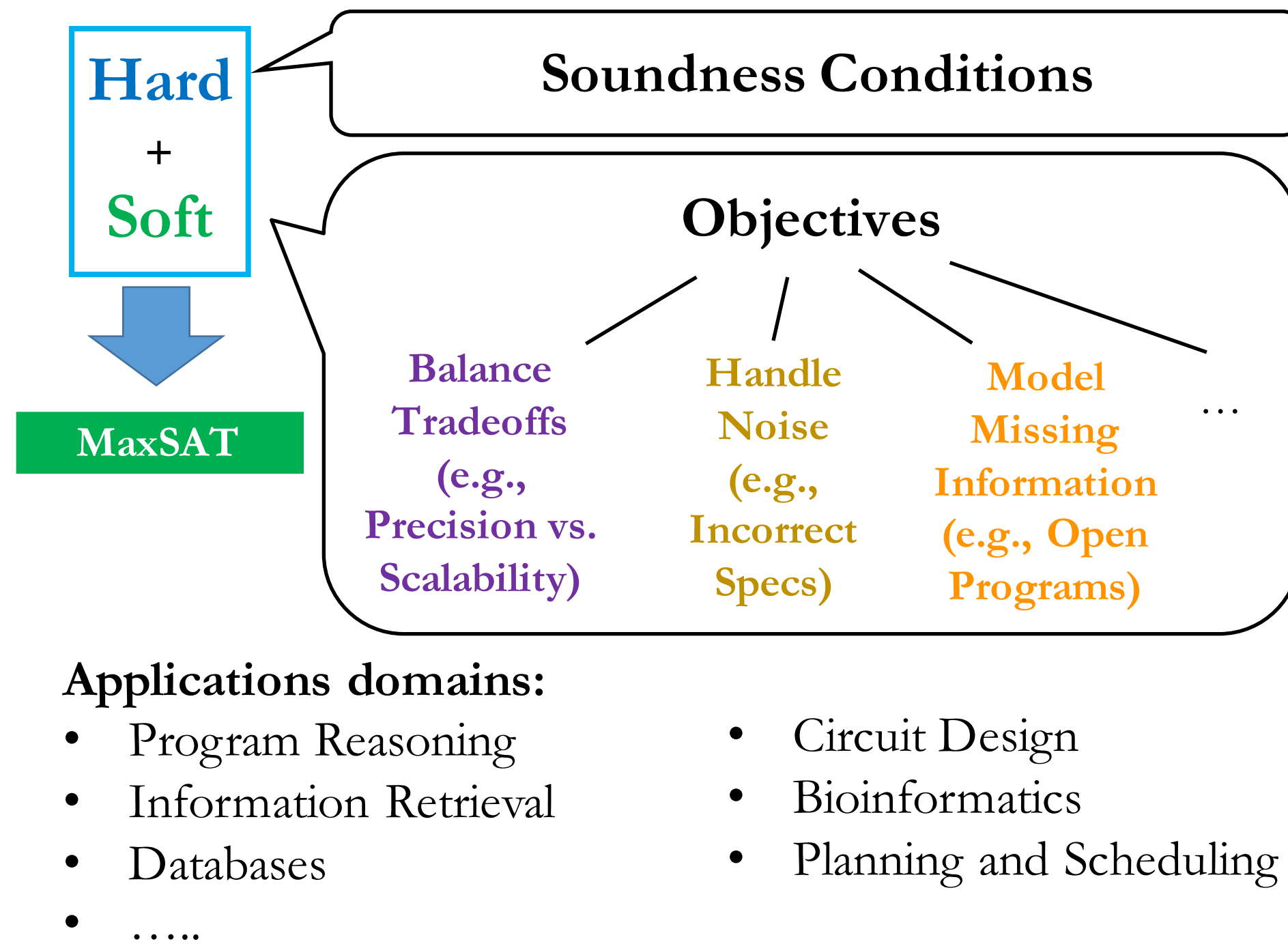




Query-Guided Maximum Satisfiability

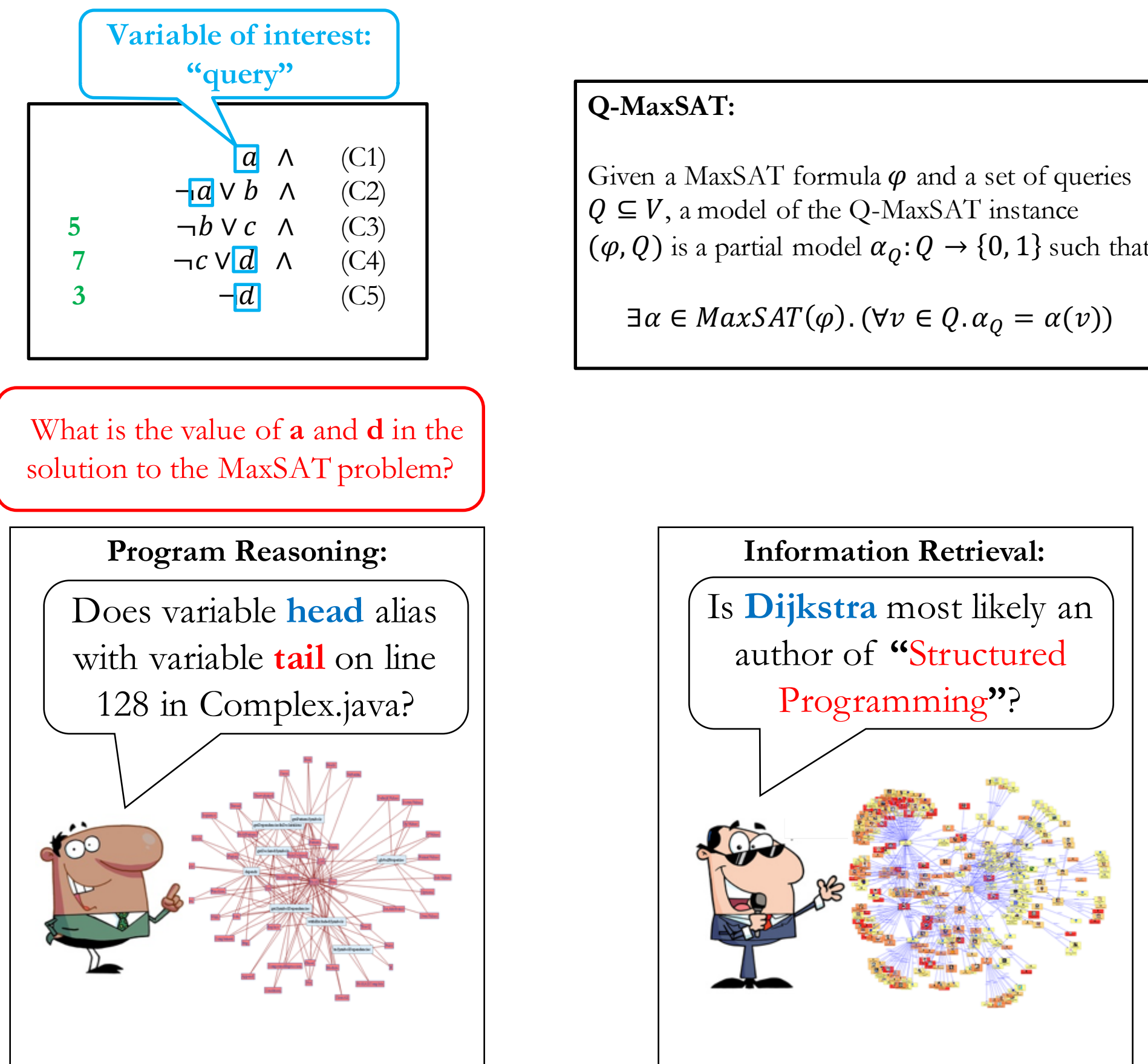
Xin Zhang, Ravi Mangal, Aditya V. Nori, Mayur Naik

An Emerging Trend

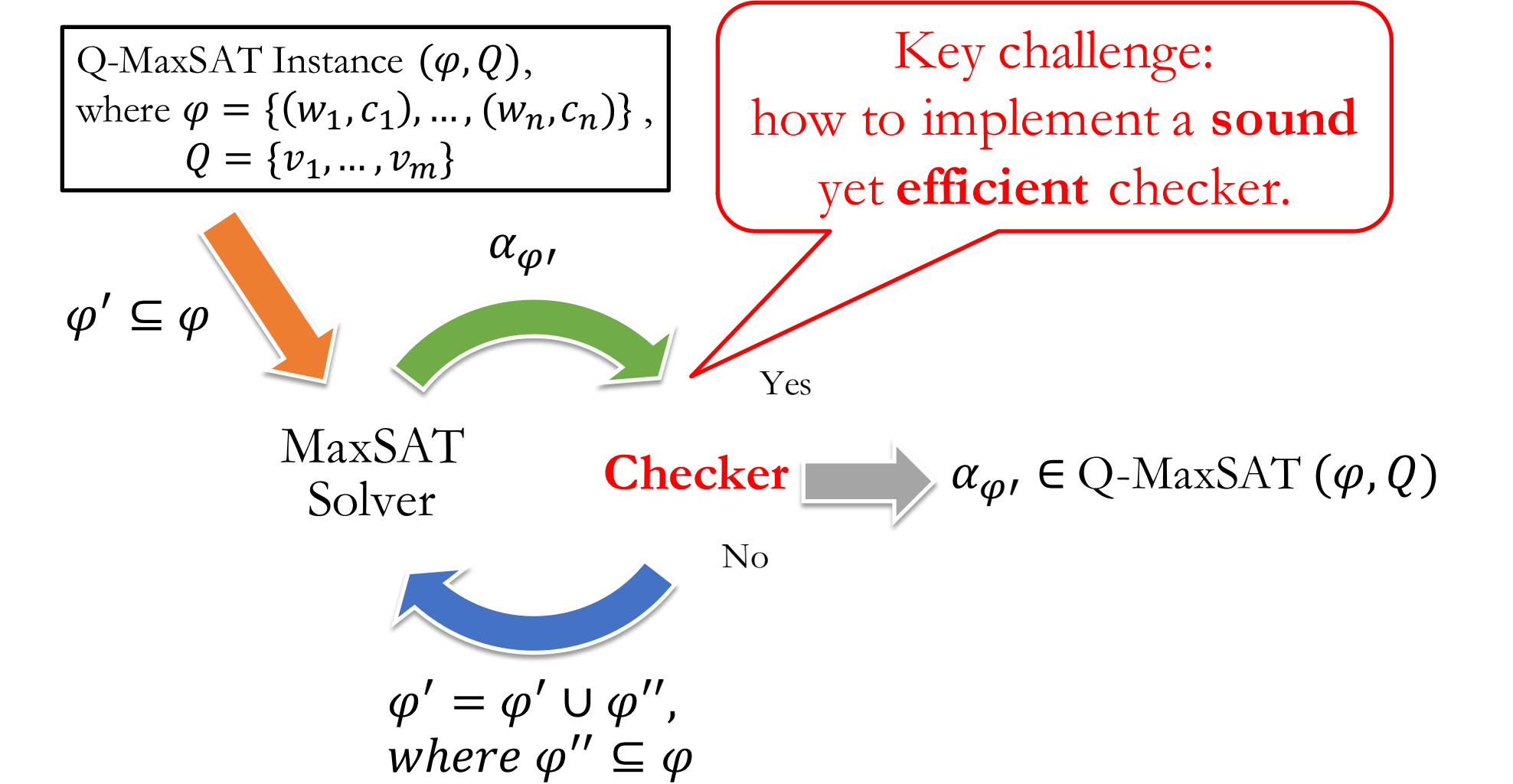


New Challenge: gigantic instances with > 1 million variables and > 10 million clauses.

Query-Guided Maximum Satisfiability



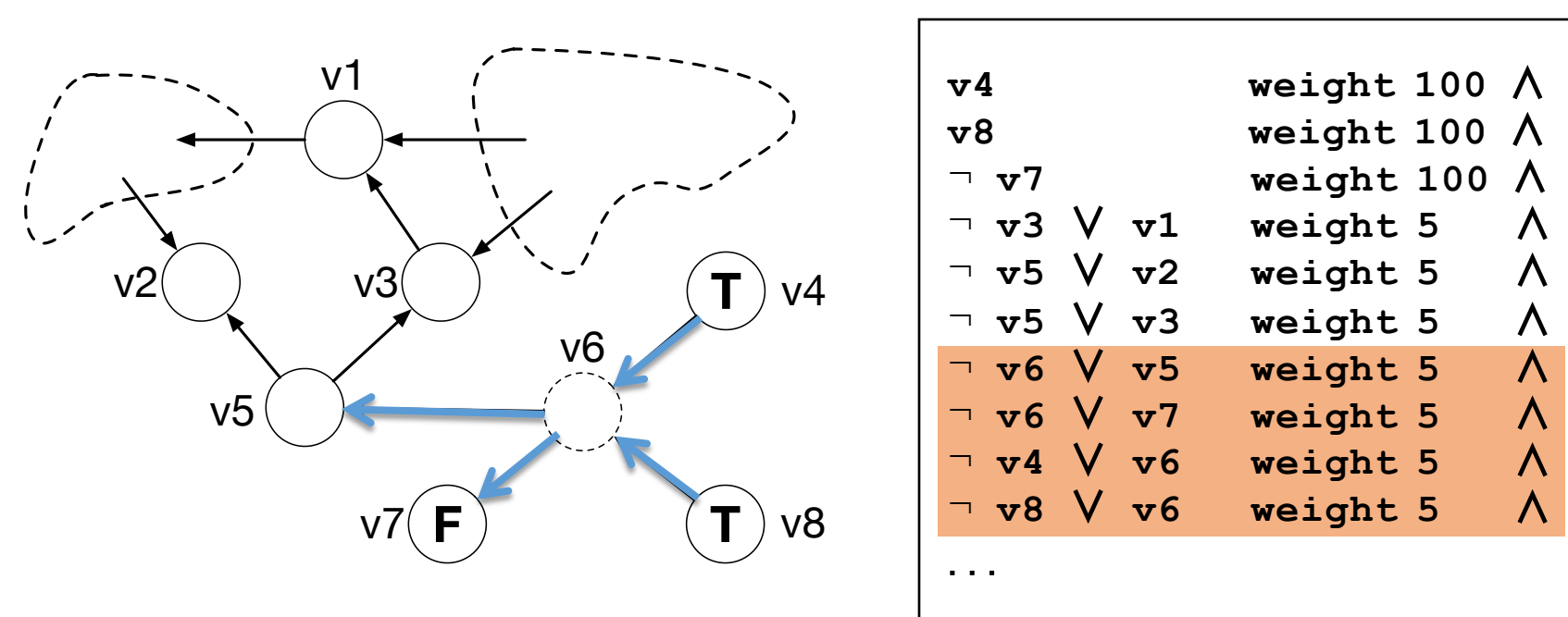
An Iterative Framework



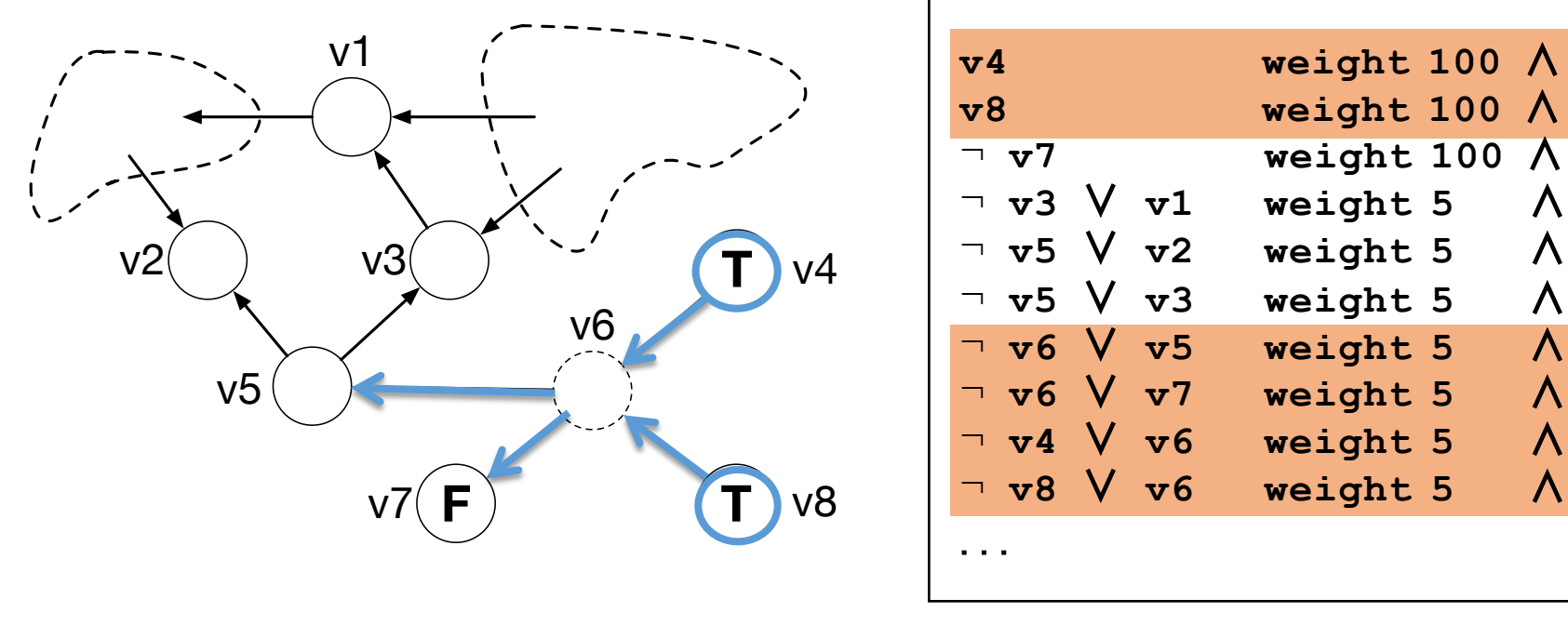
Example

What is the value of v6 in a model of the formula below?

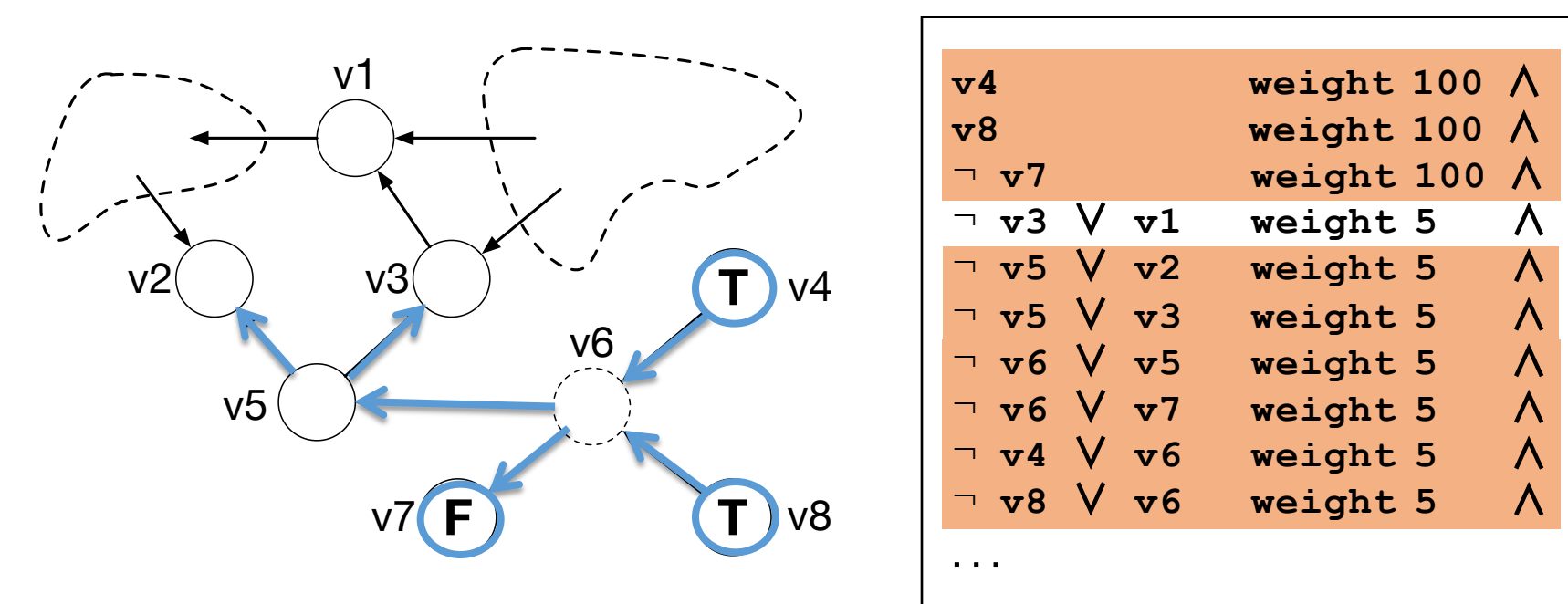
Iteration 1:



Iteration 2:



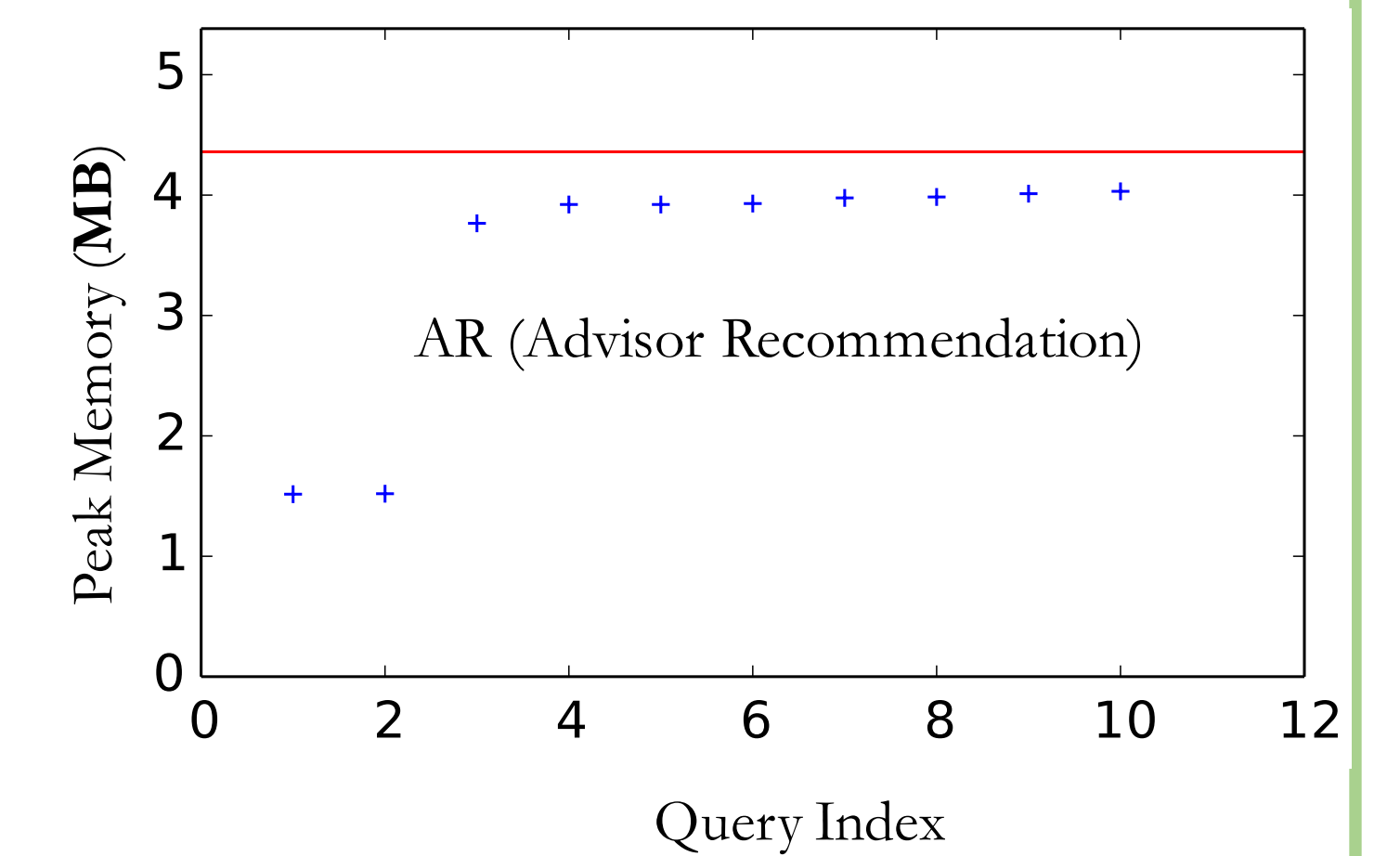
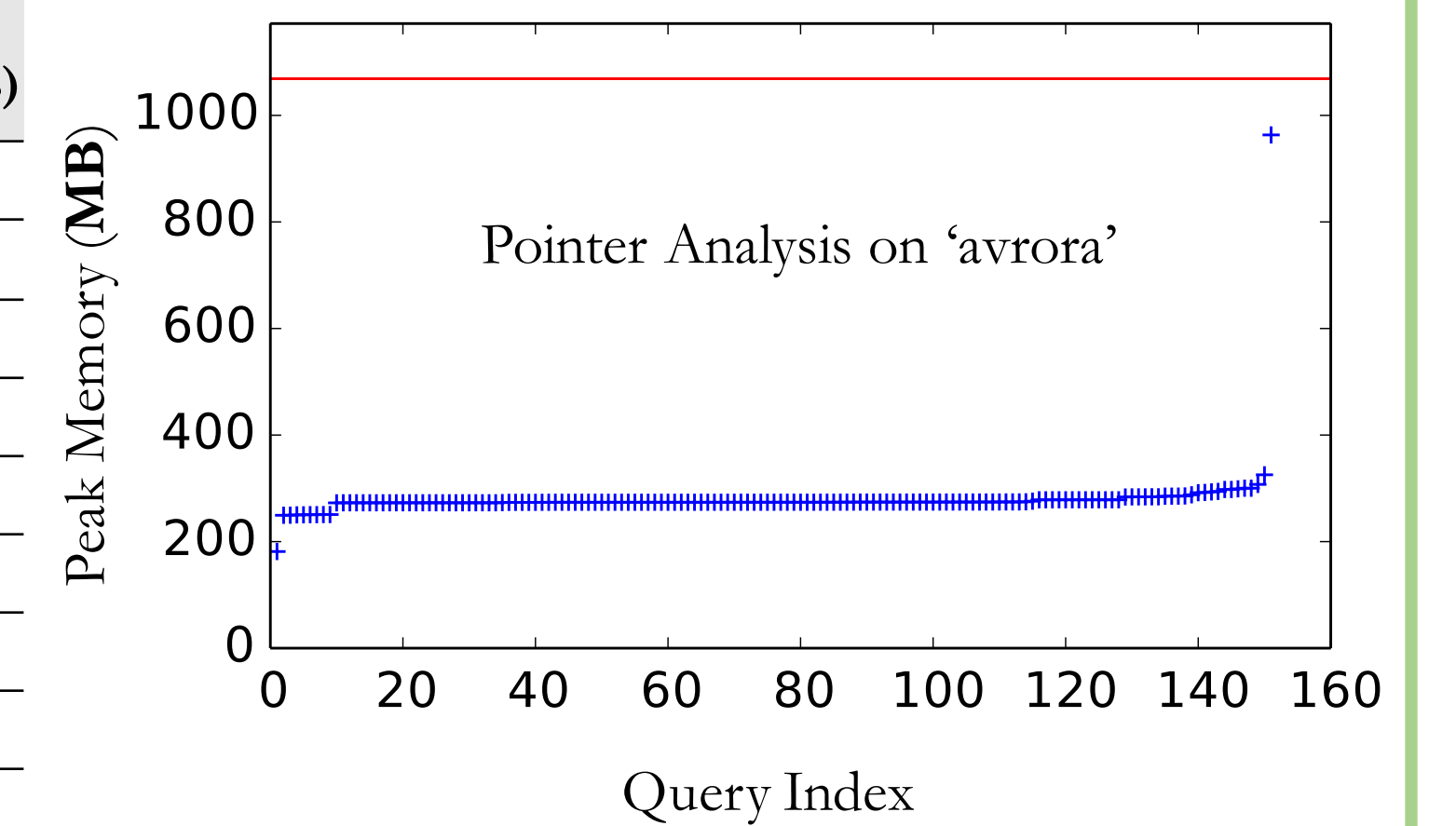
Iteration 3:



Experimental Results

	running time (seconds)		peak memory (MB)		# clauses (M=million)		iterations	last iter. time (seconds)
	Pilot	Baseline	Pilot	Baseline	Pilot	Baseline		
ftp	16	11	16	1,262	0.029M	3M	9	0.1
hedc	23	21	181	1,918	0.4M	4.8M	7	3
weblech	4	timeout	363	timeout	0.9m	8.4M	1	4
antlr	190	timeout	1,405	timeout	3.3M	13M	9	14
avrora	178	timeout	1,095	timeout	2.6M	16.3M	8	13
chart	253	timeout	721	timeout	1.8M	22.3M	6	8
luindex	169	timeout	944	timeout	2.2M	11.9M	8	12
lusearch	115	timeout	659	timeout	1.5M	10.9M	9	8
xalan	646	timeout	1,312	timeout	3.4M	18.7M	8	19
AE	4	timeout	4	timeout	0.002M	7.9M	7	0.3
ER	13	2	6	44	0.009M	4.8M	19	0.2
IE	2	2,760	13	335	0.027M	0.9M	7	0.05

instance	solver (top in MaxSAT'14)	running time (in sec.)		peak memory (in MB)	
		Pilot	Baseline	Pilot	Baseline
pointer analysis	MiFuMaX	178	timeout	1,095	timeout
	CCLS2akms	timeout	timeout	timeout	timeout
	Eva500	2,267	timeout	1,379	timeout
	MaxHS	555	timeout	1,296	timeout
	WPM-2014.co	609	timeout	1,127	timeout
AR	MiFuMaX	4	timeout	4	timeout
	CCLS2akms	148	timeout	13	timeout
	Eva500	21	timeout	2	timeout
	MaxHS	4	timeout	9	timeout
	WPM-2014.co	6	timeout	2	timeout



timeout: runtime > 1 hr. or memory > 3GB