A correction to our paper
"Towards a Semantic Characterization of
Cut-elimination"

Note that in [CT06a], according to the current definition of weak substitutivity (Definition 3.10), Lemma 3.13 does not hold. Definition 3.10 should, in fact, refer to *all* the (countable sets of) inference rules constituting (R). A possible way to overcome this problem is to define weak substitutivity in terms of rule *instances* (as in [CT06b]), instead of rule schemata.

An alternative solution was recently suggested by Wataru Sakagawa. The idea is to extend the notation $[\Theta \Rightarrow \Xi]_{X \mapsto \Phi}$ in Definition 3.9 as follows.

> Let $\Theta \Rightarrow \Xi$ be a meta-sequent. Given meta-variables $\vec{X} \equiv X_1, \ldots, X_n$ and a sequence Φ of fresh meta-variables, $[\Theta \Rightarrow \Xi]_{\vec{X} \mapsto \Phi}$ is the set of meta-sequents obtained from $\Theta \Rightarrow \Xi$ by replacing some (possibly zero) occurrences of $X_1, \ldots, X_n$ in Θ with Φ.

The definition of weak substitutivity (Definition 3.10) is then:

> Let $\mathcal{L}$ be a simple sequent calculus. a structural rule (R)
>
> $$\frac{S_1 \quad \cdots \quad S_n}{S_0}\ (R)$$
>
> is *weakly substitutive* in $\mathcal{L}$ if for any meta-variable $\vec{X}$, any $\mathcal{O} \equiv \Phi$ or $\Phi_l; \Phi_r \Rightarrow \Psi$ and any $S_0' \in [S_0]_{\vec{X} \mapsto \mathcal{O}}$, there exists a derived structural rule in $\mathcal{L}$ of the form
>
> $$\frac{S_1' \quad \cdots \quad S_m'}{S_0'}$$
>
> where each S_j' $(1 \leq j \leq m)$ belongs to $\bigcup_{1 \leq i \leq n} [S_i]_{\vec{X} \mapsto \mathcal{O}}$.

Here, we may assume that $\vec{X}$ consists of just one meta-variable X when the substitution takes place on the consequent, i.e., when $\mathcal{O} \equiv \Phi_l; \Phi_r \Rightarrow \Psi$.

Thanks
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References

[CT06a] A. Ciabattoni and K. Terui. Towards a semantic characterization of cut-elimination. *Studia Logica*, 82:95 – 119, 2006.

[CT06b] A. Ciabattoni and K. Terui. Modular cut-elimination: Finding proofs or counterexamples. In *Proceedings of LPAR'06*, volume 4246 of *LNAI*, pages 135 – 149. Springer, 2006.