Rating rules / Puzzles. Ordering the rules

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Author	Message
Allan Barker	Posted: Tue Jul 07, 2009 1:30 am Post subject: quote

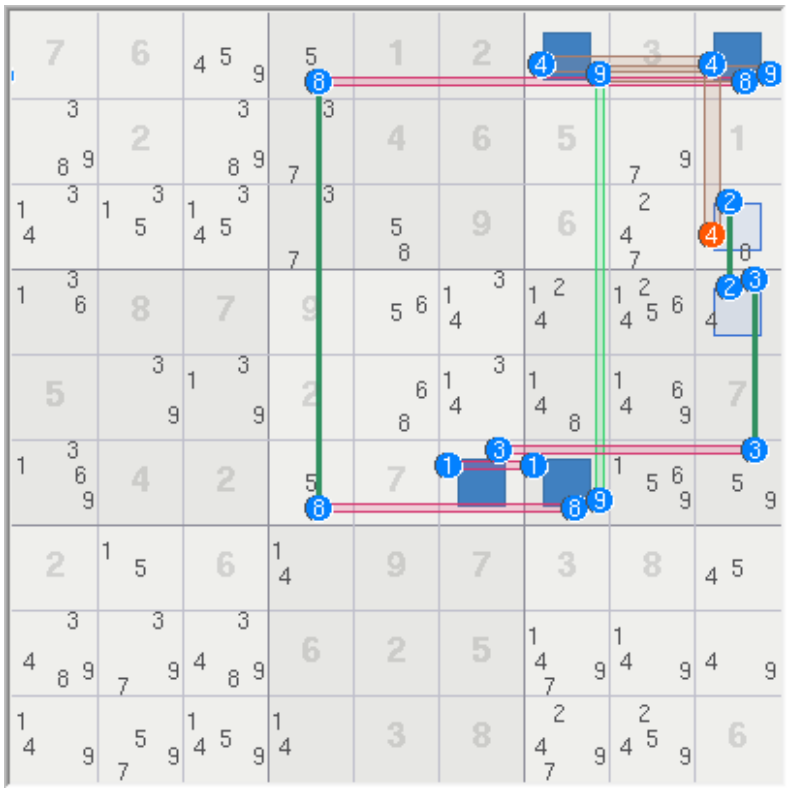
Joined: 21 Feb 2008
Posts: 284
Location: Bangkok

denis_berthier wrote:

> Finally, this definition applies to Paul Isaacson's whips with ALS inserts and to Allan Barker's cover sets (nets, for which we take the sum of the sizes of the "sets", disregarding the sizes of the "linksets"). It therefore allows comparisons of the complexities of the solutions obtained with the corresponding patterns.

A better way to describe cover sets might be *cover sets, which are able to represent most any logic including nets*. The reason being that cover sets have neither implications nor directionality, which are both integral to nets. If anything though, this only enhances your main point.

An example of what they can represent would be the class of multi insert ALS/AHS whips. The example below would be a 2 ALS whip, with ALS in rows 1,6 and a left linking connection in column 7 from 9r6c7 --> 9r1c7. Note that left linked candidates can be present either outside or inside an ALS, in which case the ALS insertion is actually an AALS.



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denis_berthier

Posted: Tue Jul 07, 2009 2:53 am Post subject: quote edit

Joined: 19 Jun 2007
Posts: 663
Location: Paris, France

ronk wrote:

> **denis_berthier wrote:**
>
> > E.g. r <-> n super-symmetry changes LS to HS.
> > ...
> > There was something imprecise in my post.
> > I corrected it.
> > ...
> > Notice that, for complementarity and symmetry reasons, an ALS(5) or an AHS(5) are counted as a LS(4), an ALS(6) or an AHS(6) as a LS(3) ...
> > ...
> > Does this answer your question?
>
> It appears your "complementarity" differs from the traditional complementary LS-HS relationship, so it really doesn't matter.

"My" complementarity is the most classical and obvious and the only consistent one: HS(5) = NS(4), NS(5) = HS(4), NS(6) = HS(3) ...
Supersymmetry adds that ,e.g., HS(4), NS(4) and SHS(4) (Jellyfish) have the same complexity.
I now extend all this to ALS, AHS,A-Fish, A*LS, A*HS, A*-Fish, just by "forgetting" the additional candidates/places.

Last edited by denis_berthier on Tue Jul 07, 2009 6:11 am; edited 1 time in total

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denis_berthier

Posted: Tue Jul 07, 2009 4:47 am Post subject: quote edit

Joined: 19 Jun 2007
Posts: 663
Location: Paris, France

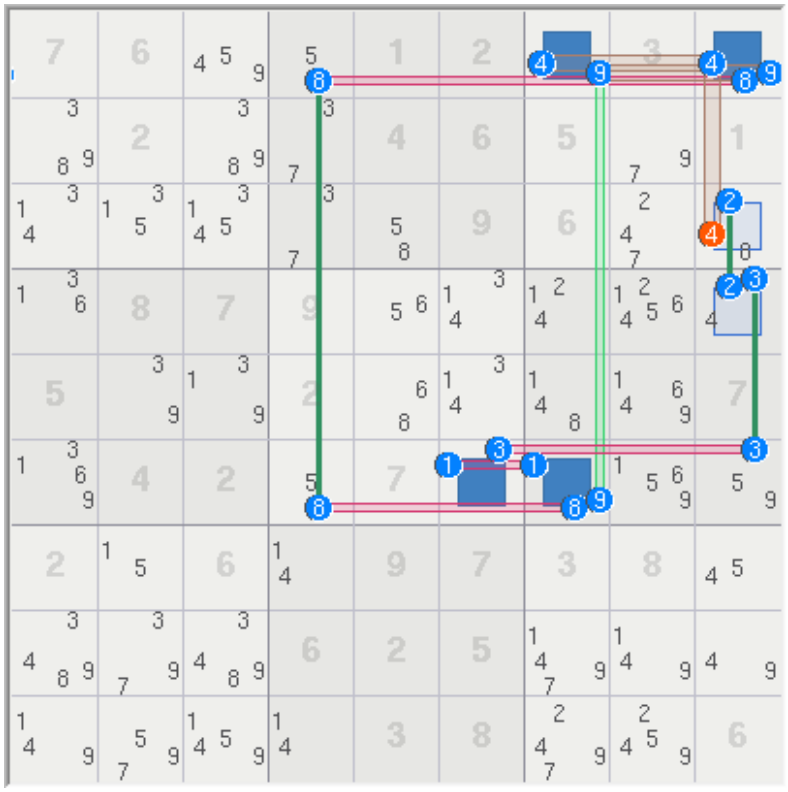
Allan Barker wrote:

> **denis_berthier wrote:**
>
> > Finally, this definition applies to Paul Isaacson's whips with ALS inserts and to Allan Barker's cover sets (nets, for which we take the sum of the sizes of the "sets", disregarding the sizes of the "linksets"). It therefore allows comparisons of the complexities of the solutions obtained with the corresponding patterns.
>
> A better way to describe cover sets might be *cover sets, which are able to represent most any logic including nets*. The reason being that cover sets have neither implications nor directionality, which are both integral to nets. If anything though, this only enhances your main point.

I didn't mean nets in the polemical sense it has got here. I meant something like fishermen nets or networks of relations.
Would it be easy to introduce my defintion of length in your solver and to rate with it your solutions of, say, the first 10,000 puzzles in sudogen0?

Allan Barker wrote:

> An example of what they can represent would be the class of multi insert ALS/AHS whips. The example below would be a 2 ALS whip, with ALS in rows 1,6 and a left linking connection in column 7 from 9r6c7 --> 9r1c7. Note that left linked candidates can be present either outside or inside an ALS, in which case the ALS insertion is actually an AALS.



Yes, good example.
Edited: As I am not yet used to using whips(ALS), there was an error in my whip(ALS) interpretation. I was looking for a whip with 2 ALS inserts, but there is a much simpler ordinary braid:
nrczt-braid-cn[8] r1c7{n4 n9} - r1c9{n9 n8 n4*} - r1c4{n8 n5} - r6c4{n5 n8} -

r6c7{n8 n1 n9#1} - r6c6{n1 n3} -- n2c9{r3 r4} - n3c9{r4 . r6#6} => r3c9 <> 4
(The double "--" indicates that the cell following it is not nrc-linked to that preceding it, as it would in a whip. Here, it is nrc-linked to the target)
This example shows how braids can express some kinds of networks that whips can't.

PS: I'm running the first 10,000 puzzles in your collection.

Last edited by denis_berthier on Wed Jul 08, 2009 4:32 am; edited 2 times in total

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denis_berthier

Posted: Tue Jul 07, 2009 6:10 am Post subject:

quote edit

Joined: 19 Jun 2007
Posts: 663
Location: Paris, France

Red Ed,
Thanks for suexg14.

All,
The above discussion shows that it'd be interesting to make some systematic comparisons of the rating results obtained with several (supposedly unbiased) *generators of minimal puzzles*.
It may also be useful to refocus the discussions on the topic of rating. We've been talking a lot of generators and it was useful to explore a few possibilties of bias in generators, but I think we can now concentrate again on rating.

The generators I'd like to take into account in the future explorations are:
either top-down:
- the version x.x of suexg I used for generating sudogen0_1M (does anyone know the value of x.x?),
- Allan's generator ...

or bottom-up:
- suexg14,
- Mike's bottom-up generator ...

In my POV, other (supposedly unbiased) generators (e.g. gsf) could usefully be considered if 3 (+ 1) conditions are satisfied:
- we have a clear natural language description of how they work,
- a large collection (~ 100,000 or 1,000,000) of puzzles becomes available,
- they are sufficiently different from the above 4,
- (we have the source code).

Some of the data I'd like to compare are:
- the mean number of clues (or the distribution of clues)
- the mean SER (or the SER distribution)
- the mean NRCZT-rating (or NRCZT distribution)

- the correlation SER vs NRCZT-rating (but it already seems clear that it is a very stable result: 0.895)
- the correlation NRCZT-rating vs #chains (same remark: ~ 0.95)
- the correlation #clues vs SER (same remark: ~ 0.1)
- the correlation #clues vs NRCZT (same remark: ~ 0.1)

- the existence of a trend #clues vs mean SER or NRCZT (it is not yet known if

the trend that appears in some generators is real).

- the autocorrelation functions (but it seems clear to me now that they will be null for all the generators, as I've checked for sudogen0_1M: the current RNGs are now well mastered, they have null autocorrelation and their period is so large that we'd be very far from reaching it even if we used as many as 10,000,000,000 random numbers to generate 1,000,000 puzzles).

- the extension of the NRCZT-rating to ALS-chains, zt-whips(ALS) and Allan's cover sets.

Some of the general questions I'd like to explore are:
- is there a clear difference between the bottom-up vs top-down generators?
- why do we never get puzzles with SER > 9.3 ? (and why are the 9.3 so rare?). What's so special with SER ~ 9.3?
- why can all the puzzles we get with generators be solved with ordinary T&E(NS+HS) (no recursion)? Are the other puzzles so rare (fewer than 1 in a million)?
- and, last but not least, which classification results remain true for all the genrators?

Of course, I'll put all the results on my web pages as soon as they become available, as for sudogen0_1M.

Well, that's what I'd like to do, with the participation of anyone willing to. Not sure I'll have time to do a large part of it.

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m_b_metcalf

Posted: Tue Jul 07, 2009 6:22 am Post subject: quote

Joined: 15 May 2006
Posts: 2182
Location: Berlin

> **denis_berthier wrote:**
>
> Well, that's what I'd like to do, with the participation of anyone willing to. Not sure I'll have time to do a large part of it.

Denis. I'm happy to give my bottom-up generator another spin to get you above 100000 puzzles. A second file can simply be appended to the first (the program starts always with a different seed).

In the Patterns Game 9.3 is about as frequent as 9.0 - 9.2.

Regards,

Mike Metcalf

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denis_berthier

Posted: Tue Jul 07, 2009 6:36 am Post subject: quote edit

Joined: 19 Jun 2007
Posts: 663
Location: Paris, France

> **m_b_metcalf wrote:**
>
> > **denis_berthier wrote:**

> Well, that's what I'd like to do, with the participation of anyone willing to. Not sure I'll have time to do a large part of it.

Denis. I'm happy to give my bottom-up generator another spin to get you above 100000 puzzles. A second file can simply be appended to the first (the program starts always with a different seed).

100,000 was just an order of magnitude, not an absolute value.
You mean you can't specify the seed?
Would it be impossible to reproduce the same sequence if you wanted to?

> **m_b_metcalf wrote:**
>
> In the Patterns Game 9.3 is about as frequent as 9.0 - 9.2.

I've heard of this game. But are the puzzles generated by programs?
At first, it seemed very strange to me that humans can generate extreme puzzles more easily than computers.
But consider the EasterMonster family. Some of its puzzles are hard (in part) because of their very special symmetry. But this symmetry in the distribution of clues is extremely unlikely to be found randomly (it shouldn't be too difficult to compute its probability precisely).
Isn't there something of the same nature in all the extreme puzzles we know?
Humans seem to be very clever at finding special cases.

Regards

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m_b_metcalf

Joined: 15 May 2006
Posts: 2182
Location: Berlin

Posted: Tue Jul 07, 2009 7:01 am Post subject:

> **denis_berthier wrote:**
>
> You mean you can't specify the seed?
> Would it be impossible to reproduce the same sequence if you wanted to?

> **the on-line manual wrote:**
>
> CALL RANDOM_SEED ([size] [, put] [, get])
>
> size
> (Output; optional) Must be scalar and of type integer. Set to the number of integers (N) that the processor uses to hold the value of the seed.
>
> put
> (Input; optional) Must be an integer array of rank one and size greater than or equal to N. It is used to reset the value of the seed.
>
> get
> (Output; optional) Must be an integer array of rank one and size greater than or equal to N. It is set to the current value of the seed.
>
> No more than one argument can be specified. If no argument is specified, a random number based on the date and time is assigned to the seed.

denis_berthier wrote:

> I've heard of this game. But are the puzzles generated by programs? At first, it seemed very strange to me that humans can generate extreme puzzles more easily than computers.

Some brave spirits play 'by hand'. Most of the puzzles are generated by program. One technique is to use a program to vary several clues at a time using an existing (hard) puzzle as a seed. That's how the 9.9 in the current game was found.

Regards,

Mike Metcalf

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denis_berthier

Posted: Tue Jul 07, 2009 7:23 am Post subject: quote edit

Joined: 19 Jun 2007
Posts: 663
Location: Paris, France

m_b_metcalf wrote:

> Some brave spirits play 'by hand'. Most of the puzzles are generated by program. One technique is to use a program to vary several clues at a time using an existing (hard) puzzle as a seed. That's how the 9.9 in the current game was found.

Thanks for the reference. It is a program biased towards high SER, but with some kind of randomness remaining.
It may be useful, wrt to the possible trend, to collect all the known 9.3, 9.4 and so on and to check whether they have more clues in the mean than the puzzles produced by our random generators.

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m_b_metcalf

Posted: Tue Jul 07, 2009 7:30 am Post subject: quote

Joined: 15 May 2006
Posts: 2182
Location: Berlin

denis_berthier wrote:

> It may be useful, wrt to the possible trend, to collect all the known 9.3, 9.4 and so on and to check whether they have more clues in the mean than the puzzles produced by our random generators.

As of Game 14, the ratings have been published in a consistent format. The number of clues is fixed in advance by the Dealer and is in no way random.

Regards,

Mike Metcalf

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ronk

Posted: Tue Jul 07, 2009 12:35 pm Post subject: quote

Joined: 02 Nov 2005
Posts: 2388
Location: Southeastern

denis_berthier wrote:

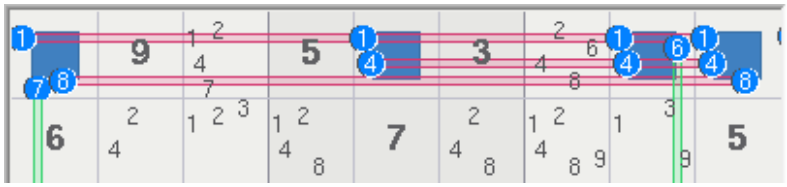
> **ronk wrote:**
>
> > **denis_berthier wrote:**

USA

> Notice that, for complementarity and symmetry reasons, an ALS(5) or an AHS(5) are counted as a LS(4), an ALS(6) or an AHS(6) as a LS(3) ...
> ...
>
> It appears your "complementarity" differs from the traditional complementary LS-HS relationship, so it really doesn't matter.
>
> "My" complementarity is the most classical and obvious and the only consistent one: HS(5) = NS(4), NS(5) = HS(4), NS(6) = HS(3) ...

If we're going to use the smaller strong-set-count ("SSC") of a complementary ALS-AHS pair in ratings analysis when one SSC >= 5, we should do so for smaller SSCs as well.

Here's a very typical ALS -- 4-cells with 5 candidate values:



Here's the smaller **complementary** AHS -- 3 candidate values in 4 cells:

I'm not sure what the **H** and **L** numbers in your AHS(**H**) and ALS(**L**) represented, but I think they should be the SSCs. For the above example, therefore, we have a AHS(3) and an ALS(4). I make these two observations:

1) **H** < **L**, so **H** = 3 should be used in ratings analysis IMO, and
2) Letting **F** equal the the number of fills in r1 (in general, a row, column, or box) the sum **F + H + L** = 10, not 9.

> **denis_berthier wrote:**
>
> Supersymmetry adds that ,e.g., HS(4), NS(4) and SHS(4) (Jellyfish) have the same complexity.
>
> I now extend all this to ALS, AHS,A-Fish, A*LS, A*HS, A*-Fish, just by "forgetting" the additional candidates/places.

No argument there, but I see this all, i.e., the rating, as using the minimum count of strong sets, which makes me question why ...

> **to Allan Barker, denis_berthier wrote:**
>
> Yes, good example. In complete nrczt notation, the corresponding whip(ALS) has length 9 ...

... when Allan's illustration shows 7 strong sets.

> **Quote:**

> zt-whip(ALS)[9] r1{n4c9 NT({n5 n8 n9}{c4 c8 c9}) n4c7*} - r6{n8c4 NQ({n1 n3 n5 n8}{c4 c6 c7 c9}) n9r6c7#1 n9r6c9#1} - r4c9{n3 n2 n4*} - r3c9{n2 . n4*} => r3c7 <> 4

Ouch

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denis_berthier

Posted: Tue Jul 07, 2009 12:52 pm Post subject: quote edit

Joined: 19 Jun 2007
Posts: 663
Location: Paris, France

Ronk,
I'm not talking of the complements of ALS or AHS, but of the usual complements of Naked or Hidden Subsets.
In my example: 3 + 4 + 1 + 1 = 9

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ronk

Posted: Tue Jul 07, 2009 2:21 pm Post subject: quote

Joined: 02 Nov 2005
Posts: 2388
Location: Southeastern USA

denis_berthier wrote:

> I'm not talking of the complements of ALS or AHS, but of the usual complements of Naked or Hidden Subsets.

So much then for your recent claim to consistency IMO.

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denis_berthier

Posted: Tue Jul 07, 2009 2:40 pm Post subject: quote edit

Joined: 19 Jun 2007
Posts: 663
Location: Paris, France

ronk wrote:

> **denis_berthier wrote:**
>
> > I'm not talking of the complements of ALS or AHS, but of the usual complements of Naked or Hidden Subsets.
>
> So much then for your recent claim to consistency IMO.

I don't see how your failure to understand such things as:
- complementarity of Naked/Hidden Subsets
- supersymmetry
- considering right-linking objects which are mere Naked or Hidden Subsets modulo the target and the previous right-linking candidates
can be related to my consistency.

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Allan Barker

Posted: Tue Jul 07, 2009 3:08 pm Post subject: quote

Joined: 21 Feb 2008
Posts: 284
Location: Bangkok

denis_berthier wrote:

> Would it be easy to introduce my defintion of length in your solver and to rate with it your solutions of, say, the first 10,000 puzzles in sudogen0?

Yes, it might not be very difficult. I'm working on the solver now off and on, let me take a closer look at the specifics of how you define various lengths. For the

most part it seems based on truths/strong-links will little emphasis on the links, I do something similar.

> **denis_berthier wrote:**
> PS: I'm running the first 10,000 puzzles in your collection.

I would be very happy to see any feedback.

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denis_berthier

Posted: Tue Jul 07, 2009 3:11 pm Post subject: quote edit

Joined: 19 Jun 2007
Posts: 663
Location: Paris, France

> **Allan Barker wrote:**
> > **denis_berthier wrote:**
> > PS: I'm running the first 10,000 puzzles in your collection.
> >
> > I would be very happy to see any feedback.

May be tomorrow for the first results.

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