

Appendix A4

Care of your pet combinator

This Appendix was contributed by Carol Hindley to [HS86]. We believe its plain common-sense advice is still very valid despite changing fashions in care, and therefore reprint it here.

Combinators make ideal pets.

Housing They should be kept in a suitable axiom-scheme, preferably shaded by Böhm trees. They like plenty of scope for their contractions, and a proved extensionality is ideal for this.

Diet To keep them in strong normal form a diet of mixed free variables should be given twice a day. Bound variables are best avoided as they can lead to contradictions. The exotic **R** combinator needs a few Church numerals added to its diet to keep it healthy and active.

House-training If they are kept well supplied with parentheses, changed daily (from the left), there should be no problems.

Exercise They can be safely let out to contract and reduce if kept on a long corollary attached to a fixed point theorem, but do watch that they don't get themselves into a logical paradox while playing around it.

Discipline Combinators are generally well behaved but a few rules of inference should be enforced to keep their formal theories equivalent.

Health For those feeling less than weakly equal a check up at a nearby lemma is usually all that is required. In more serious cases a theorem (Church–Rosser is a good general one) should be called in. Rarely a trivial proof followed by a short remark may be needed to get them back on their feet.

Travel If you need to travel any distance greater than the length of M with your combinators try to get a comfortable Cartesian Closed Category. They will feel secure in this and travel quite happily.

Choosing your combinator Your combinators should be obtained

from a reputable combinatory logic monograph. Make sure that you are given the full syntactic identity of each combinator. A final word: *do* consider obtaining a recursive function; despite appearances, they can make charming pets!

