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Dry Ice Metal Sounds

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This started off as more of a science fair project, inspired by such TV science shows as Mr. Wizard (mid-50s) or MythBusters (contemporary) than anything else. Along the way, though, I encountered some fascinating sounds which I'm happy to share with readers of this magazine. I first came across the idea of exploring the sounds made by placing dry ice on metal about 35 years ago. I believe someone was showing it off

as a party trick for a happening, or a theater event. Later, I encountered USA-based NPR's "Soundclips" series, in which sound artists share their favorite sounds with the public. These are available on the web, and are highly recommended! In this one - www.npr.org/templates/story/story.php?storyId=12309256 sound effects virtuoso Andy Aaron describes his recording the sounds of metal placed on dry ice.

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Dry ice is frozen carbon dioxide. It is readily available from commercial outlets. In my town, I got mine from a party supplies store. In other places, you may have to go to an industrial gasses outlet to buy some. It's cheap, too. Here, pellets are available for around \$5 Australian a kilo. I've heard that in the US, the price is about \$2 US a kilo. To record the sounds in this Wusik set, I bought 2 kilos of dry ice. I actually used about 1 kilo.

Dry ice is cold. No, let's make that COLD. Its temperature is -78.5C or -109.3F. That's cold enough for your skin to freeze to it, if you're foolish enough to handle it with bare hands. Notice in the photos I'm wearing thick gardening gloves. These were more than adequate for handling it, but after a few moments I still felt the cold penetrating the gloves. Handle dry ice with care! Since it's a solid which directly transforms into

gas, it can expand - so don't put it in sealed containers - they are likely to explode! What's more, it's heavier than air, so the gas will tend to accumulate in low places. Don't drive your car with dry ice in it without having the windows open. And use it only in well ventilated spaces. Breathing dry ice fumes (carbon dioxide) can suffocate you.

Once having bought the dry ice, I placed it on the ground on our back patio, and proceeded to place metal objects on it. The sounds were remarkable and immediate. Some objects made sound very well, others didn't. How the sound was being made was that the heat of the metal caused the dry ice to instantly turn to gas where the metal contacted it. The pressure of this gas pushed the metal away from the dry ice, and without contact, the dry ice stopped sublimating (turning directly from a solid into a gas). The

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metal then fell back onto the dry ice, and the cycle repeated. If this occurs fast enough, the metal vibrates, and you hear the result as sound.

The sounds are wild, and they do give the impression of sounds produced under stress. Monster movie fans (and heavy metal musicians who enjoy the horror and sci-fi scenarios of much metal music) should enjoy some of these sounds as a source of "cries from the pit."

On a different note, when talking about musical phrasing and how to make a series of notes musically expressive, the German-American composer and philosopher Herbert Brun said "not the gesture, but the stress is the music." This meant that the varieties of loudness and strength of each musical part of a phrase was one of the things that really conveyed meaning in a sound. In a sense, these sounds certainly live up to that, being produced by metal undergoing extreme stress by sudden exposure to cold.



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The objects I found most useful in this session were steel mixing bowls, pliers, a cross-cut saw, a little hacksaw (just its handle), and a larger hacksaw (both handle and blade). These can be seen in the photos. I wanted to try out a large flat, thin sheet of metal, but didn't have one available. In the excitement of using tools and kitchen gear, I also completely forgot that just a couple of meters away, in the garage, I had a complete set of copper pipes from a metallophone I'd made about 5 years ago. Those might have made some interesting sounds as well!

For this Wusik sound set, I've made a separate Preset for each sample, and the samples are saved as WAV

files, so you can copy them and use them for any other purposes. The sounds are not looped - if you want to work with the rhythmic aspects of these sounds (which some people might find irresistible), you'll have to export them to a sound editor and loop them on your own. There is only one WusikSND sound set (DryIceMetalShorterSounds.WusikP.RST) - a preset which has 47 of the shorter (less than 10 seconds) sounds, arranged one to a key from C36 up to C84. No effects are added to the sounds - I wanted to present these sounds as cleanly as possible. The potential for extending these sounds with effects is, of course, great, but I'll leave that up to the individual user.



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Most of the sounds are short - around 10 seconds or less, but there are several long ones which might serve as musical phrases in their own right. Here's a listing of them, with their durations:

- Bowl08 - 16.7 secs
- BowlLongSequence - 43.6 secs (this is a composed sequence of an extended improvisation with a bowl. Silence has been spliced out and different sections amplified differently. It's a mini-composition on its own.)
- HacksawBlade02 - 11.2 secs
- HacksawHandle01 - 18.9 secs
- HacksawHandle02 - 17.1 secs
- HacksawHandle05 - 34.8 secs (another long sequence, but this one doesn't have much splicing)
- LittleHacksaw02 - 19.5 secs
- Pliers01 - 13.4 secs
- Pliers06 - 13.4 secs
- Pliers07 - 21.5 secs

Listen to these sounds, to their rhythm, to the way pitch changes within them, and to the textures produced by the bouncing, freezing metal. Very little processing, other than volume adjustments (to make each sample about the same level) was done. Most of the rhythms you hear (except in some of the very long samples) were produced by the metal itself, not by splicing. For all the sounds, except the WusikSND compilation, the root key is C60. Playing higher and lower than this, of course, produces wonderful effects. Fans of music of complex textures, such as the musique concrete works of Iannis Xenakis, should find these sounds useful and exciting. And if this idea intrigues you, you can try making your own. All you need is the location of your local dry ice distributor, a microphone and a recording device, and some metal objects. Enjoy!

