Comments on Lettieri and Yoneyama's "Su-field: An Educational Example of Inventive Problem Solving in Electrical Engineering" by Richard Kaplan

Lettieri and Yoneyama provide a nice electrical engineering example of inventive problem solving in their 1/06 TRIZ-Journal article. The problem is reminiscent of the classical lamps creativity puzzle:

There is a lamp on the third floor of a house and three switches, one of which controls the lamp, on the first floor. How could it be determined which switch controls the lamp with only one trip to the third floor? The lamp and its light bulb are operable, the lamp can not be seen or can it be known whether the lamp is on or off from the first floor, and the lamp can not be controlled from other than the first floor.

Answer – Use the effect that when the lamp is on, the bulb gets hot. Turn on switch #1 for one minute. Then, shut it off. Turn on switch #2, and leave it on. Go to the third floor. Determine which switch controls the lamp by means of the following table:

Bulb Condition		
On/Off	Hot/Cold	Switch that Controls Lamp
On		#2
Off	Hot	#1
Off	Cold	#3

The circuit problem also seems to me to be solved by using effects, not Su-Field approaches. To solve the problem it must be possible to differentiate one case from the other. As Lettieri and Yoneyama point out, differentiating can be done in their case by testing for heat or magnetic effects. The authors consideration of the circuits as "substances" needing fields for completion is problematic because the circuits already contain electric current or voltage "fields". Conversely, the Creativity As an Exact Science page 21 example of differentiating between cut up pieces of tree interior and tree bark is a case solved via Su-Field by adding a field to a two-substance situation.