First Impressions

A Modal Logic Designed Specifically to Confuse Undergraduates

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Abstract

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1. Introduction

One major attraction of modern type theories lies in their elegant use of pretty symbols. What modern computer scientist could not but be smitten by the simple beauty of such gems as

$$\Gamma \vdash e{:}\tau$$

or even

$$\Gamma \vdash M{:}A$$

Hell, even funny symbols such as those used in

$$\Gamma; \Delta \vdash M{:}A \multimap B$$

are pretty ok.

However, these beautiful strings of symbols serve a deeper purpose than mere aesthetics. They also allows us effectively hide very powerful ideas in a mass confusing typography and terminology. For example, it is rare that one needs to actually describe what one is working on when it includes such terms as "pointwise subkinding." [2, 3]

With rising education and theoretical programming language ideas become more accepted by a broader audience, it is becoming more and more necessary to increase the complexity of terminological and typographical conventions if any actual work is to be accomplished [1].

With this in mind, we present First Impressions, a modal logic designed specifically to confuse the uninitiated.

Propositions	P	$::=$	$P_1 \vee P_2 \mid P_1 \wedge P_2$
		$\mid$	$P_1 \heartsuit P_2 \mid MP$
Atomic Propositions	M	$::=$	$A, B \mid \triangle M \mid \Box M$
		$\mid$	$\cdots \mid \bigcirc M$

Figure 1. Some symbols

2. Confusing Overview

Propositions in First Impressions consist of base propositions prepended by a series of alethic modalities. Base propositions are really whatever one feels like: they do not actually matter at all. We're not actually going to do anything with this logic other than talk about it. So, for instance, one could have a series of atomic propositions, $A, B, ...$, and some binary connectives, $\vee, \wedge, \rightarrow, \propto,$ ©.

Modalities consist of the set of regular polygons. They are distinguished by how many sides they have. Any polygon with more than nineteen sides is considered to be a circle, which has nineteen sides. In notation, these polygons may be written with a dot in the middle. This has no meaning, but serves merely to multiply notation.

A string of modalities can be equivalent to another string of modalities. A string of modalities followed by a base proposition A is true iff an equivalent string of propositions followed by A is true. However, the exact rules determining the provability of the truth of a proposition are unclear. Therefore, it is necessary to give heuristics for determining the if two strings of modalities are equivalent. In practice, we find the most useful way of determing this is to sum the number of sides of polygons in a string and take that number modulo twelve. If two strings yield the same number, they might be equivalent.

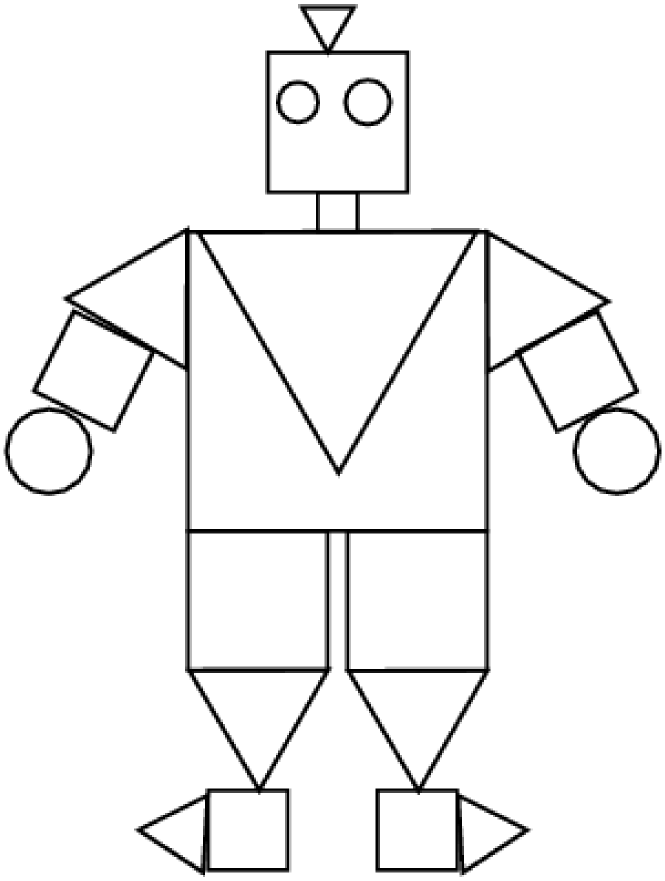

Figure 2. A Robot

For example, it is pretty likely that a cicle (nineteen sides) is equivalent to a heptagon, as $19 \equiv 7 \mod 12$.

We find that discussion of these rules leads to endless confusion in those who are unaware of the subtlties of modal logic. Even those who have much experience, when faced with a pentadecagonal modality, tend to give up quickly.

3. Metatheory

As we do not actually have any judgments, inference rules or even any particularly well specified syntax, metatheory for this logic consists mostly of vague statements about possible future work. This is a striking return to the philosophical underpinnings of modern logic, and we hope to someday treat this subject in full.

4. Use

One of the primary uses of this logic is for drawing pictures. Freed from the tradional constraints of simple boxes, diamonds and possibly circles, we have a near unlimited palette of shapes from which to choose. However, we still require these shapes to be regualar which makes more complicated images difficult to compose. We find that, given these limits, houses and boxy robots (Figure 2) are some of the most easiest images to produce.

Acknowledgments

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References

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