Notation

I find it tiresome to continually read and write long tensor expressions such as

$$\Gamma^a{}_{bc,i_1 i_2 i_3 \cdots i_n} A^{i_1 i_2 i_3 \cdots i_n}$$

So I propose a small change in notation. I will use single greek letters to denote strings of indices while reserving roman letters for single indices. In this notation the previous line would be written as

$$\Gamma^a{}_{bc,\beta} A^\beta$$

The number of indices inside β is unknown but usually that would not be a problem. The number n in the old notation normally serves only to remind us that we have an unknown long series of indices. The value of n is usually unknown and of little concern. Thus it seems reasonable to remove n from the picture.

How might we deal with something like

$$\Gamma^a{}_{bc,i_1 i_2 i_3 \cdots i_n} A^{i_1} A^{i_2} A^{i_3} \cdots A^{i_n} \text{ ?}$$

I propose writing

$$\Gamma^a{}_{bc,\beta} A^{\cdot\beta}$$

The single dot reminds us that we are to multiply n copies of the object A, one for each of the normal indices in β.

Here is another common construction

$$\left(\cdots\left(\left(\Gamma^a{}_{bc,i_1} A^{i_1}\right)_{,i_2} A^{i_2}\right)_{,i_3} A^{i_3} \cdots\right)_{,i_n} A^{i_n}$$

How might we tidy this up? By including a dot before the derivative index β, like this

$$\Gamma^a{}_{bc,.\beta} A^{\cdot\beta}$$

I had also thought of writing a bar underneath any letter to denote arbitrary length indices. The advantage is that it places no constraints on the choice of index and it provides a better visual clue than roman versus greek letters. Its main weakness is that it mght make the equation look a little clutterd. Maybe that's a weak objection. Here is how it would look

$$\Gamma^a{}_{bc,.\underline{d}} A^{\cdot\underline{d}}$$