ELECTRONIC NEWSLETTER ON
REASONING ABOUT ACTIONS AND CHANGE

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Today

We carry today a further exchange between Michael Gelfond and Hector Geffner, continuing the discussion from the previous Newsletter. We also advertise the posting of major parts of the discussions at the recent Commonsense 1998 workshop, which contains a lot of interesting and timely material for reasoning about actions and change. It is also a major step in the development of the present medium for online research communication. The specifics follow below.

A clarification: when Hector Gelfond wrote "This is in reply to Michael's message" in last Friday's Newsletter, he was referring to Michael Gelfond and noone else.

New initiatives

Commonsense workshop continues discussions online and in our Newsletter

The recent workshop on Formalization of Commonsense Reasoning in London on January 7-9 featured 23 presented papers, as well as two panel discussions. The discussions at the workshop were very lively and informative, and it was decided to make an experiment with pursuing the discussions online. The result is now available in the ETAI web structure, and to go there directly please use [1][http://www.ida.liu.se/ext/etai/nj/fcs-98/listing.html]

The structure rooted at that URL contains a discussion summary that the participants have a had a chance to correct and augment (although additional amendments may be forthcoming), but it is also intended as a starting point for continued discussion. Thus, the online workshop discussions will proceed in the same manner as our discussions about ETAI received papers and our existing on-line panels. Also, it is of course not restricted to workshop participants: every reader of the Newsletter is invited to take this opportunity to ask questions to the authors.

Just like in a question period in a seminar, this is for the benefit of all: if one person thought something required further explanation and asked a question, then chances are that several others will also find the question and the answer useful. In fact, this style of presentation may be an excellent way of explaining a piece work, just like a list of "Frequently Asked Questions" and their answers may be more readable than a plain text containing the same information. In other words, you are making the author a favor by asking a good question to her or him.

However, in one respect the discussion about workshop papers differs from our earlier online discussions: we don't send out the initial part by e-mail, simply because the resume of questions and answers is too voluminous. Follow-up questions and comments concerning a point that was first

[1] Ref: http://www.ida.liu.se/ext/etai/nj/fcs-98/listing.html

addressed in the discussion at the workshop will have to be understood by relating to the existing online structure (URL above).

Although many of the workshop papers addressed reasoning about actions and change, some of them concerned other aspects of commonsense reasoning. (*Mutatis mutandis*, there are some aspects of reasoning about actions and change that don't really qualify as formalization of commonsense). However, although the online discussion is run through the Actions and Change Newsletter and Colloquium, we'll be generous and include all the articles. This means in particular that researchers outside the constituency of the present Newsletter may also be interested in seeing the discussion and in participating. If you know someone who might be interested on that account, please forward this Newsletter to her or him.

Debates

Ontologies for actions and change

From: Michael Gelfond

Dear Hector,

You write

> *As I see it, in the "basic" approaches to the frame problem (Reiter's completion, Sandewall form of chronological minimization, language $\mathcal{L}$ in one way or another, action rules are compiled into transition functions of the form $f(a, s)$ - where s is a state and a is an action - that describe the set of possible state trajectories. Observations in such models just prune some of the trajectories and hence have a "monotonic" effect (i.e., predictions are not retracted, at most they are made inconsistent).*

If you replace $\mathcal{L}$ by $\mathcal{A}$ then I agree.

A model of $\mathcal{A}$ however consists of a transition function, initial situation and the **actual path** - a sequence of actions which actually happened so far.

Observations not only prune "the set of possible trajectories" but also change the actual path in each model. This gives the nonmonotonicity of entailment in $\mathcal{L}$.

Is this nonmonotonicity "in the set of observations"?

You continue:

> *In other models, Michael's and Luís' included, actions are represented in the state (in one way or the other) and hence abduction to both fluents and actions are supported. Such models* are *non-monotonic in the set of observations. Actually the only apparent difference in such models between actions and fluents is that the former are assumed to be "false by default" while the latter...*

You are right when you say that in $\mathcal{L}$ occurrences of actions are assumed "false by default" and fluents are assumed "to persist by default". But there are other "standard" differences. Actions label arcs of the automaton, while sets of fluents label its states. There is also a syntactic difference:

occurs(A, S) requires action as the first parameter, *at*(F, S) requires F to be a fluents, etc.

Michael

From: Hector Geffner

Dear Michael,

I meant the language $\mathcal{A}$, not $\mathcal{L}$

I've read your paper with Chitta and Provetti, but don't have it with me. As far as I recall, and following what you say, yes, definitely that account is non-monotonic wrt to the observations.

Hector
