INTRODUCTION

Composers inside Electronics: Music after David Tudor

The electronic future, as envisioned for the past 80 years or so, has usually taken one of two forms: the streamlined, antiseptic, utopian vision in which technology allows us ever more control (the iPod future) and the messy, chaotic, dystopian vision in which electronics multiply and decay, leaving us at their mercy (the impenetrable-thicket-of-cables-making-it-impossible-to-vacuum-behind-your-desk future). There is, of course, a third vision: one in which we accept the machine as a collaborator, rejoice in its inexplicable intransigence and, like Michelangelo finding the figure in the marble, pause to listen to the composer inside the electronics. This David Tudor was doing as he sat at a table piled with wire-spewing circuits, tending to them like an old lady with 3 dozen cats while producing some of the most extraordinary music of the 20th century.

David Tudor was born in Philadelphia, Pennsylvania, in 1926. He began his musical career as an organist but quickly acquired a reputation as a leading pianist of the avant-garde, championing the music of Pierre Boulez, Sylvano Bussotti, Morton Feldman, Karlheinz Stockhausen and Stefan Wolpe among others (see Austin Clarkson's article in this issue). By the early 1950s Tudor had begun working with John Cage, performing Cage's music, serving as pianist for the Merce Cunningham Dance Company and assisting in the realizations of Cage's electronic works. As early as the 1930s, Cage had treated scavenged everyday electronic appliances—record players, radios and amplifiers—as performable musical instruments [1]. Tudor, working with Cage, recognized the profound potential of electronics to create fundamentally new, endlessly adaptable and (equally important) eternally unpredictable performance instruments. Over the course of the 1960s, Tudor gradually abandoned the piano and emerged as a virtuoso of electronic performance. As Ron Kuivila and James Pritchett recount in their articles, Tudor underwent a two-part metamorphosis: from pianist to electronic performer, with his meticulous realizations of Cage's *Cartridge Music* (1960) and *Variations II* (1961); and then, by the time of his own *Fluorescent Sound* (1964) and *Bandoneon!* (1966), from performer to composer in his own right.

Expanding on Cage's discovery of alternative musical forms implicit in the "found" technology of radios and record players, Tudor embarked on the arduous process of acquiring enough knowledge of circuit design and soldering to construct his own new instruments [2]. He believed that new, object-specific, intrinsically *electronic* musical material and forms would emerge as each instrument took shape: "I try to find out what's there—not to make it do what I want, but to release what's there. The object should teach you what it wants to hear" [3].

This was a profound shift in the aesthetics of electronic music. It was implicit perhaps in Cage's earlier work, but Tudor made it tangible and audible to a new generation: John Bischoff, in his interview with Douglas Kahn, describes how listening to Tudor "completely turned my musical world around." Inspired by Tudor (and fellow visionaries such as David Behrman and Gordon Mumma) and aided by the proliferation of the integrated circuit, which combined transistors into functional, Lego-like modules that could be wired up with a bare minimum of engineering skill, a number of composers adopted a working method based on seat-of-the-pants electronic engineering. The circuit—whether built from scratch, a customized commercial device, or store-bought and scrutinized to death—became the score.

In 1973 Tudor held an extended workshop in Chocorua, New Hampshire. The focus was on creating a collaborative realization of his composition *Rainforest,* but—as John Driscoll, Matthew Rogalsky and Bill Viola describe—the event served as a catalyst for a handful of emerging electronic artists, who banded around Tudor to form a loosely collective ensemble called Composers Inside Electronics. Over the years this group served as a laboratory for artist-designed circuitry and experimental electronic performance, presenting dozens of installations of *Rainforest IV* worldwide, as well as performances of works by individual members of the ensemble (such as Ralph Jones's *Star Networks at the Singing Point* (1978), the score of which is included in this issue).

The introduction of the microcomputer and MIDI at the start of the 1980s prompted many musicians to swap the soldering iron for software and increasingly affordable commercial music synthesizers, but—as D'Arcy Philip Gray and Nancy Perloff write—Tudor continued to create extraordinary analog works up until his death in 1996. Other composers, inspired by his vision of the music within the machine, ported their ideas into code and went on to combine computers and circuits into quirky hybrid instruments.

Tudor was a catalyst for a generation of artists and musicians (Stephen Jones recounts how the ethos of the Tudor/Cage/Cunningham collaboration reached around the world to Australian choreographer Philippa Cullen), but the aesthetic of "composing inside electronics" extended far beyond the cult of his personality. Douglas Irving Repetto, Norbert Möslang and Gert-Jan Prins, while aware of Tudor's music and demonstrating some similar concerns and methods, developed their own work free of his direct influence. Reed Ghazala has been "circuit-bending" since the late 1960s, quite unaware of Tudor's precedent, introducing Tudor-esque electronic ideas to a new generation of sound artists through his popular web site [4]. By 2004, in fact, the aesthetic has spread well beyond the confines of the avant-garde: Hip-Hop, House and other forms of dance music and Electronica share a similar obsession with the quirks intrinsic to specific pieces of audio hardware or software. Every Pop producer has a signature gizmo. Music software, such as Max/MSP and Reaktor, emulates the creatively corruptible modularity of 1970s-era electronic technology, and the latest software plug-ins strive to mimic obsolete but beloved hardware.

As Tudor-esque aesthetics have permeated culture both high and low, his legacy has not gone unacknowledged in academe. The Getty Research Institute, which houses the David Tudor Papers archive, hosted the first international Tudor symposium in May 2001. For this issue of LMJ we selected four symposium papers that relate most directly to Tudor's work with technology; the authors revised them for publication here. The rest of the symposium papers are represented by their abstracts, with full texts available on the Getty web site. The balance of papers in this issue result from our call to authors to submit articles on any aspect of the work of David Tudor (both in its historical context and as it applies to music and art today), on the influence of Tudor's ideas on their own work, or on the role of technological idiosyncrasies in their composition, performance or production.

Ron Kuivila, who arranged for Tudor's electronic instruments to be donated to the Wesleyan University World Music Instrument Collection in 1997–1998, curated the CD, which includes rare performances by Tudor.

In *Microchip,* an account of the invention and early history of the integrated circuit, Jeffrey Zygmont observes that in the early 1960s the first microcomputer chips, which would one day make possible the personal computer, the cell phone and the Internet, were designed and manufactured in absence of any foreseeable market [5]. After months of unreturned phone calls, the salesmen at Texas Instruments and Intel finally pitched their wares to two clients: one wanted to make a handheld substitute for the cumbersome desktop mechanical calculator; the other needed a control device for one of the first consumer microwave ovens. American industry wasn't listening back then. But David Tudor was.

NICOLAS COLLINS
Editor in Chief

References and Notes

1. *Imaginary Landscape No. 1* (1939), for piano, cymbals, turntable and test-tone records; *Imaginary Landscape No. 4* (1951), for 12 radios; *Cartridge Music* (1960), for phonograph cartridges and contact microphones. Performable electronic instruments existed before Cage's experiments—the Theremin, Ondes Martinot and Hammond Organ, among others—but Cage wanted to free electronic music from the gestural conventions that bound these new devices too closely to traditional performance practice.

2. He was not alone—other composers of the time, such as Louis and Bebe Barron, Hugh Le Caine and Raymond Scott, also designed their own instruments, but to rather different ends and with less impact on fellow composers. The Barrons, after a brief stint working with Cage, moved to Hollywood and created electronic scores and effects, most notably for *Forbidden Planet* (1956); Canadian composer Le Caine is best known for his invention of the "Electronic Sackbut" in the late 1940s; Scott, an extremely prolific film and television composer, invented the Theremin-esque Clavivox keyboard in 1957 and produced three records of proto-ambient music for newborns and infants using home-made forerunners of sequencers and synthesizers.

3. David Tudor and Victor Schonfeld, "From Piano to Electronics," *Music and Musicians* **20** (August 1972) pp. 24–26.

4. See <http://www.anti-theory.com>.

5. Jeffrey Zygmont, *Microchip: An Idea, Its Genesis, and the Revolution It Created* (Cambridge, MA: Perseus Publishing, 2002).

Frontispiece Image

Stan Ries, David Tudor at The Kitchen, NYC, circa 1972–1974. (Photo © stanries.com)