

# RESOLUTION IN REGISTRATION

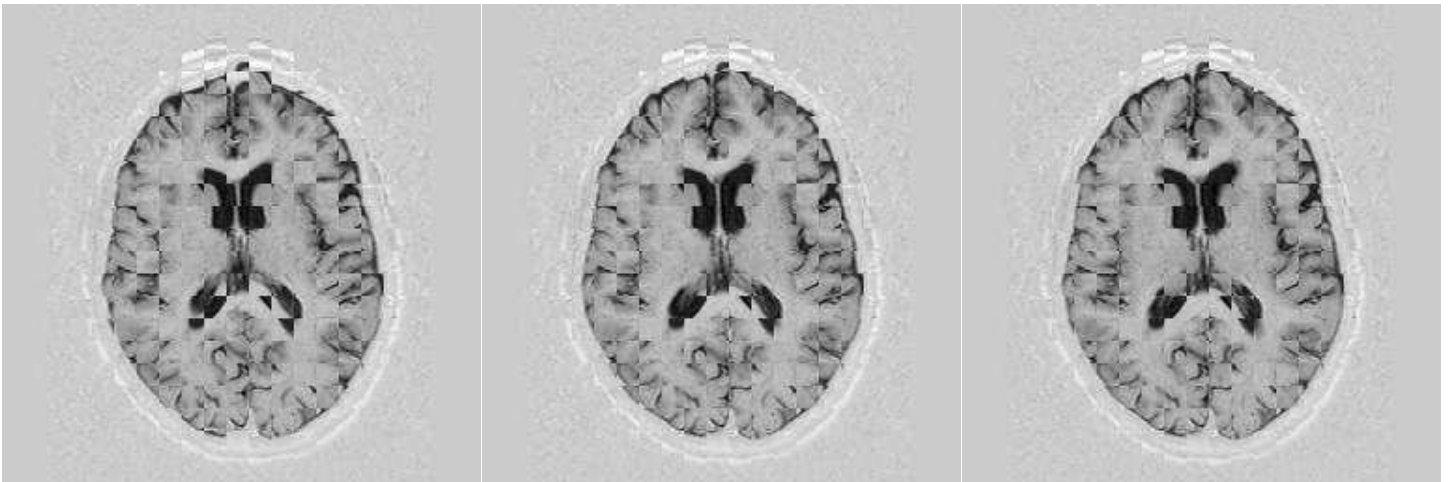
11th December 2004

*The following is a round-up of experiments that investigate resolution and its effect on 3-D registration.*

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## Experiment 20112004-5

This was the earliest experiment that studied the effects of pyramiding. Here are the results:

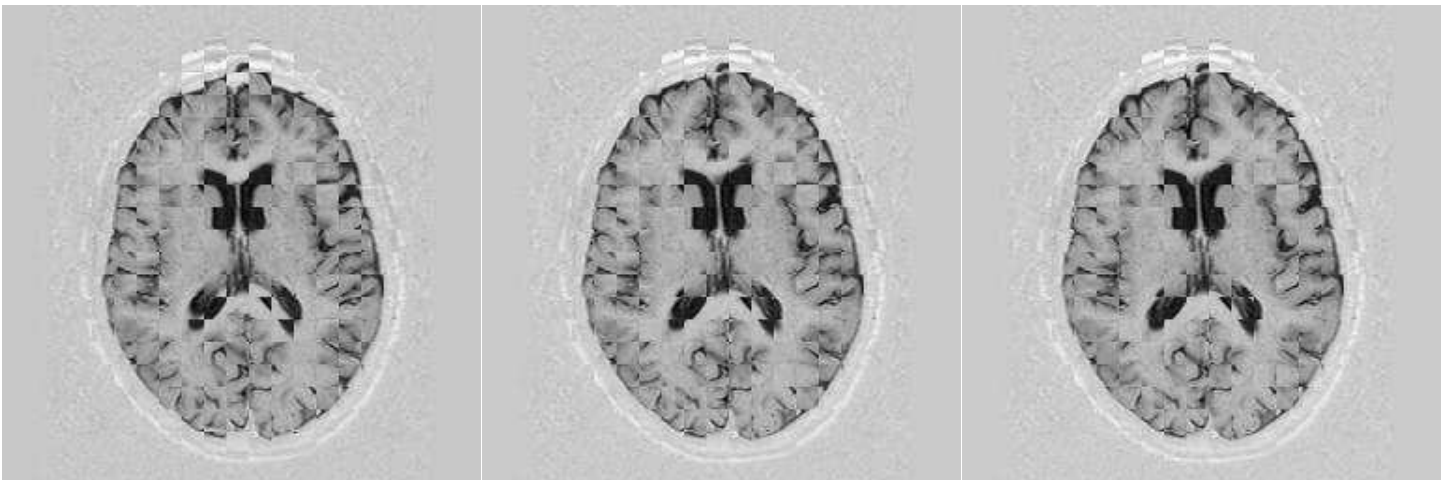


**from left to right:** before NRR; after 5 iterations of NRR at level 2; after another 5 iterations of NRR at level 1.

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## Experiment 21112004-6

This later experiment took a different pair and applied a more intensive rigid and affine alignment. The following shows NRR stages.

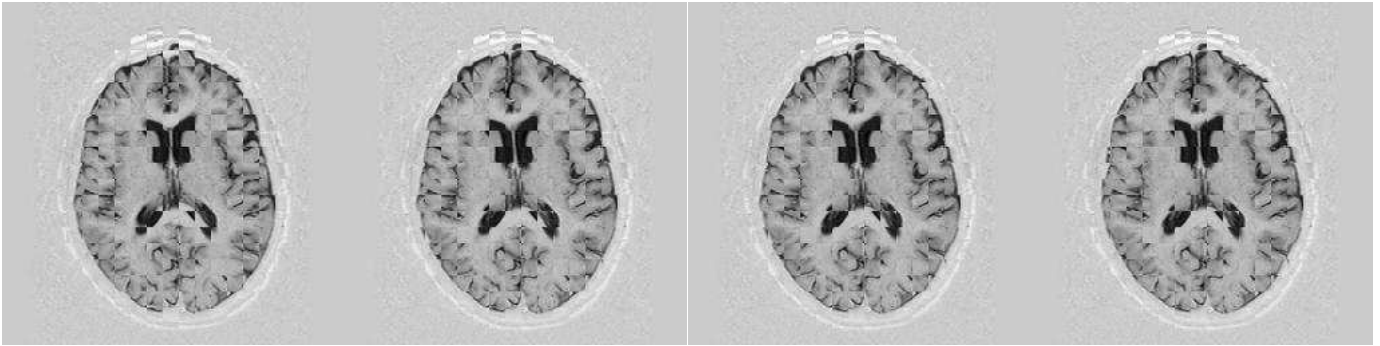


**from left to right:** before NRR; after 5 iterations of NRR at level 2; after another 5 iterations of NRR at level 1.

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**Experiment 22112004-1**

10 iterations in level 2, then 2 iterations at level 1, and 1 iteration at the finest level.

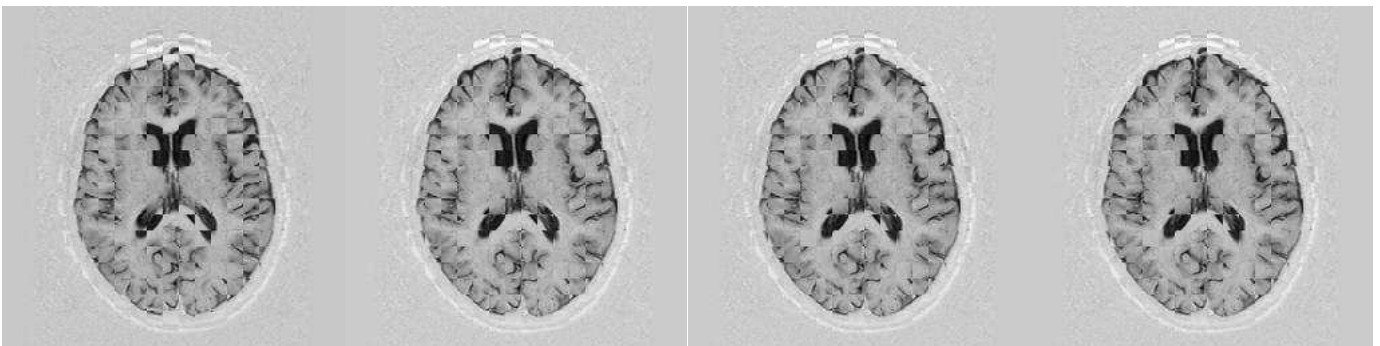


**from left to right:** before NRR; after 10 iterations of NRR at level 2; after another 2 iterations of NRR at level 1; after 1 iteration at level 0.

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**Experiment 22112004-2**

10 iterations in level 2, 6 iterations at level 1, and 6 at level 0.

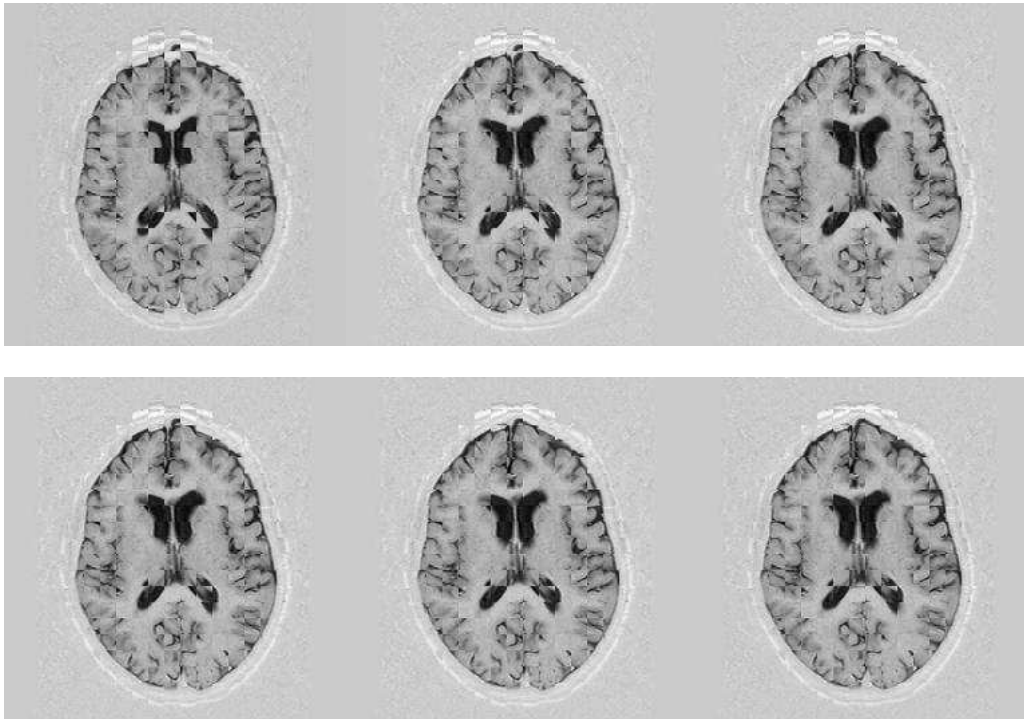


**from left to right:** before NRR; after 10 iterations of NRR at level 2; after another 6 iterations of NRR at level 1; after 6 iterations at level 0.

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### Experiment 25112004-2

A longer optimisation that shows results of changing resolution and number of knot-points. There is a gradual increase in the number of knot-points (+1 at each stage) and a change from level 2 to level 1 between the second and third images below.

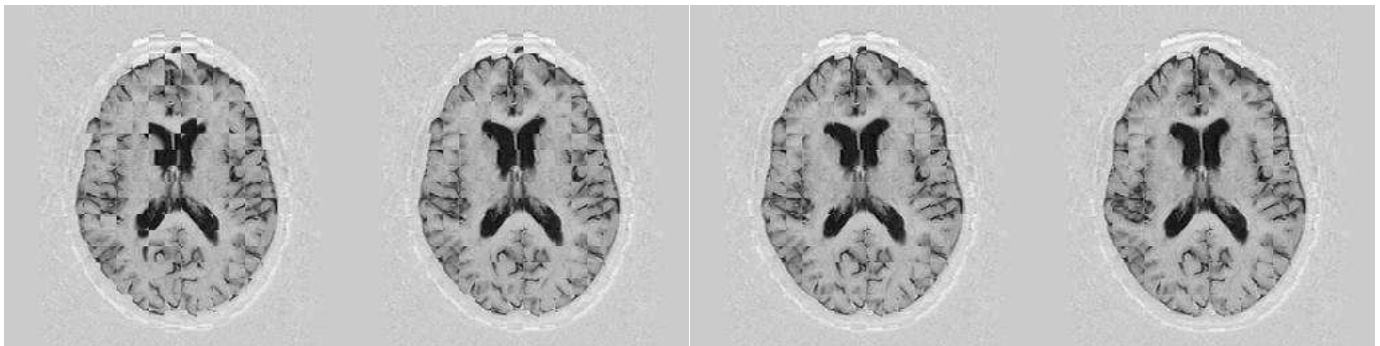


Before NRR (top left) and during NRR.

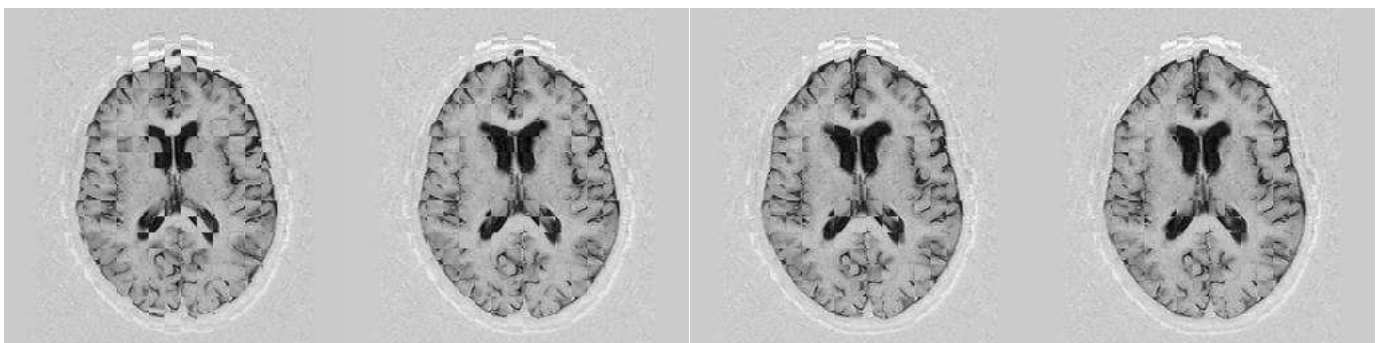
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### Experiments 26112004-3 and 26112004-4

Long optimisations that change both the number of knot-points and the resolution.



**From left to right:** before NRR; after NRR, level 2, 4 knot-points; after NRR, level 1, 5 knot-points; after NRR, level 0, 10 knot-points. All stages comprise 10 iterations each.

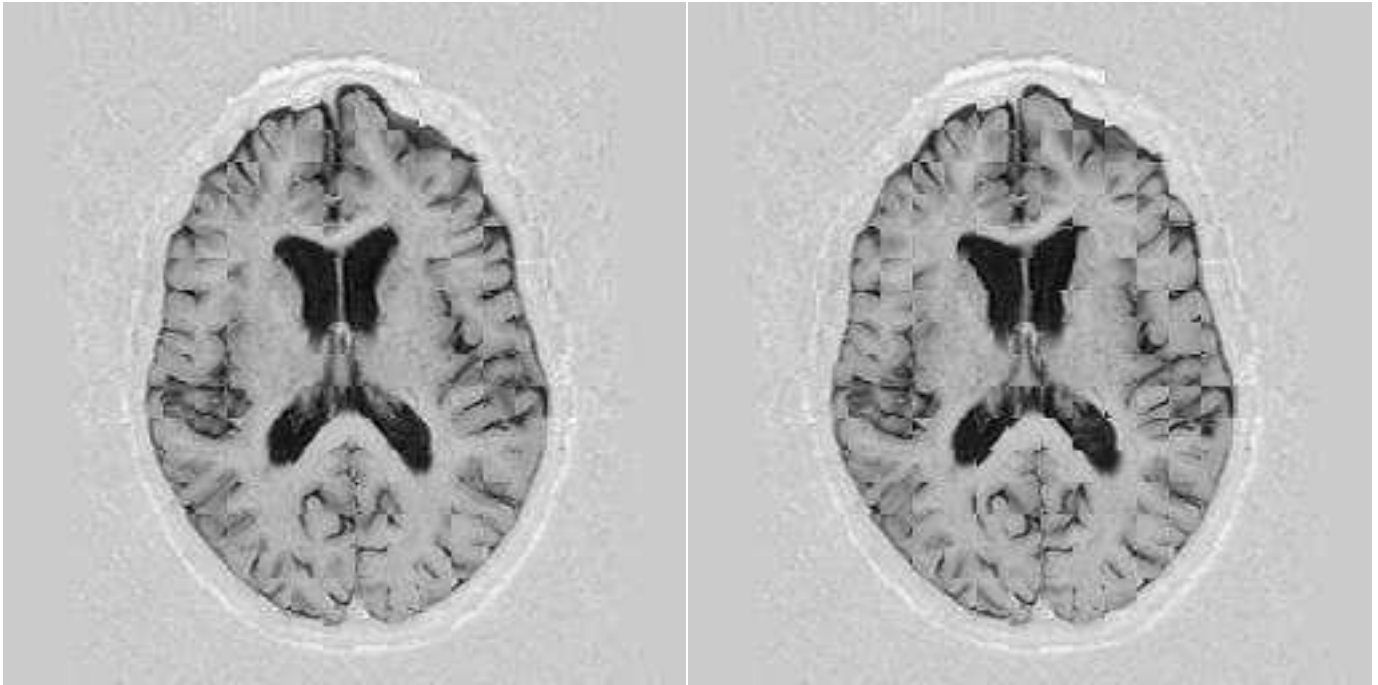


As above, for a different pair.

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**Experiments 28112004-1 and 28112004-2**

This was an important comparison between large registrations. Up to 20 *knot-points* in each of the 3 dimensions were picked.



**On the left:** all at level 1; **On the right:** all at level 2.

There is a clear difference in quality, in favour of the left.