PROJET DE VIDEO-CLIP SUR L'HYPERCUBE

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à suivre →

Ces 73 dessins, réalisés à l'aide d'un micro-ordinateur Canon X-07 équipé d'un traceur X-710, sont extraits d'un scénario de vidéo-clip sur l'Hypercube.

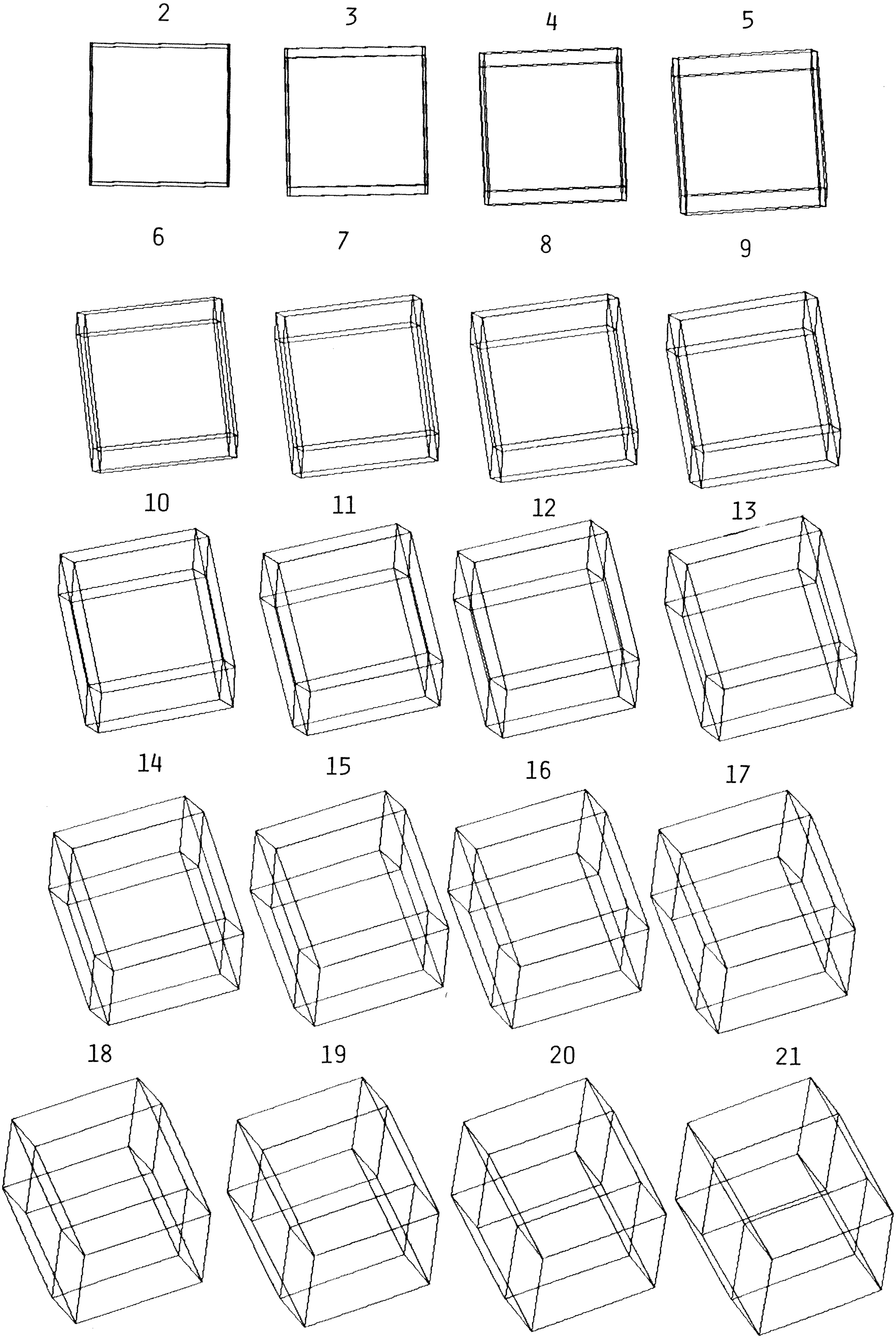
L'hypercube est le polyèdre ayant pour sommets les 16 points (± 1, ± 1, ± 1, ± 1) dans l'espace euclidien R^4. Il possède 32 arêtes, 24 faces (des carrés) et 8 hyper-faces (des cubes). Le graphe des arêtes de l'hypercube a la propriété remarquable d'être eulérien : on peut le parcourir d'une façon continue sans repasser deux fois par la même arête. Cette propriété a été exploitée dans le programme de tracé.

Pour déformer l'hypercube, on lui applique une famille continue (R_t) d'éléments de SO(4) avec $R_0 = Id$. Les images sont obtenues par projection orthogonale sur le plan x0y.

Notez la symétrie octogonale obtenue dans l'image n° 37. Le dessin fait apparaître un octogone régulier à l'intérieur duquel se trouve un octagramme (ce qui s'obtient en joignant de trois en trois les sommets d'un octogone régulier), ainsi que huit carrés s'appuyant chacun sur l'un des côtés de l'octogone et l'un des côtés de l'octogramme. Cette figure se trouve par exemple dans le livre de H.S.M. COXETER : "*An introduction to geometry*", p. 401.

Le vidéo-clip (en cours de réalisation) sera accompagné, en son quadriphonique de la célèbre composition des quatre ex-Beatles : "*Across the Four-dimensional Universe*".

En attendant, l'Ouvert vous propose de découper avec soin les 73 dessins puis de les agrafer après les avoir empilés dans le bon ordre. En les faisant alors défiler le plus régulièrement possible, vous verrez s'animer l'Hypercube.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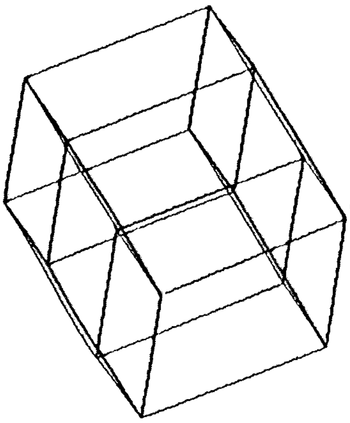

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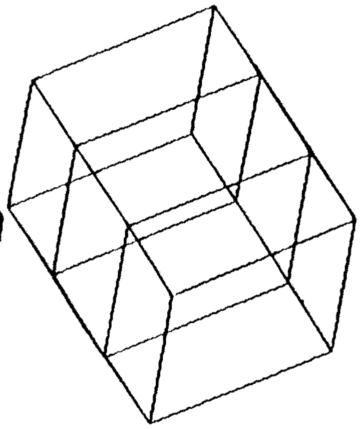

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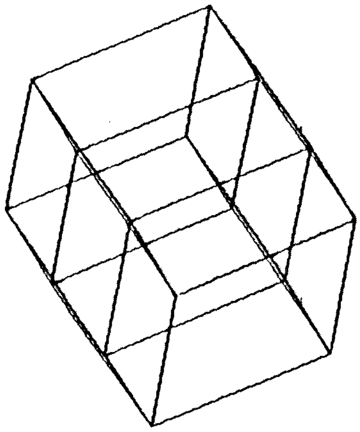

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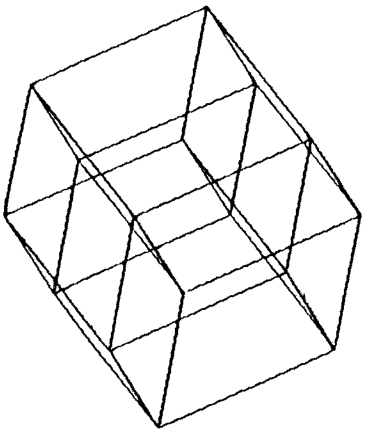

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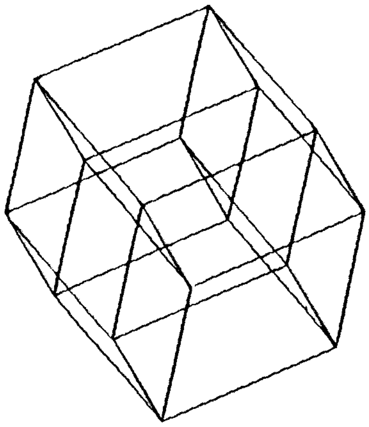

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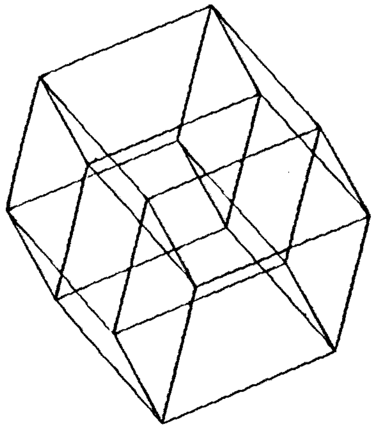

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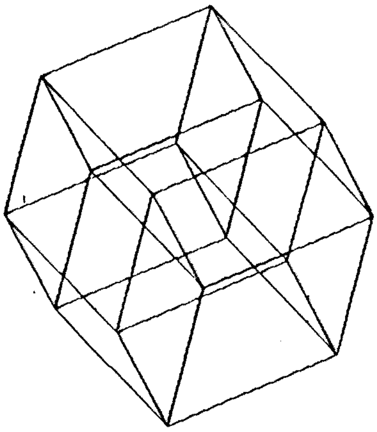

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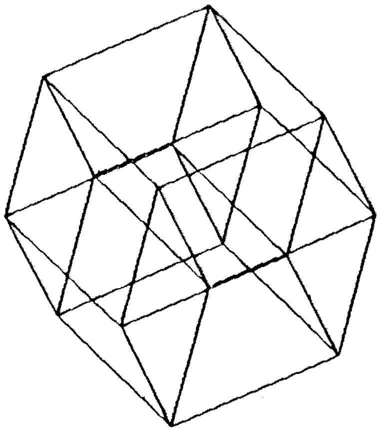

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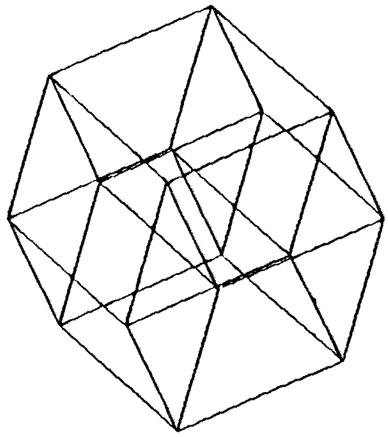

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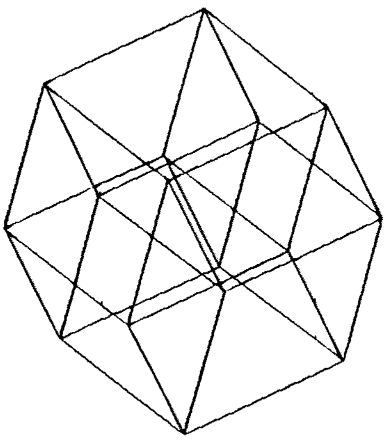

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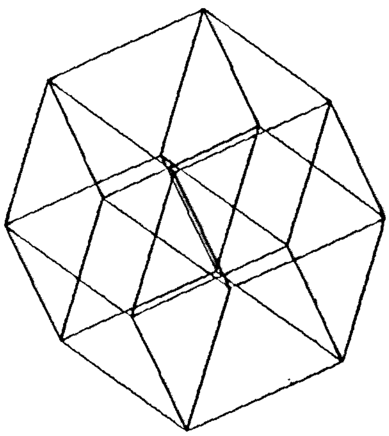

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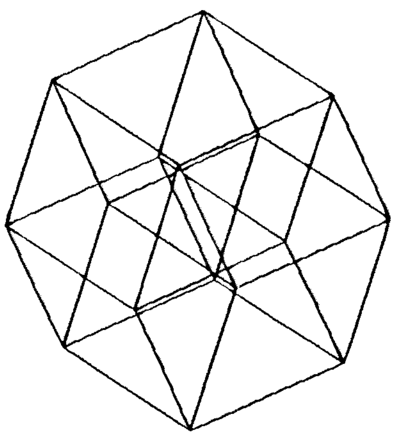

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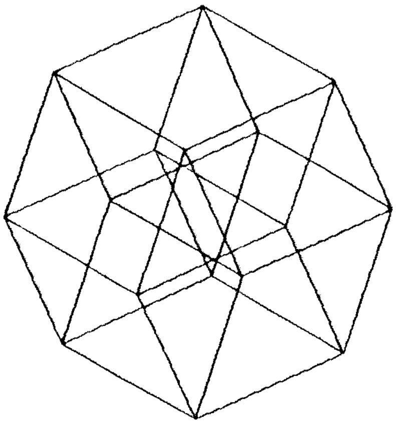

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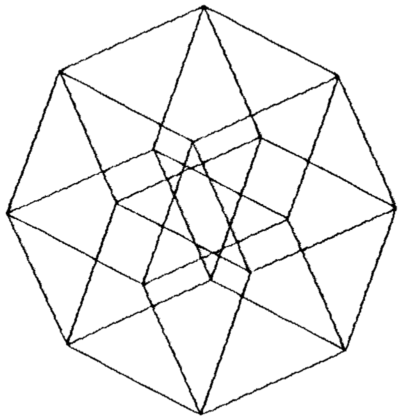

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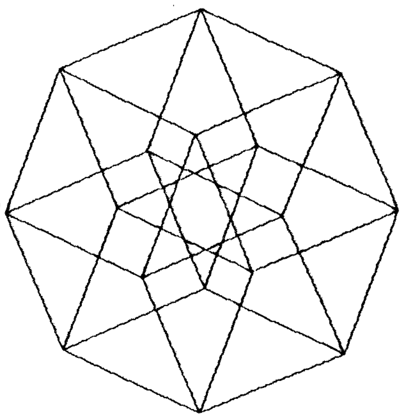

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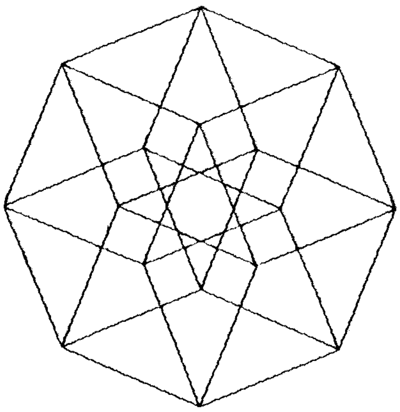

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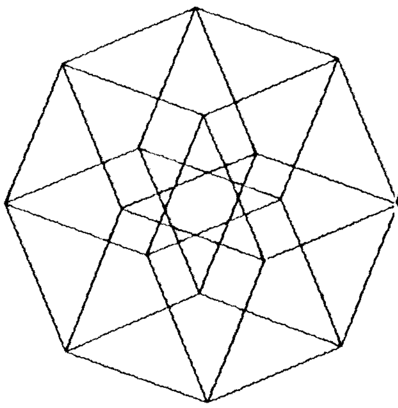

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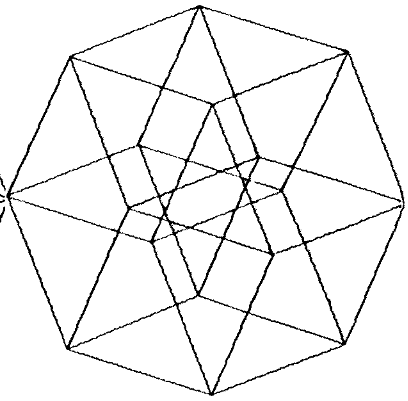

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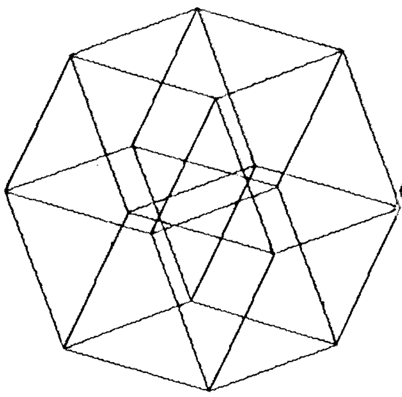

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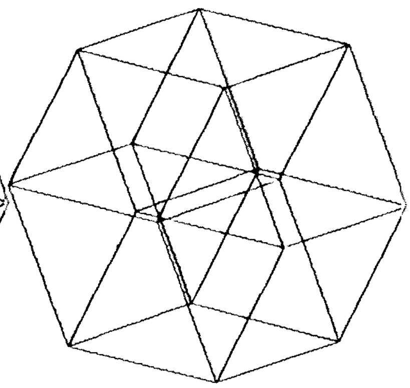

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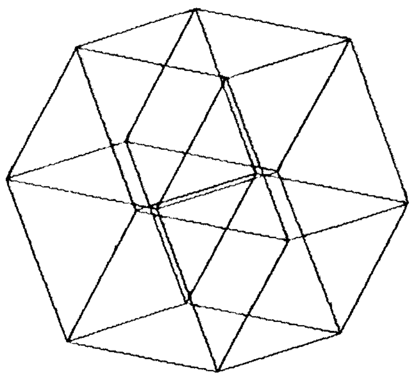

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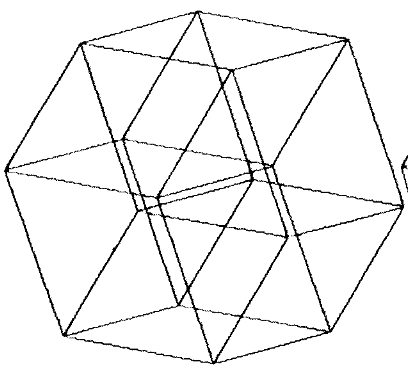

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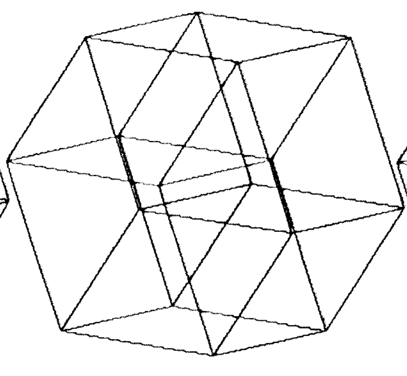

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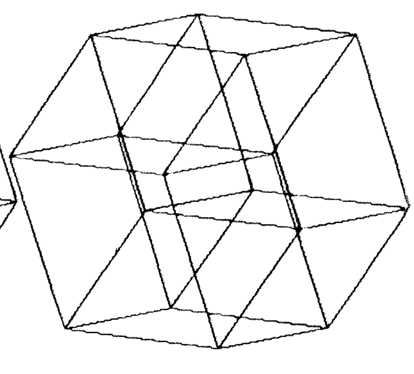

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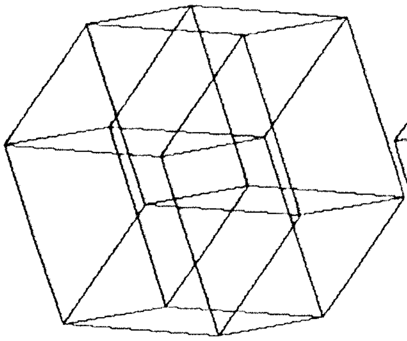

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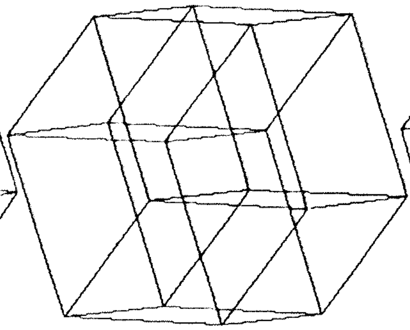

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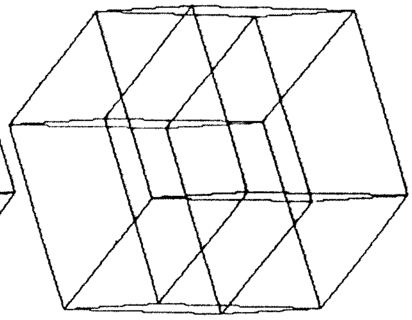

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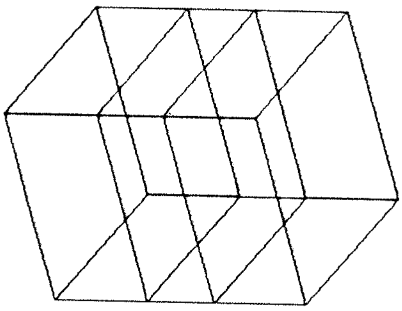

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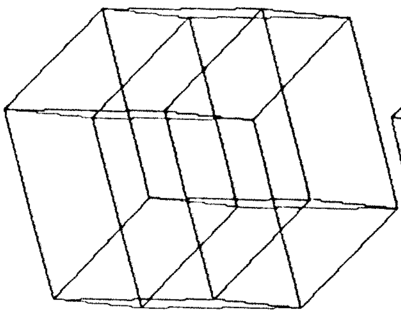

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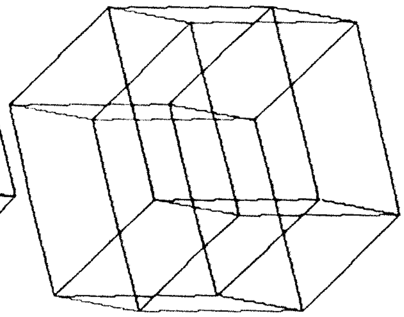

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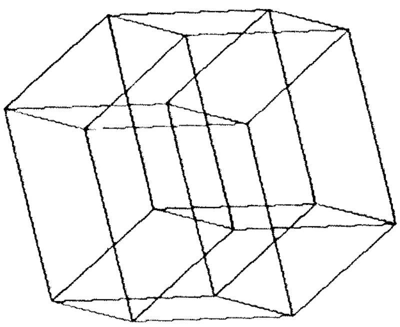

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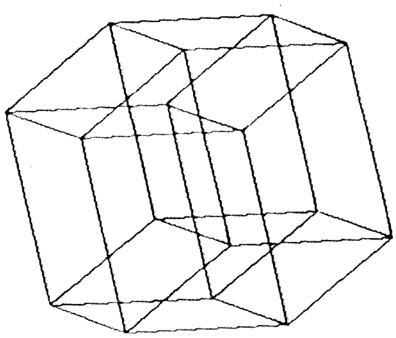

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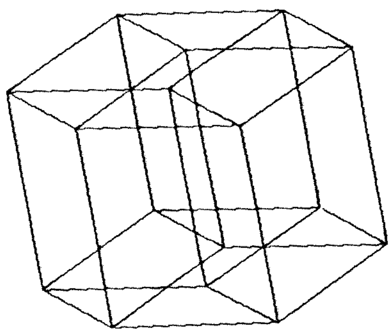

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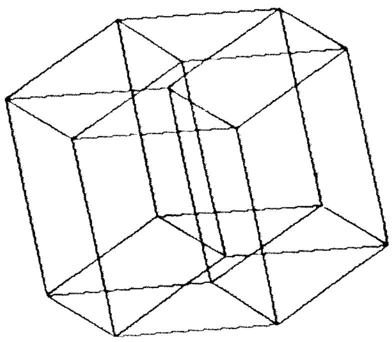

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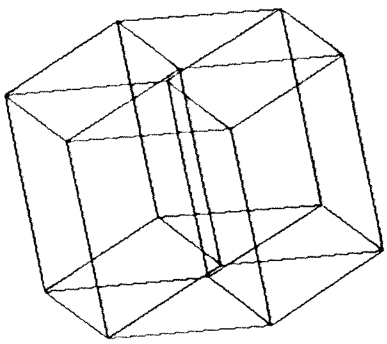

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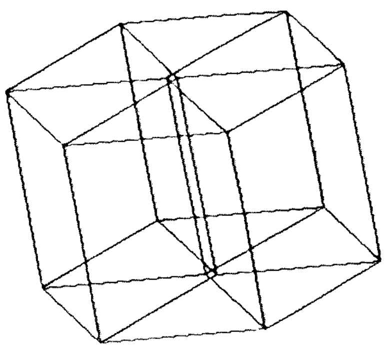

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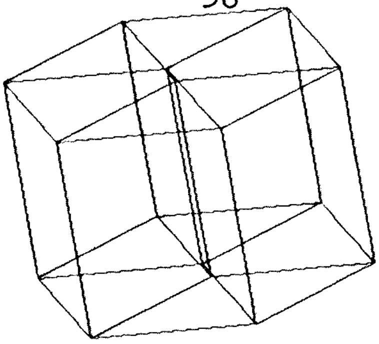

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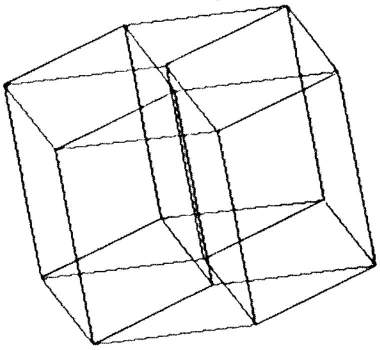

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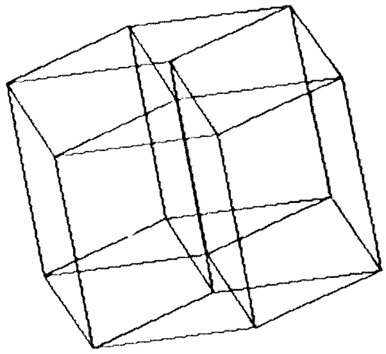

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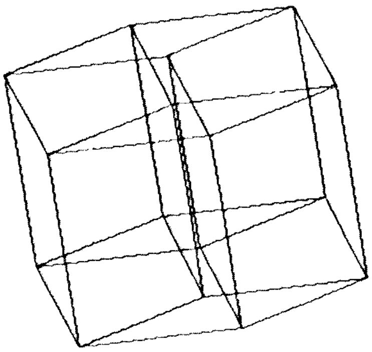

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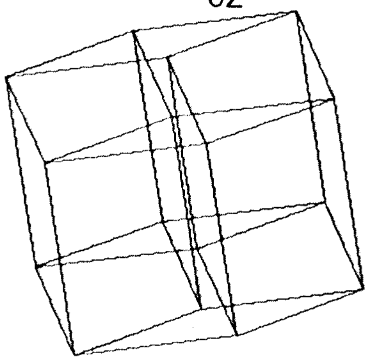

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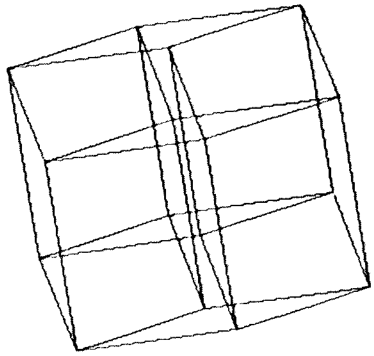

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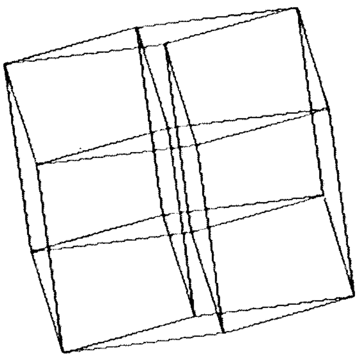

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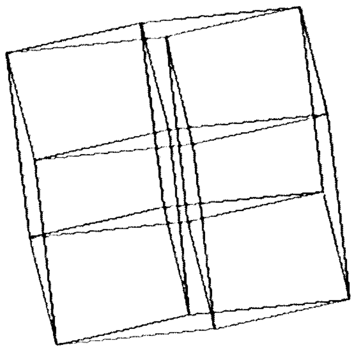

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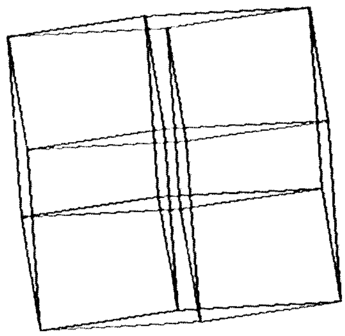

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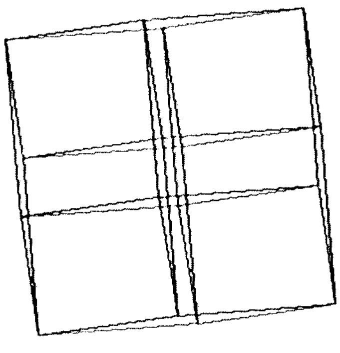

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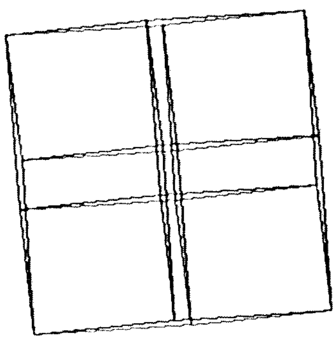

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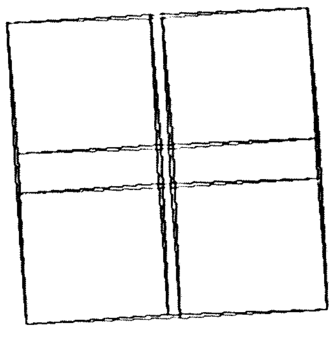

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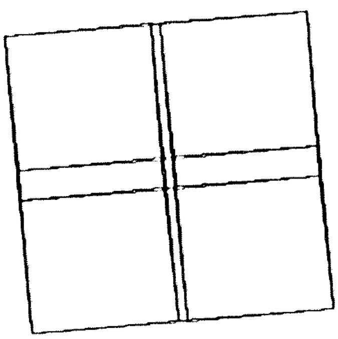

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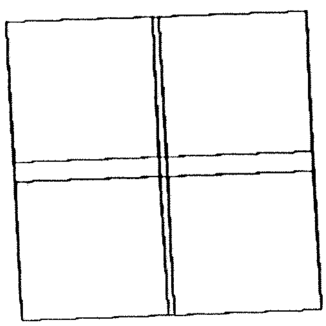

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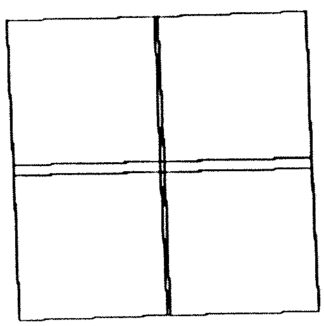

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