## PORTABLE NETWORK GRAPHICS (PNG) DECODING PROCEDURE **Image params START IDAT** params Width Extract Height **Read IDAT IDHR** header Compression Bit depth header bits info method NO **Was IDAT** Color type **Check bits** end marker Compression Preset **PNG file** zero? method dictionary? Filter method **Get binary** Compression Interlaced? stream level Reached YES **IDAT** end marker **IDAT** Read file **Huffman type** marker? YES signature Huffman Reach decoding: "IEND" iteration #1 NO Inflate decompression First **YES** 8 bytes = Huffman De-filter 89 50 4E 47 Read header decoding: pixel rows **OD OA 1A** chunk iteration #2 OA? **Binary tree Chunk params** params Length NO Raw pixel Literals/ Type values Lengths LZ77 de-Extract **Distances** compression chunk data **NOT A PNG FILE** PIXEL **DISPLAY** FILE **Calculate** VERIFICATION **RGB to CMYK** Test Adler32 LZ77 output CRC32 checksum conversion **Unfiltered** (optional) "And take man's vaunted power of calculation. Have we not pixel values engines which can do all manner of sums more quickly and correctly than we can? In fact, whenever precision is required man flies to the machine at once as far preferable to himself. The machine is brisk and active when the man is Create display NO weary; it is clear-headed and collected when the man is pixels Remainder stupid and dull." equals Checksum Ancillary chunks with errors can be ignored — Samuel Butler, Erewhon: or, Over the Range (1872) zero? correct? Required chunks with errors should NO "Labour without joy is base. Labour without sorrow is base. **END** Sorrow without labour is base. Joy without labour is base." YES

← HEADER

| PIXEL DATA →

YES

— John Ruskin, Time and Tide (1867)