**MIDI, Openness, Creativity, and the Tools of Digital Humanities**

First off, my apologies for the state of this “draft.” Several unexpected time commitments superseded my ability to devote my resources to this project as I had intended. (Not that I’m making excuses — it’s my responsibility. I’ll just have to plan for significantly more time on this project as I revise over the coming days).

My primary focus will be to define MIDI, the Musical Instrument Digital Interface, and the dimensions of its “openness”.

I want to give a brief history and an accessible, not-very-technical description of how MIDI works as a technical standard.

* + MIDI was invented by two electronic synthesizer makers: Dave Smith of Sequential Circuits and Ikutaro Kakehashi of Roland, and debuted in 1983.
  + MIDI allows for manipulation of and performance with electronic musical instruments to digitally encoded, for the purposes of control, interfacing/connecting devices, or recoding the *elements* of performance (as opposed to the actual sound).

I want to emphasize how MIDI is “open” in two very important ways:

* + The MIDI specification was patented, but the creators released it openly and required no fees for licensing its use or implementation, leading it to become an early example of an “open standard.” Anyone could access the technical specs of MIDI and use them for any purpose free of charge or constraints by the patent holders. This openness helped MIDI become a universal data specification and supplant individual, competing, proprietary spec’s.
  + MIDI is open in the sense that it is virtually infinitely extensible, allowing for users to implement virtually infinite use-cases. The MIDI standard is so open-ended that it even allows for the separation of the specification itself from its original purpose. The technical specification allows for virtually any electronic input or output device to send/receive signals. The only *required* data in MIDI are on/off, control identification number, and value. Infinitely many channels for MIDI data can be added to any use case through the entirely open-ended “SysEx” (system-exclusive) super-layer of MIDI data.
  + Because MIDI was open as a standard and open-ended as a communication format, MIDI was used to control early surgical robots, for instance, and it is still found in some automated manufacturing/industrial control settings.
  + The MIDI’s openness as a standard and extensibility as a format has made it extraordinarily robust. This January was the 37th anniversary of MIDI’s official launch. After nearly four decades, the MIDI specification is still in version 1.0. MIDI is used in literally billions of devices (most of which are cell phones that use MIDI for ringtones).
* I then intend to connect MIDI to Digital Humanities, even though it did not develop as a DH project as such (not developed for scholarship, but as a manufacturing standard):
  + MIDI developed contemporaneously with some DH tools like hypertext and markup and shares some features with those technologies.
  + As an open standard with virtually infinite extensibility, MIDI addresses some of Drucker’s concerns/criticisms of DH tools.
  + MIDI’s role in the development of digital music has created some new dimensions of musical creativity that are certainly worthy of humanistic scholarship, for instance:
    - MIDI allows for the separation of performance and instrument. A performance can be recorded in real time with MIDI, but the “recording” consists of data streams — the values of various keys, knobs, switches, etc. in time. MIDI performance data can later be sent to other instruments and assigned to other controls on that instrument, for instance.
    - MIDI allows for the separation of composition and performance and/or instrument. MIDI can be directly programmed in addition to being performed, with the data sent to any hardware or software instrument at any time. Inhumanly complex or randomized compositions are made possible with MIDI programming.

**References**

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