much of the dancer's body was on the floor. Unfortunately, he couldn't find any dancers who could 'carry a tune,' and *Theremin* players were not a graceful bunch. Apparently, the only performance was by Clara Rockmore, who played *Ave Maria* by standing up and sitting down."

He then talks about his current work. "By the late '70s," he says, "the big guys had gone into making synthesisers. We didn't want to go head-to-head with them, so we picked a small corner of the market: gesture controllers."

He shows a *Trazer*: a cursor controller that responds to finger working, he says, on putting such a controller on each key of a keyboard. "It's as close as you can think of using all of the functions of the finger: it's sensitive to left-to-right, front-to-back and up-and-down position, as well as the force of the motion." The scanning program for the keyboard is so complex, he says, that so far the largest working model he has made has only eight keys.

Bill Buxton then offers the opinion that the only way to get support for new music systems is to call them something else. On a remarkably amateurishly-produced videotape he makes his case for *Drum*, his touch tablet that refused to co-operate Monday night. On the tape he discusses only home computer, industrial and engineering applications, not music.

Tom DeWitt talks about a system he devised for generating images with live action. Dancers on a stage wear small infra red generators whose motion is picked up and processed by fixed sensors. *Painter Power*—a program written for the *Apple*, lets the movement of the dancer control the direction of movement of video brush strokes, the character of which are predetermined by an artist.

Then we get to see and hear all this in action. A dancer flits around the stage, while thick coloured lines fill a large projection screen behind her. Moog and Buxton make weird noises on their various devices, which all seem to be working for a change. It's all extremely avant-garde but not particularly interesting.

Epilogue

And so Digicon comes to a close. Although Cindy Noakes is exhausted and although she says the attendance figures didn't fulfil her 'dream scenario', she is mightily pleased.

"People were talking to each other," she says. "I heard someone say, 'Boy, I would have stayed on the same track the rest of my life if I hadn't met the guy sitting next to me'." And of course, that's what it's all about. Computer artists and musicians are a solitary bunch, and any opportunity for them to come out of their basement laboratories and see what everyone else is doing is welcome. "I don't know if Vancouver was ready for this," she says. "But this one won't be the last." A few weeks after it's all over, she calls me to announce that Digicon II will take place in Vancouver, in August, 1985. She makes me promise to show up.

And I'm pretty tired too. Now I go home and digest 100 pages of notes, no doubt exhausting the capacity of my word processor. I also have some ideas about tricking my alphaSyntauri into making sounds it's not supposed to be capable of. But first, I think I'll head for those mountains.