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Crystal combinatorics from PBW bases.

We re-examine Lusztig's algebraic construction of canonical bases, showing how it gives an alternative way to approach Kashiwara's crystals in finite type. This is in a sense well known, since it is known that canonical bases and global crystal bases coincide, but we feel it has not been fully explored. For instance, we show how, in type A, the familiar Young-tableaux combinatorics can be derived using only Lusztig's piecewise linear functions relating different PBW bases. This same approach works in other types, giving new combinatorics. Those parts of this work which are not due to Lusztig are joint with John Claxton, Ben Salisbury and Adam Schultze. (Received August 11, 2015)