Taxonomy of Plato's Wayfinding Enquiry

Yahei KANAYAMA

1. Textual Configuration and Geographical Configuration

布置 (*Fuchi*) in テクスト布置の解釈学的研究と教育 (Hermeneutic Study and Education of Textual Configuration) of Global COE program is translated in English as 'configuration', whose first meaning in *the Oxford English Dictionary* is:

> Arrangement of parts or elements in a particular form or figure; the form, shape, figure, resulting from such arrangement; conformation; outline, contour (of geographical features, etc.).

The core meaning of 'configuration' has more directly to do with space or geography than with texts. Whether in space or in texts what is grasped as configuration is something vertically seen from above, not horizontally on the ground level. It is like a map. Travellers cannot see their goal horizontally. Although they can have some understanding of what direction to go even on the ground level, their understanding is limited due to many obstacles that prevent their view. By examining a map containing configuration of routes, they can see where in the world they are in their attempt to approach the goal.

However, even if they have a panoramic view by means of a map, it does not mean that they actually see every detail of the landscape. To quote from a handbook for navigation, 'Just because you can see something on a map, don't assume you can *actually* see it. When you look at a hill, for instance, you see only the portion of its map picture that is toward you and not hidden by something else'.[1] Although a map helps travellers in navigation, it is necessary for them to do their own navigation in order really to understand the whole configuration of geography.

The same thing can be said about texts taken as configuration. Through reading texts people try to understand the world where they live. However, even if they have

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1 Fleming (2001) 39.

a panoramic view through texts, it does not mean that they actually see its every detail. It is not merely that the view that texts present is limited. Their ability to understand is also limited. Although written texts facilitate their understanding of the world and human life, the help they can gain from there sometimes defeats their purpose, when they put too much trust on texts and their own level of understanding, as Plato emphasizes in the *Phaedrus* (274Cff.). It is necessary for them to do their own navigation and learn through experience. It then becomes a crucial question, what kind of enquiry is essential for effective learning. This was the question Plato kept asking himself. This paper is an approach to Plato's view on this problem, with the help of recent research on spatial cognition and navigation.

2. Cognitive Map

2.1. Spatial Knowledge

We adults may be able to understand at once such configuration as written texts or maps, when they are presented, but this is beyond the ability of children. For them it is necessary first to learn to construct some kind of mental configuration on their own.

According to modern research on navigation, the ability to construct a map-like image of environments is an ability cross-culturally endowed to human beings. 'Spatial knowledge is critical to our interactions with each other and to our interactions with the physical world, indeed to our very survival'.[2] Mapping behaviour plays a crucial role for survival, and small children with low eye-level, a couple of feet high above the ground, have the ability somehow to construct a higher survey. Toy playing with miniature landscapes on the floor, which is cross-culturally observed, is certainly a good training for that purpose. The basic ability to solve mapping problems in toy and air-photo form is actually possessed even by 3-year-olds.[3]

The Athenian in Plato's *Laws* makes an interesting remark in this respect:

All freemen, I conceive, should learn as much of these branches of knowledge as every child in Egypt is taught when he learns the alphabet. In that country arithmetical games have been invented for the use of mere children, which they learn as a pleasure and amusement. They have to distribute apples and garlands, using the same number sometimes for a larger and sometimes for a lesser number of persons; and they arrange pugilists and wrestlers as they pair together by lot or remain over, and show how their turns come in natural order. Another mode of amusing them is to distribute vessels, sometimes of gold, brass, silver, and the like, intermixed with one another, sometimes of one metal only; as I was saying, they adapt to their amusement the numbers in common use, and in this way make more intelligible to their pupils the arrangements and movements of

2   Taylor and Tversky (1996) 371.
3   Blaut (1991) 59–65, 67.

armies and expeditions, and in the management of a household they make people more useful to themselves, and more wide awake; and again in measurements of things which have length, and breadth, and depth, they free us from that natural ignorance of all these things which is so ludicrous and disgraceful. (819A–D, tr. by Jowett)

The Athenian refers to children's toy playing as an aid to arithmetic as well as military and domestic management. It is clear that development in these areas is promoted through fostering survey ability, and this ability is fostered in turn by repeated episodes of construction, transformation and destruction on the floor. Through this process children obtain the mapping ability of adults in a well-developed form, which seems to work in the following way:[4]

(1) Suppose we are told to go to Athens. If we are far away from there, most of us will visualize vertically a map including Athens and the place where we are, and locate them on the map, and see their spatial relation.

(2) On the other hand if we are told to go e.g. to the nearest drugstore, we will use our route knowledge, which we have constructed horizontally from our previous experiences.

(3) This means that there are two types of spatial cognition, the one that can be learned through maps and the other acquired through navigation experience.

(4) The former, which is survey knowledge, contains as its topographic properties, such pieces of information as compass bearings, streets and parks, straight-line distances. They are not easily available from direct experience in the environment.

(5) On the other hand, the latter type of cognition, which has to do with procedural descriptions employed along the routes, is typically derived from navigation experiences. It enables one to identify locations where one should change direction, and to take appropriate actions on each location. It also contains detailed information about impressions of the distance travelled in each segment of the road, the angle of the turns, and the features along the route, which are sequentially represented.

(6) Neither navigation experience alone nor survey knowledge alone constitutes knowledge of the environment.

(7) However, there is some difference in effects between learning from navigation and that from a map. Knowledge of the environment involves at least four tasks: (i) estimating route distances; (ii) estimating straight-line distances (called 'Euclidean distances'); (iii) judging relative location; (iv) orienting oneself. An experiment was conducted in order to compare map-learning and three types of navigation experience, which differ in the period of exposure to the environment (1 to 2 months, 6 to 12 months and 12 to 24

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4   The following explanation is based mainly on Thorndyke and Hayes-Roth (1982) 560–4, 586.

months), employing two buildings connected in the way that causes disturbance in orientation. It showed that there is some difference according to how much one is exposed to maps or navigation. With moderate exposure, map learning was superior concerning (ii) estimating Euclidean distances and (iii) judging relative location, whereas as to (i) estimating route distances and (iv) orienting oneself, learning from navigation was superior. However, with extensive exposure, although map learners' cognitive maps did not improve, navigation subjects' ability of estimation improved to such a degree that the previous performance superiority of maps over navigation vanishes.

(8) A significant thing to note is that people who have obtained sufficient navigation experience and reached high level standard have a form of survey knowledge in which the environment is 'translucent'. They can in some sense 'look through' opaque obstacles in the environment to their destination. They have a kind of 'survey knowledge from a perspective within, rather than above, the represented environment'.[5]

When one has arrived at this stage, one will be able to take a particular perspective freely from above as well as from within. Taylor and Tversky speculated what such a spatial mental model would look like, and their conclusion was:[6]

> it may be like an architect's 3D model of a town; it can be viewed or visualized from many different perspectives, but it cannot be viewed or visualized as a whole. Particular spatial perspectives can be derived from a more abstract spatial mental model that is perspective-free. … To answer a survey question seemed to require taking a view from above to check if the landmarks were in the stated relative locations (north, south, east, or west). To answer a route question seemed to require taking a view facing a specific landmark and checking if the other landmarks were in the stated relations to the viewer (left, right, front, or back).

This 3D model, which enables one to have both vertical and horizontal grasps of the environment with equal ease, has much in common with knowledge Homer attributes to gods. They have a panoramic view of the whole as well as a microscopic view of detail in close-up, as is suggested in Homer's address to Muses, 'you … know all things (*panta*), while we hear only fame and do not know even a thing (*ti*) [i.e., a thing in close-up]' (*Il.* 2.485–486).[7] What Plato sought after himself as a philosopher and tried as an educator to make people seek after was this kind of knowledge supported by both a bird's-eye view and a zoom-in view.

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5   Thorndyke and Hayes-Roth (1982) 586.
6   Taylor and Tversky (1992) 289; also cf. Tversky (1991) 128.
7   Purves (2010) 4, 6.

2.2. Distortions in Cognitive Maps and their Adjustment

However, it is certainly difficult to obtain this kind of survey knowledge comparable to the gods' knowledge. It may remain an ideal, and what we can do may be just to continue to seek after it in a humble spirit. However, or because of this, in navigation our cognitive maps often mislead us rather than help us find the right way. What exactly causes us to get lost?

Although the metaphorical expression 'cognitive map' is convenient, it is misleading in giving an illusionary impression that cognitive maps are coherent wholes that reflect spatial relations among elements. The fact is rather that 'people's internal representations seem to be more like *collages*'.[8] Accordint to Tversky, 'collages are thematic overlays of multimedia from different points of view. They lack the coherence of maps, but do contain figures, partial information, and differing perspectives'.[9] Collage is a kind of chunk, and 'chunking underlies many aspects of human learning': we divide information into a small number of chunks, which are 'collections of elements having strong associations with one another, but weak associations within other chunks'.[10]

Thus, in route learning we usually organize our experience into distinct segments. However, there is some problem about this segmentation, for 'these segments significantly influence subsequent judgments of macrospatial distance', and can cause distortion in judgement.[11] The main types of distortions are as follows:[12]

(A) **Due to categories or hierarchical organization**: (1) distortion of direction judgments: although San Diego is east of Reno, we tend to think that it is west of Reno, just because we first store the relative locations of the states, and then store cities by the state that contains them, inferring the relative locations of cities from the locations of their superset states, i.e., from California and Nevada; (2) distortion of distance judgments: we group buildings of the town we live in according to function, and when asked to judge distances between pairs of buildings, overestimate distances *between* functional groupings, relative to distances *within* functional groupings. We group cities on maps, as well as landmarks in our home towns, into higher-order categories, geographical as well as conceptual.

(B) **Due to cognitive perspective**: students in Ann Arbor who were made to imagine themselves on the West Coast of the United States overestimate the distances between westerly pairs of the United States relative to easterly pairs, and those given an East Coast perspective do the opposite. Reference points people take influence their sense of distance or of details in environments in

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8   Tversky (1993) 15; also cf. Tversky (1992) 134.
9   Tversky (1993) 15.
10 Gobet et al. (2001) 236.
11 Allen and Kirasic (1985) 226.
12 The following summary is based on both Tversky (1992) 132ff. and Tversky (1993) 15–17; also cf. Wiener and Mallot (2003) 332.

such a way as to make them see more clearly more differences close to where they imagine they are than far from there.

(C) **Due to cognitive reference points or landmarks**: landmarks, which are prominent and familiar structures in an environment, are often used to define neighborhoods. 'Many theories of acquisition of environments maintain that we first learn relative locations of landmarks, then we learn routes between them, and, finally, we fill in survey or distance information'. Then, when people try to estimate distances between pairs of locations, one of which is a landmark and the other an ordinary building, they tend to judge ordinary buildings to be closer when a landmark is used as a reference point than vice versa. 'Landmarks draw buildings closer to them, but ordinary buildings do not'.

(D) **By rotation**: in our visual comprehension what we do first is to distinguish figures, i.e. landmasses, landmarks etc. from backgrounds, and then locate, orient and identify them. They constitute a frame of reference, and this frame influences our perception and causes distortion. For example, we tend to upright cutouts of South America in a north-south east-west frame, although it appears to be tilted in its proper north-south orientation. Also we tend to regularize turns and angles to right angle. 'Like cognitive reference points, cognitive frames draw other elements towards them'.

(E) **By alignment**: we isolate figures from a background, and then organize them by relating their locations and orientations not only to a frame of reference but also to other figures. Our tendency to remember the location and orientation of figures by relating them to others, which has been termed 'alignment', makes us choose as a correct map a map in which South America was moved westward with respect to North America, so that the two Americas were more closely aligned.

There are also such distortions as: (F) 'Estimates of Euclidean distance between points are greater when a route has a barrier or detour than when a route is relatively direct'.[13]

An interesting thing is that although all these processes distort spatial information, they are still useful in organizing and remembering it.[14] If one didn't have this kind of hierarchical organization, one would have to retrieve a series of routes in order to go to a distant place. But as a matter of fact, thanks to this structure all that a navigator has to do is first to locate two neighborhoods, the one he or she is in, and the other including the destination, and then retrieve the route connecting them; after arriving at the latter neighborhood the navigator tries to retrieve the relative location of each place in relation to its own environment, and then goes directly to the destination. What distinguishes expert taxi drivers from novices is this kind of detailed hierarchical

13 Tversky (1992) 134.
14 Tversky (1992) 134.

organization of locations within neighbourhoods, neighbourhoods within larger geographic regions, and larger regions within more global features.[15]

Thus, most of the factors that cause distortion work for better purposes, as well. The only exception is (F), which was the very thing that discouraged Meno in Plato's *Meno* from enquiry, in clear contrast with Theaetetus in the *Theaetetus*.

Besides, the hierarchical structure is useful not only for organized, economical storage but also for adjusting distortions. This may sound strange, when we take into account the fact that it was the very thing that caused distortions. However, the best way to adjust our cognitive map is to get lost and to notice the fact of having got lost, and then through exploring the network of routes to come to locate the road that led to the dead-end or to the same place again. Distortions give rise to conflicts and urge us to try to solve inconsistencies and find our ways by means of maps, instructions, environmental cues etc.[16]

As long as we move around in our familiar territory, conflicts may not arise, but once we get outside, we easily get lost. The arousal of this kind of conflicts is what Socrates did through *elenchus* (refutation) in Plato's earlier dialogues or a person like him in the *Republic* tries to do against cave dwellers (523B–524D). People are forced to face distortions that originate from their categorizations, perspectives, reference points, reference frames, alignments, and to consider whether what they accepted as true is really true. In this situation they either attribute their perplexity to themselves or blame the person who has led them out of their familiar territory. For the former kind of people, to whom Theaetetus belongs, the road is wide open to adjust their cognitive maps in reference to higher frameworks, while for the latter kind of people, to whom Meno and Athenians who sentenced Socrates to death belong, there is no such chance. It seems that one of Plato's missions as a philosopher and educator was to devise effective ways to take them out on the road of enquiry.

3. *Paradeigma* for Plato's Wayfinding

3.1. *Paradeigma* in Plato's *Statesman*

In the *Statesman* 278A–C Plato introduces the method of *paradeigma* (model) in enquiry as follows:

> VISITOR: Well then, isn't this the easiest and best way of leading them [children] on to the things they're not yet recognizing?
> YOUNG SOCRATES: What way?
> VISITOR: To take them first back to those cases in which they were getting these same things right, and having done that, to put these beside what they're not yet recognizing. By comparing them, we demonstrate that there is the same kind of thing with similar features in both combinations, until the

15 Chase (1983) 399, 404.
16 Tversky (1993) 18.

things that they are getting right have been shown set beside all the ones that they don't know; … Well then, have we grasped this point adequately, that we come to be using a model when a given thing, which is the same in something different and distinct, is correctly identified there, and having been brought together with the original thing, brings about a single true judgment about each separately and both together? (*Plt.* 278A–C, tr. by C. J. Rowe)

This is an explanation of the method of *paradeigma* (model) Plato gives, by using as a *model* of philosophical learning or enquiry an easy case of learning in reading and writing. The learning of letters is carried out through easier syllables, which are made use of as *models* of more difficult syllables. The gist of the method is: when two separate things have their structures in common, the easier case to analyze becomes a model for the more difficult one, because exploration in the former helps to find the structure of the latter. Now, for Plato it is not only the learning of letters and syllables that has structure similar to that of philosophical enquiry. Spatial learning itself has the similar structure. Plato often compares philosophical enquiry to navigation of environments.

For example, in the *Theaetetus* just before introducing the robbery case in court, which can be taken itself to be a *model* for the general case where knowledge is different from true belief, Socrates has a very short conversation with Theaetetus and says as follows:

> SOCRATES: Well, Theaetetus, as the man who was leading the way across the river said, 'It will show you'. If we go on and search, perhaps we may stumble on the very thing we were searching after; but if we stay where we are, nothing will become clear.
> THEAETETUS: You are right; let's go forward and consider. (*Tht.*200E–201A3)

For Plato navigation or journey was a model for philosophical enquiry. In fact the noun *hodos* and the verbs *ienai* and *erchesthai* are used in such a way in the *Theaetetus* (147C4, 177C2, 187C1, 188D1).

So, here in our enquiry too, our journey in the field of human wayfinding behaviour may work as such a *paradeigma* and teach something interesting to us, for 'It will show you', as the man who was leading the way across the river said.

3.2. Taxonomy of Human Wayfinding Tasks

The taxonomy of human wayfinding tasks can be presented as follows (Figure A):[17]

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17 Wiener et al. (2009) 156–60. Figure A is based on Figure 1 of Wiener et al. (2009) 156, with a slight change.

Figure A
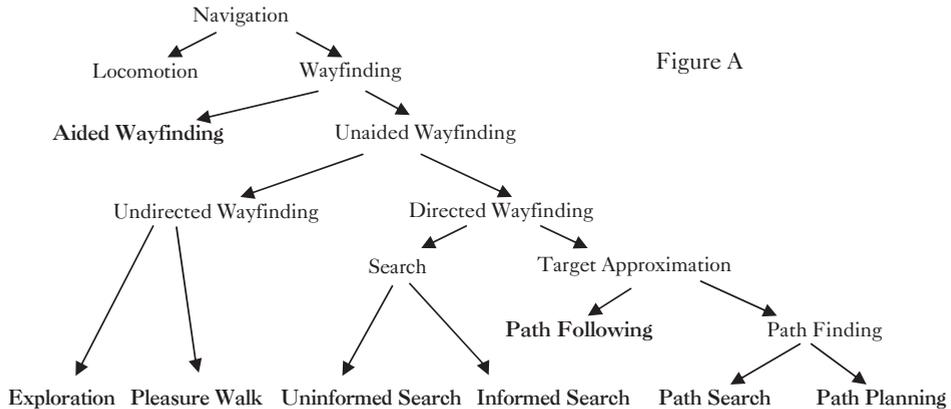
(1) *Navigation* consists of two components, *locomotion* and *wayfinding. Locomotion* is navigation in response to current sensory-motor input of the immediate surroundings. *Wayfinding* is navigation directed to distant destinations or distant space, whose paths to the destinations are not available from direct perception at the origin of travel. They have to be either retrieved from long term memory, or if unavailable, have to be discovered.

(2) *Wayfinding* consists of *aided wayfinding* and *unaided wayfinding. Aided wayfinding* includes much of everyday wayfinding behaviour in urban environments, which 'is aided by some form of externalized representations, such as maps, signage, route instructions, …'. Sign-following is an example, whose extreme case may not demand any serious effort on travellers' part.

(3) *Unaided wayfinding* consists of *undirected* wayfinding and *directed* wayfinding. In *undirected wayfinding* survey knowledge of the environment is sometimes possessed by navigators (like a pleasure walk through familiar territory) and sometimes not (like exploration in a novel city). In *directed wayfinding* a navigator tries to approach a single or multiple destinations.

(4) In *directed wayfinding*, if the navigator is not in the position of knowing or inferring where the destination is located, the navigator's task becomes a *search*, and if the navigator knows or can infer where the destination is located, it becomes *target approximation*.

(5) *Search* can be divided into *informed search* and *uninformed search*. In *informed search* one looks e.g. for a friend, who one knows must be in one of the restaurants nearby. One has enough amount of survey knowledge. What one lacks is only the information about where in the environment one's actual target is located. *Uninformed search*, on the other hand, is e.g. the task of a firefighter, who has been told that someone is still in a burning house, but does not know where the person is when searching for him or her.

(6) *Target approximation* is divided into *path following*, where the path is known and can be retrieved from long term memory, and *path finding*, where the path is not known. A typical example of *path following* is our everyday walk or

drive to and back from work. In *path finding*, on the other hand, 'no specific path sequence from the start to the destination is memorized', and 'the correct path to the destination has to be extracted or found'.

(7) *Path finding* is divided into *path planning* and *path search*. In *path planning*, survey knowledge is available to a navigator and the target location is known, but a direct path toward it is unknown. Here the navigator has to 'refer to the survey knowledge, combine it in new ways and possibly make inferences about missing pieces'. In *path search*, on the other hand, although the navigator is informed of the location of the target, he or she does not possess survey knowledge, thus lacking information about the space between the current location and the target. Suppose you go to Paris, and want to climb the Eiffel Tower; it is visible, but you cannot approach it directly because you don't have survey knowledge of Paris as a traveller. Then, you engage in *path search*.

This taxonomy of human wayfinding tasks is useful to locate some enquiry tasks that must have interested Plato.

4. Plato's Wayfinding

4.1. Knowledge

What one does at the stage Plato regards as that of knowledge is *path following*, where the navigator can execute the appropriate sequence of actions without any difficulty or mistake.

4.2. Guided Tour to Larissa

In the *Meno* Socrates says as follows:

> If someone, knowing the road to Larissa or anywhere else you like, goes there by walking and guides others, he will guide them in a right and good way. … But if a man has the right opinion as to what is the road, though he has never been there and doesn't know, will he not also guide others aright? [Meno replies in the affirmative.] (*Men.* 97A9–B4)

Three kinds of people are mentioned here: (1) a guide who has knowledge, (2) a person who needs guidance, and (3) a guide who has the right opinion. (1) The journey will be *path following* for the guide who has knowledge. (2) It will be *aided wayfinding* for the person who needs guidance. In an extreme case *aided wayfinding* will be conducted without any effort on the part of the enquirer. This was the ideal for Meno, who was eager to have his questions answered by Socrates. (3) Finally, the journey will include both *path following* and *path finding* for the guide who has the right opinion.

4.3. Meno's Paradox

After several trials and failures to define virtue, Meno presents the so-called Meno's paradox, having become weary of laborious enquiry:

> How will you search for it, when you do not know at all what it is? As what kind of thing will you set it in front of you among the things you do not know, in order to search for it? And if you should meet with it, how will you know that this is the thing that you did not know? (*Men*. 80D5–8)

This is then rephrased by Socrates:

> I understand what kind of thing you want to say, Meno. Do you see that what you are bringing up is a contentious argument to the effect that it is not possible for a man to search either for what he knows or for what he does not know? He cannot search for what he knows—for he knows it, and there is no need for a person like him to search—nor for what he does not know, for he does not know what to search for. (*Men*. 80E1–5)

Usual enquiry is covered by *path finding*. Here the target can be identified. However, Meno reduces it to *uniformed search*, i.e., the kind of search a firefighter may conduct, by saying 'How will you look for it, when you do not know at all what it is?' (*Men*. 80D5–6). But a firefighter will never give up searching for the person left in the burning house: he believes his systematic search conducted with minute attention to every route without redundant walking will lead in the long run to the location of the person. Of course, there may be a case where the discovered person was not the one he looked for, there being actually more than one people left in the house. But if the firefighter traverses all the routes, it will be possible for him to save all the people left in the house.

And what is more, the firefighter 'will learn new information about the environment during a wayfinding episode. For example, if the navigator is performing a search task and returns to a previously visited location (after having moved in circles or backtracking from a dead-end), he may realize that he need not enter the same fruitless path option again, informing at least the local movement decision'.[18] And this may finally lead to the systematic knowledge of all the routes in the building. The firefighter may not show interest in the mapping of the building because his mission lies in saving people whose life is in danger. Bur for Plato as an enquirer it is more important to obtain survey knowledge of the house of truth than to find what happens to be left in one of its rooms. Meno's argument is nothing but a contentious argument (*Men*. 80E2) coming from his laziness, which is why Socrates says (just like a firefighter) that he would contend at all costs both in word and deed that people will be better, braver and less lazy, if they believe that one must search for the things one does not know (search for a person left in a burning house), rather than if they believe that it is not possible to discover what they do not know and that they must not search for it

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18 Wiener et al. (2009) 162.

(they must not save the person left in the house) (86B–C).

4.4. *Paradeigma*

Certainly, it is difficult to reach the destination without any help of survey knowledge; *path search* is difficult. However, it is often the case that cities have similar structures, because they have similar functions. 'Even if a navigator is unfamiliar with a specific environment he can use schemata that he has learned during earlier experiences with similar situations. For example, railway stations are not only located at default places (often near the center of town), they also function similarly; rest rooms in large public buildings are often located in proximity of staircases or elevators, etc.'.[19] Thus, past wayfinding experiences, including *exploration* and *pleasure walk*, will help us, as *paradeigmata* (models).

4.5. Method of Hypothesis

In *path search* as well as in *path planning* the navigator has to choose the best course at each junction. What wayfinding strategies are employed on such occasions is a question that attracts interest of cognitive psychology today. One of the strategies is 'the least-angle strategy', according to which 'an individual subject will follow as straight a line as possible, with minimal angular deviation (from that straight line), on condition that this choice is always approximately in the direction of his or her goal'.[20] It may be possible to understand the method of hypothesis in the *Phaedo*, specified below, in connection with this strategy.[21]

> Hypothesizing on each occasion a *logos* that I judge to be strongest, I put down as true whatever seems to me to be in accord with it, about an *aitia* (cause) and everything else, and I put down as not true whatever does not. (*Phd*. 100A3–7)

> You would cling to that safety of the hypothesis and answer accordingly. But if someone should cling to the hypothesis itself, then you would dismiss him, and you would not answer until you should have considered whether the things that have started from it are in accord or discord with one another; and when you have to give an account of the hypothesis itself, you would give it in the same way, once again hypothesizing another hypothesis, whichever would seem best of those above, until you came to something satisfactory. (101D1–E1)

According to the 'the least-angle strategy', navigators choose at each junction the strongest or safest route [strongest hypothesis, 100A] on two conditions: (1) the route has minimal angular deviation from the straight line; (2) the choice is approximately in the direction of their goal. Starting this way and adopting the safest route (strongest

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19 Wiener et al. (2009) 162.
20 Conroy Dalton (2003) 122; also cf. 126.
21 As to the interpretation of the method of hypothesis in the *Phaedo*, cf. Kanayama (2000) 51–80, which I follow in this paper, too.

hypothesis), they continue to go this chosen route and any path that this route leads to [cling to the safety of the hypothesis, 101D], and at each junction to choose any path that lies in as straight a line as possible relative to the route they have taken so far [whatever seems to be in accord with it on conditions (1) and (2), 100A], even if their company raises doubt about the navigation and does not dare to proceed to the path [even if someone should cling to the hypothesis itself (and thus disrupts further journey), 101D].[22] Through this process of wayfinding they will both arrive at the destination and come to construct survey knowledge of the environment. And when the time has come to give an explanation of why it was a correct decision to take the first route [give an account of the hypothesis itself, 101D], they will refer to the map-like survey knowledge (or a map they themselves have drawn) and point out how each route they took at each junction actually made them draw near the destination. What becomes clear through this explanation will include such things as [A] what are regions in which the starting point and the destination are located respectively, [B] what are highways through which the two regions are connected, [C] what is the best route through which to go out of the regions of the starting point and [D] what is the best route through which to arrive at the destination after entering its region. On the map they will see also that the route taken was the product of [E] 'the least-angle strategy' and [F] some such strategy as that of finding first the route connecting the regions of the start place and the destination and trying to 'continue following a global plan until cues from the environment are encountered that trigger specific routes at choice points along a route'.[23] I take it that all or some of [A] to [F] are hypotheses chosen as 'best of those above' (101D6–E1).[24]

4.6. Recollection

Recollection[25] too can be understood in the framework of wayfinding. Plato presents Recollection for the first time in the *Meno*:

> So there is nothing surprising in the soul's being able to recollect things, which it knew before also, concerning both virtue and other things. For since all nature is akin, and the soul has learned all things, nothing prevents a man, after having recollected one thing—what men call 'learning'—from discovering all other things, if he is brave and does not weary of the searching. For searching and learning are, as a whole, recollection. (*Men.* 81C7–D5)

> I would not contend as to other points for the sake of the thesis. But as to the point that people will be better, braver and less lazy, if they believe that one must search for the things one does not know, rather than if they believe that it

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22 Cf. Kanayama (2000) 78.
23 Chase (1983) 404.
24 I argued for this line of interpretation in Kanayama (2000) 59–66.
25 I use 'Recollection' to represent the recollection thesis in contrast with 'recollection' representing the actual act of recollection.

is not possible to discover what they do not know and that they must not search for it, I would contend at all costs both in word and deed. (*Men.* 86B6–C2)

In the latter text Socrates says concerning Recollection that he wouldn't altogether take a stand on the argument, as far as other points are concerned, i.e. except that one should search for what one does not know and become better, braver and less lazy. This suggests that he wouldn't take a stand, at least in the *Meno*, on such points as the immortality of the soul and the validity of the demonstration of Recollection with the slave boy. What is left as the gist of Recollection is, therefore, that since all nature is akin, nothing prevents a man, after having recollected one thing, from discovering all other things, if he does not become weary of the searching.

What does the kinship of all nature here mean? 'Akin' (*syngenēs*) suggests family connection, where children from the same parents are related with each other as belonging to the same family, and the parents and their siblings are again related with each other as belonging to the same super-ordinate family because they were born from the same parents. If you go up this way, you may arrive at a mythical hero as the ancestor of all the citizens. Under him a hierarchical structure of networks of family trees subsists, and this kind of network is taken to be meant by the kinship of all nature.

Socrates must have had in mind this kind of kinship, when he referred in the *Meno* to the tying down of true opinion by reasoning of the explanation:

True opinions are not willing to remain long, but run away out of a man's soul, so they are not worth very much, until someone ties them down by reasoning of the explanation (*aitias logismos*). This, my friend Meno, is recollection, as we previously agreed. When they are tied down, they first of all become pieces of knowledge, and then remain in place. (*Men.* 98A1–6)

Socrates makes this remark just after referring to the journey to Larissa. Some interpreters are inclined to deny the relationship between the reasoning of the explanation and the journey to Larissa, on the following ground:

[H]aving travelled the road oneself hardly means that one now knows … why it is the right road.[26]

[*E*]*pistēmē* applies only to cases that in addition to firsthand acquisition also involve systematization, proof, explanation, or account: this is the *aitias logismos* of the *Meno* and the *logos* of the *Theaetetus* (202d5). Neither the case of the traveller nor that of the eyewitness seems to me capable of satisfying this additional constraint.[27]

However, Socrates' reference to true opinions and pieces of knowledge with the comment that the former are changed into the latter by tying down, just after referring

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26 Sharples (1985) 183; also cf. Scott (1995) 46.
27 Nehamas (1985) *27* (=Nehamas (1999) 21).

to the same pair of cognition concerning the road to Larissa, strongly suggests that the very tying down is applicable also to the case of navigation to Larissa. And in fact, as I showed above, the survey knowledge, which is acquired through firsthand experience of navigation, does involve such systematization as to allow one to give an account of why this is the right route. So does the truth of the robbery case, which is said to be known only by an eyewitness in the *Theaetetus* (201A–C), involve the reason why the crime was committed in the way it was committed.[28]

Besides, the Greek verb *badizein* which Plato used in connection with the journey to Larissa (97A10) is the very word he used in connection with the recollection of Meno's slave boy (84A):

> Do you realize, Meno, what point this boy has now reached by walking (*badizōn*) on the path of recollection? (*Men*. 84A3–4)

Meno's slave boy is just like a three-year-old infant in the field of geometry. In the demonstration of Recollection in the *Meno* (82Bff.), he reached a dead-end, because he took the route of choosing the edge twice or three times as long as the original edge of the square when he tried to answer the question of constructing a square twice as large. He was at a loss, because the possibility of exploring diagonal routes was beyond his imagination. His view was limited to a horizontal perspective. In contrast with him, Socrates and Meno knew what point the slave boy had reached on the path of recollection, just because they had in command a vertical perspective; this perspective must have enabled them to highlight in their cognitive map of geometry the routes to be taken to reach the square sought after, which contain such information as definitions, postulates and common notions just like those specified in Euclid's *Elements*, as well as ways to employ them and various propositions that are drawn from them so as to be used to lead to the answer in question.[29]

4.7. Recollection and Mnemonics

The same verb *badizein* is used also in the *Phaedrus* in connection with Phaedrus' walk outside the city wall (227D3), which evokes an interesting point concerning Recollection. Phaedrus went for a walk after staying with Lysias for a long time, with the book of the orator in hand, just because he wanted to practice reciting Lysias' speech (228B). He tried to memorize the speech while walking. In ancient Greece the technique of memorizing was available. According to the mnemonics, remembering something consisted not in rote learning but in connecting what is to be remembered both to other items and to a large framework. Cicero says in *On the Orator* as follows:

> He [Simonides] inferred that persons desiring to train this faculty [of memory] must select localities and form mental images of the facts they wish to remember and store those images in the localities, with the result that the arrangement of the localities will preserve the order of the facts, and the images of the facts will

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28 Cf. Kanayama (2011 forthcoming).
29 Cf. Kanayama (2011 forthcoming).

designate the facts themselves, and we shall employ the localities and images respectively as a wax writing tablet and the letters written on it. (2.354, tr. by Sutton)[30]

Quintilian, *Insitituio Oratoria* (11.2.17–21) gives us further explanation by referring to a spacious house or public buildings, a long journey, the ramparts of a city, in which *loci* (localities) (e.g. the forecourt, the living room, the light-well, bedrooms etc.) are set so that we can locate symbols in each of them. When memory needs to be retrieved, all these localities are visited in turn and deposits are demanded from there, for the sight of each locality recalls the respective details. The hierarchical structure, possessed by a mnemonic expert, of details to be remembered nested in a number of rooms, and rooms nested in a spacious house, reminds us of the hierarchical organization, possessed e.g. by an expert taxi driver, of locations nested within neighborhoods, neighborhoods within larger geographic regions, and larger regions within more global features. Plato, who now and then quotes Simonides, must have been acquainted with this kind of mnemonic technique. Phaedrus, who went for a walk outside the city wall, practicing reciting Lysias' speech, seems to have tried to use the road as the framework for localities of his mnemonics.

Of course, Plato's recollection is different from recollecting with the help of mnemonics, in that it is not the task of simple retrieving from long term memory, but rather a matter of enquiry in quest of what has been completely lost from memory, long term or short term. In Plato's recollection there is no such device to help the retrieving task as the image of a whole house whose details are supplied by various cues. We have to reconstruct, through enquiry, from scratch the hierarchical structure of reality corresponding to the configuration of Forms. To put it another way, the retrieval by means of mnemonics corresponds to *path following*, whereas recollection corresponds to *path finding*.

However, *path following* in philosophical enquiry is crucially different from the counterpart in navigation in that although in the latter there are certainly people who know the path and can do *path following*, in the former no human being has knowledge, at least in the eyes of Plato. There are no human beings that can do *path following* in philosophy. Actually 'philosophy' means 'love of wisdom', which implies the lack of wisdom to be followed. If anybody thinks that he or she has obtained knowledge just by memorizing certain texts with the help of mnemonics, that person will be regarded as ignorant of his or her own ignorance, just like Meno, whose name reminds us of 'memory' (*mnēmē*) (*Men*. 71C8), and who certainly must have put more importance to memorizing than to engaging in enquiry (73C6–8). Socrates in the *Phaedrus* compares to blind people those who try to proceed without the proper method of enquiry, however much they may have stored in their memory from books on the art of speaking. (*Phdr*. 270D–E)

It is only gods that can do real *path following* in philosophical enquiry. Plato refers in the *Phaedrus* to another journey besides Phaedrus' walking out outside the city wall.

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30 Cf. also Yates (1992) 17ff.

It is the journey of the soul.

> All soul … traverses the whole universe, now in one form, now in another. Thus when it is perfect and winged, it travels through air (*meteōroporei*) and controls the whole world. (*Phdr.* 246B5–C2)

> Now within the universe are many spectacles of bliss and paths (*diexodoi*) along which the happy race of gods go around, each of them doing their own work, and after them follows anyone who will and can follow them … But when they go to their feasting and banquet, they climb the steep ascent even unto the summit of the arch that supports the universe … When the souls that are called immortal are at the summit, they travel outside and stand upon the back of the universe, and standing like this, they are carried round by its revolution, and look upon the things outside the universe. (*Phdr.* 247A4–C2)

According to these texts, souls usually travel through air along the paths of gods, observing spectacles of bliss, whereas on special occasions when the time of banquet comes, gods observe, and human souls try to observe, the things outside the universe, i.e. Forms. In the former journey they see things inside the universe, including things on the earth, with the double focus of a bird's eye view and a zoom-in view, at least in the case of gods, just like Olympian gods in Homer. The view of Forms is an extra view reserved for special occasions of banquet. Why is this kind of view necessary? It is because:

> A man must understand what is said according to *eidos* (Form *or* kind), arising from many perceptions and being collected together into one by reasoning (*logismos*). And this is a recollection of those things which our soul once saw, when it journeyed with a god and looked down upon the things which we now say are, and gazed up to what truly is. (*Phdr.* 249B6–C3)

As long as one does not see in perceivable things appropriate patterns beyond what meets the eye, one is not regarded as having attained understanding. The standard for detecting appropriate patterns can be obtained through finding common characters among perceivable things scattered apart. This attempt, which must be conducted by means of the proper method of enquiry, which is the method of division and collection (*Phdr.* 265C–266D, cf. also 270C–D), will help people to find the hierarchical structure of Forms.

What gods do and what men do respectively, when both of them travel through this universe and see perceptual things, are supposed to be different. The journey of gods is *path following*, because they have already internalized in their souls the hierarchical structure of Forms with its various patterns. In this journey they do what they should do as gods, i.e. controlling the whole world (*Phdr.* 246C1–2), on the basis of the harmonious structure of Forms they have retrieved from their long term memory (247A4–5). For men, on the other hand, who have got only a vague, and probably somewhat distorted, cognitive map of the world of Forms, the journey is rather *path finding* than *path following*, carried out in order to make their cognitive map

more exact, more detailed and clearer, by making the most of their limited ability of bird's eye view and zoom-in view under the guidance of gods. They have to engage in the work of internalization of the structure of Forms through hard work by making use of their bodily eyes as well as their mind's eye and intellect. And this process is supposed to be recollection.

4.8. *Petteia*

The method of enquiry Plato recommends in the *Phaedrus* (265D–266C) as heuristically important was the method of division and collection. It is introduced and explained also in the *Philebus* (16Cff.), as a gift from gods hurled down by some Prometheus. It is described there as an essential element that distinguishes dialectical discourse from eristic one (17A). Through this gift, music and the art of letters were invented. The deity who invented the latter in Egypt was Theuth (18B). He invented also number and calculation, geometry and astronomy, and *petteia* and *kybeia*, which are both board games (*Phdr*. 274C–D). Among these games *petteia* is a very interesting item concerning Plato's wayfinding enquiry.

This is 'a game wherein all depended on skill and calculation, and bore some resemblance to our chess'.[31] *Petteia* served for Plato as a *paradeigma* of the most important techniques: people he compared to its grand master include the expert of dialectic (*R*. 487B–C) and the supervisor of the universe aiming at the best possible results for the universe as a whole (*Lg*. 903D). Plato also draws attention to the kinship between *petteia* and geometry: in the *Laws* (820C–D) he makes Clinias say that *petteia* is not radically different from such studies as geometry.

What characteristic of *petteia* makes Plato so highly evaluate this game and its experts? The game is similar to chess, in which chunking mechanism plays an important role as a factor distinguishing experts and ordinary players:[32]

> In their chunking theory, Simon and Chase (1973) stressed the role of perception in skilled behavior, … but they added a set of elegant mechanisms. Their key idea was that expertise in chess requires acquiring a large collection of relatively small chunks (each at most six pieces) denoting typical patterns of pieces on the chess board. These chunks are accessed through a discrimination net and act as the conditions of a production system: they evoke possible moves in this situation. … In chess, as well as in other domains, the chunking theory explains experts' remarkable memory by their ability to find more and larger chunks, and explains their selective search by the fact that chunks evoke potentially good actions. … Simulations with this program [a computer program] … led to the estimation that expertise requires the presence of a large number of chunks, approximately between 10,000 and 100,000. … The template theory, based on the chunking theory and implemented as a computer program, proposes that chunks evolve into more complex data structures (templates), allowing some

31 Cf. Bekker (1854) 352, with some more information concerning *petteia* and *kybeia*.
32 Gobet (1999) 113–114. Cf. also e.g. Gobet (1997); Gobet (1998).

values to be encoded rapidly.

Chess experts' remarkable memory comes from their ability to encode chunks into the retrieval structure, which with the help of retrieval cues (associations) allows them an easy access to chunks in their long term memory. This system is the same as that of Simonides' method of *loci* (localities), where associations are established between the items to be learnt and the localities. Just as expert taxi drivers who have a detailed hierarchical organization of locations within more global features, chess masters can cover in a short time more area of the board and fixate groups of pieces, in comparison with weak players whose attention tends to go to individual pieces.[33] This distinguishing mark applies to expertise in geometry too (cf. *Lg*. 820C–D).

Chess players, or *petteia* players, may be compared to navigators searching for best routes among various options available, but in one point they are crucially different. In ordinary navigation routes and their surroundings are rather fixed and visible. Their number is also limited. All you have to do is to make a best choice among them. In *petteia*, on the other hand, although you can see pebbles, routes are not visibly given, and you have to create routes by making connections between pebbles, whose possible ways are innumerable. Besides, patterns on the *petteia* board are always changing its configuration, at each move. Therefore, you have to hypothesize what new possibilities of configuration next move and future moves may bring about, and think about what move you will be able to make in order to win the game. You can always be thrown into unpredictable situations, but you are required calmly to choose the best possible move as quickly as possible.

This kind of situations *petteia* players are exposed to is very similar to that which people engaged in dialogue meet, or that which rulers of this changing world face. This is why Plato compares its grand master to the expert of dialectic (*R*. 487B–C) and the supervisor of the universe (*Lg*. 903D). In the field of politics too, the situation is always changing, with best courses to take varying relative to people, communities, cultures and other circumstances and situations. This is why Plato in the *Statesman* places the rule by a wise statesman above the rule by law (*Plt*. 294A–297D). The wise statesman will certainly be compared to a *petteia* grand master.

The kind of judgement that all these experts are required to make is judgement concerning the future. The ability to predict what will happen in the future is a crucial point that distinguishes experts from novices, according to the *Theaetetus* (*Tht*. 178–179). One of the experts there mentioned is a professional cook who can tell how nice the cooking will be. It is true that cookery is downgraded in the *Gorgias* as mere experience (*empeiria*), which cannot give an account of what kind of things are what it prescribes and why it does each thing (*Grg*. 464D–465A, 500B). However, it is due to the lack of a view to what is best that Socrates denies here the title of 'craft' or 'expertise' to cookery. A cook, who aims at pleasant taste, will certainly be unable to give an account of what good effect it brings about to the body. But as to the question of the tastiness of dishes it will certainly be able to give an account, which is why

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33 Gobet (1998) 128–9, 138.

Socrates in the *Gorgias* issues a strong warning concerning the danger of cookery. The skill of cooking may be gained mainly through experience. But this experience will certainly, in the long run, lead to map-like cognition of the landscape of tastes, which can be accessed also through some kind of theorizing.

There is an interesting test concerning the ability to distinguish Coke and Pepsi.[34] It is fairly easy to tell Coke from Pepsi. However, suppose there are three glasses, two of which are filled with one of the colas and one with the other. Suppose further that you are asked to tell which of the three is not like the other two. Then, the task suddenly becomes difficult, and the chance of success becomes just over one-third, which is in fact equal to chance. This is because 'With two colas, all we have to do is compare two first impressions. But with three glasses, we have to be able to describe and hold the taste of the first and then the second cola in our memory and somehow, however briefly, convert a fleeting sensory sensation into something permanent—and to do that requires knowledge and understanding of the vocabulary of taste'.[35] The vocabulary of taste is based on the so-called DOD (degree-of-difference) scale, going from 0 to 10, 'where 10 is for two things that are totally different and 1 or 2 might describe just the production-range differences between two batches of the same product'.[36] Experts of taste have this kind of internalized standard, which can be acquired only through much experience and theorizing. This standard is supposed to consist of the network of various categories of taste hierarchically structured, and it is this kind of structured knowledge that gives experts a real understanding, the kind of understanding that enables them to explain why e.g. this cola is different from the other two.

Knowledge or understanding Plato sought after himself and recommended his students and readers to seek after must have been of this kind concerning human actions. This knowledge is never obtained through *aided wayfinding*. It is only *unaided wayfinding* that allows enquirers to draw near this goal, and in this attempt even failures are useful. They teach what routes led to a dead end or in circles to the same place again. We can learn a lot even in backtracking from a dead end. If we have resilience and wisdom enough to accept our own ignorance, failures can be of much help in making us explore anew, refer to higher reference points and frames, and adjust our cognitive map. This must be the ultimate reason why Socrates says to Meno, 'I would contend at all costs both in word and deed that people will be better, braver and less lazy, if they believe that one must search for the things one does not know' (*Men*. 86B–C).

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