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## Letters

### Not a transistor

Karen Hartley's excellent article on high-temperature superconductivity (SN: 8/15/87, p.106) contains a small error: Josephson junctions are not transistors.

The Josephson junction is intrinsically a threshold device, usually used as a *current steering switch* as opposed to a current amplifier. Two states are exhibited: one superconducting (the OFF state), the other a nonlinear resistance state (the ON state) providing a nonzero resistance to current flow. Starting out from (i.e., biased in) the OFF state, gate current is switched to an output load resistor by the addition of a small signal current that switches the device into the ON state.

In transistors (the term derives from a contraction of *transfer resistor*), an amplifying action is produced by transferring a current from a low- to a high-resistance circuit. Al-

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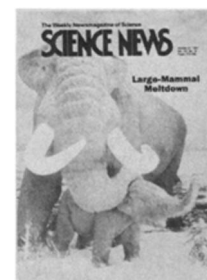
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Cover: These mastodons represent one of the many classes of large mammals that became extinct or disappeared from North America at the end of the last Ice Age around 11,000 years ago. Scientific explanations of their abrupt demise are far from settled, but theories include intensive hunting by humans and climate change. (Illustration: New York State Museum, Albany)



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though transistors are also used in logic circuits as switching elements, their three-terminal structure and current amplification ability set them apart from Josephson junction devices.

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### A rationalization?

Those, like David Goldstein (Letters, SN: 9/5/87, p.153), who pooh-pooh human rationality get hoisted on their own petard. If all our explanations were bogus — e.g., mere rationalizations — this would cover Gold-

stein's idea that "[Man] does what he wants to . . . and then provides himself with explanations."

A more sensible view is that too often, perhaps, we do this, but we can also be careful and avoid it. Being a rational being only enables us to live rationally; it does not guarantee that we will do so. That is an accomplishment of some measure, as Aristotle already knew. Surely any scientist struggling to get things as right as possible also must know this.

Thus we can also distinguish, for example, between Goldstein's and other people's hypotheses about human rationality. Sometimes we can discover one that succeeds, while often we find only those that amount to no more than rationalizations. Goldstein's sloppy generalization on this topic most likely fits the latter bill.

*Tibor R. Machan*  
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OCTOBER 31, 1987

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