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Memories about Loss of Home among the resettlers of Bhakra Dam, Western Himalayas

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Resolution of social dilemmas during decision making favors the greater common good, justifies development, but leaves a minority to grieve for loss of home. We questioned the period for which this process of grieving goes on among the displacees. Bowlby's attachment theory, drawing from ethology, control systems and cognitive psychology, predicts long-term effects of early age unwilling separations. The Bhakra Dam, a large hydro-power project in India, drowned as many as 256 villages, along with the town of Bilaspur (Himachal Pradesh), in the dammed water of river Sutlej in 1963. In this third report, we compare the past memory of 50 displaced peasants with an equal number of non-displaced peasants from Bilaspur by giving two types of retrieval cues—relevant and neutral. The relevant cue evoked greater number of memories of lost homes in comparison to a neutral cue. Furthermore, the relevant cue evoked as many memories of lost home from the displacees as from the normal persons. Though these findings strengthen the hypothesis based on attachment theory, the retrieval cue also has significance.

Keywords: Resettlement; Attachment; Bhakra Dam; Himalayas; Memory; India

In the scenario of uncritical acceptance of policies, on the pretense of being scientific (Hayek, 1989) and for the greater common good (Hardin, 1968), people seem oblivious of the pain of others. While some benefit from the process of development, others suffer. Hardin goes even further to underline that everyone is caught in a situation called double bind. It is a situation in which no matter what a person does, he cannot win (Bateson, Jackson, Haley, & Weakland, 1956). We ought to take people out of the double bind situation rather creating an environment where they recurrently face double bind, which is pathogenic. Moreover, it perpetuates social and psychological deprivation of the people from particular sections (Misra, 1990; Tripathi, 2002). Several large-scale developmental interventions (e.g. hydropower projects) exemplify these issues in the Himalayas.

The foundation of the first large hydro-power project, the Bhakra Dam, was laid down in the late 1950s, in the foothills of the Himalayas in India (Raj, 1960). Soon after the Bhakra Dam, India began the construction of yet another larger dam at Tehri, on the Ganges in the mid-Himalayas (Pearce, 1991; Valdiya, 1997). The limits of imagination of the common man were blown away by the Three Gorges project in China (Heming, Waley, & Rees, 2001; Yimin, Haihong, & Suhong, 2011), though away from the Himalayas, it poses a Himalayan problem of resettlers never ever encountered in human history. Until there are alternatives for 'energy' and 'water', the rivers originating from the Himalayas remain its vital source, and fertile area for the viability of proposals like the interlinking rivers (see Jain, Kumar, & Panigrahy, 2008), a project of the proportions of the Three Gorges.

It is argued that since forced displacement due to various factors is inevitable (de Sherbinin et al., 2011), resettlement as a major policy measure is an important step. Studies on relocation selection remain the only alternative to face this challenge (Heming, Waley, & Rees, 2001; Yimin, Haihong, & Suhong, 2011). Besides the physical, social and cultural factors, perhaps, the forced migration involves a variety of mental health issues. For example, Xi and Hwang (2011) reported that there were about 1.27

million (1,270,000) Chinese people that had to be resettled for the construction of the Three Gorges project. They were assured sustainable livelihood after resettlement. But many of the promises made by the Chinese government were not fulfilled. In this study, it was found that the unmet expectations among the resettlers of the Three Gorges project were associated with an increase in the depressive symptoms among these people (Xi & Hwang, 2011).

Additionally, there is perhaps a need to understand the mental health aspects of resettlers within a theoretical framework, and the present paper makes such attempt to understand the memories of the resettlers of Bhakra Dam after about 50 years.

The dam-induced displacement (DID) in the Himalayas involve three major issues: social, moral, and pathogenic. The social issues are concerned with irreversible changes in the habitat. As a result there is displacement of populations and drowning of its cultural heritage forever (Bahuguna, 2008; Valdiya, 1997). Moral issues involve the sacrifices of a minority for a greater common good, as is the case with the displacees of a hydropower project. There are two approaches to moral issues—the rational and the intuitive. The former advocates greater common good (e.g. trolley dilemmas; Chelini, Lanteri, & Rizzello, 2009); and the latter sides with humanistic viewpoint (e.g. the moral foundation theories; Renner, Ramalingam, & Pirta, 2013; Shweder, Much, Mahapatra, & Park, 2003). Lastly, there is good theoretical evidence that forced displacement or unwilling separation causes social pain (MacDonald & Leary, 2005). Theories of social scientists about dams and displacement (Cernea, 1997; Scudder, 2001) have overlooked the fact that loss of attachment or forcible displacement from native habitat is detrimental to health, and has long-term consequences through cognitive pathways (Bowlby, 1958; 1969/1997; 1977).

A decade ago, the World Health Organization recognized that internally displaced persons, along with the refugees, were the most vulnerable groups in the world (Brundtland, 2000; Tribe, 2002; WHO, 2001). These processes of displacement severely impair the social and cultural fabric of their life as argued in place attachment theories (Fried, 2000; Guliani, 2003).

The present study

As argued above, it is not unreasonable to assume (also see Kandel, 1999) that among dam-displacees various psychological processes are either impaired (e.g., the attachment system) or thrown into action (e.g., the fight or flight systems) having consequences on mental health more or less similar to those observed among the Holocaust survivors (Sagi-Schwartz et al., 2003). Interdisciplinary researches show that the memories of such experiences are long lasting and troublesome (Christianson, 1992; Fullilove, 1996; Maunder & Hunter, 2001). These emotional memories are not easily accessible (e.g., loss of home; see Fried, 1970), but they are evoked by effective stimuli even after long time (Christianson, 1992). In fact, besides a biological (survival) threat, unwilling separation and loss, also cause significant modifications in the internal working models (Bowlby, 1969/1997; Bretherton, 1992; Maunder & Hunter, 2001) and are stored as cognitive schemas, which if given appropriate retrieval cue unfold in recall of attachment objects and relationships (Mikulincer, Gillath, & Shaver, 2002).

Our aim in this study was to examine memories of loss of home among the displacees of the Bhakra Dam after about 50 years. We compare the displaced with the non-displaced peasants in Bilaspur, Himachal Pradesh, assuming that forced displacement impaired the social ties of people to their homeland, which can be understood applying Bowlby's attachment theory as argued above. We hypothesize that the recall score will be significantly greater for the displacees in comparison to the normal peasants. On the other hand, literature on memory suggest that the greater the similarity between the information contained in the retrieval cue and that contained in the memory trace, the higher the probability that the individual will remember the information he or she is seeking. Therefore, a relevant retrieval cue, a picture of the town that drowned in the lake of Bhakra Dam, the old Bilaspur town will evoke significantly greater number of memories in comparison to the neutral cue, a picture of a faraway place, Rishikesh.

Method

The study area:

The construction of Bhakra Dam on the river Sutlej began just before the independence of India in 1947 and was completed in 1963. This 225.55m concrete wall created the Govind Sagar lake, spread over 168 km^2 in Bilaspur district of Himachal Pradesh. A large part, about 16,835 hectares, of the then princely state of Bilaspur immersed in Govind Sagar, and in all more than 36,000 people were displaced (Raj, 1960; Singh, Mehta, Uppal, Kabra, Taneja, & Rao, 2002), from 256 villages, including complete submergence of the old town of Bilaspur. It was part of the state of Bilaspur or Kahlur (between 31° 12' and 31° 35' N Latitude and between 76° 26' and 76° 58' E Longitude; Anonymous, 1910/1995).

Participants:

Two sizeable populations of displaced (n=50) and normal (non-displaced) (n=50) peasants were selected in the Bilaspur district of Himachal Pradesh (see Pirta, Chandel, & Pirta, 2014a; 2014b). When the construction of Bhakra Nangal Project began, Bilaspur (or Kahlur) was an independent hill State and Raja Anand Chand was the last ruler, since in 1954 the State merged with the Union Territory and later became part of Himachal Pradesh. According to Census of India 1961, the population of Bilaspur (448 square miles) was 158,806 (81,363 males and 77,443 females) whereas there were 110,336 persons (56,935 males and 53,401 females) in 1941, before the construction of the Bhakra Dam.

The participants, displaced as well as non-displaced, were living in villages at the outskirts of Govind Sagar. They were dependent on small scale dry farming and most of them had spent only a few years in schooling. Displaced peasants, 109 males and 91females, 200 in all, constituted the experimental group. Non-displaced peasants, 82 males and 118 females, 200 in all living in the same area, formed a comparison group. These participants at the time of present study were 55 to 80 year old. Since the displacement was carried out from 1955 to 1965, the midpoint of the displacement being 1960 and the present study was conducted in 2005, in this way the memories of this traumatic event were explored after about 45 years. Care was taken that no participant was below 10 years at the time of displacement.

After locating the displaced resettlers during the field work, a group of more than 200 peasants was identified, and similarly, from a nearby area, a group of more than 200 non-displaced peasants was selected. Each participant, displaced or non-displaced, at the time of administration of retrieval cues, was assigned to one of the four retrieval strategies/ methods. In this way, though the selection of a general pool of more than 400 participants was opportunistic, the assignment to retrieval conditions was random. Each retrieval strategy constituted a separate study (as different theoretical assumptions were behind it) having 50 displaced (22 males and 28 females) and 50 non-displaced (19 males and 31 females) participants. In the present study the retrieval strategy involved cued recall.

Design of the study:

In the present study, the retrieval strategy involved presentation of relevant (a photograph of the old Bilaspur town) and neutral cue (a photograph of Rishikesh). A 2 X 2 factorial design was employed, 50 displaced peasants were randomly assigned to neutral cue (n=25) and relevant cue (n=25) conditions, and similarly 50 normal non-displaced peasants were also randomly assigned to neutral cue (n=25) and relevant cue (n=25) conditions.

Measures of recall:

Four dependent measures of recall were latency, category, past memory and total recall (Christianson, 1992; Davis, 1999). Latency is the time required to get the overt response started. For each participant, all memories related to the loss of home were grouped under the six categories described by Fosse, Fosse, Hobson, and Stickgold (2003). In addition, a 7th category grouped all the other memories recalled by a person which were not related to displacement. Thus, there are seven categories—characters, objects, situations, actions, emotions, locations, and the other, and a person's score on category

ranges from 0 to 7. From the measure of category, we derive a combined score, the past memory for each subject, which includes all the memories of loss of home, under the six categories, excluding the other. Finally, total recall is the number of memories under all the seven categories for a subject.

Procedure:

In a preliminary study during 2002-2003, one investigator (N. C.) located the study population and habituated herself with the terrain and subjects. The study population was spread in various villages surrounding the Govind Sagar lake. On reaching a particular village, by boat or local bus, the investigator approached the village head or an elderly member. After a brief introduction and explaining the purpose of the study, the investigator would locate the participant, women and men in the age group of 55 to 80 years. In the final study, during 2005-2006, after a brief conversation to gain rapport with the family, the investigator (N. C.) in her general instructions to the participant in local dialect, apprised the participant about the procedure of giving responses, especially to recall memories of younger age, and speak them out in small (discrete) words and sentences, when asked to do so.

Two photographs, a neutral one and a relevant one, were used as cues (Figure 1). The neutral cue showed the view of Ganges at Rishikesh, whereas the relevant cue was the photograph of the old Bilaspur town. These two cues were selected after some preliminary trials of other photographs. We assumed that the scenario of old Bilaspur town would elicit greater number of memories than the neutral cue, the Ganges at Rishikesh. The instructions (given in local dialect) for the two types of cues were similar, and under each condition the photograph was shown as long as the participant chose to view it, but not more than 5 min. The instructions were:

"I will show you a photograph and then read a sentence. Pay attention to the photograph and the sentence. After seeing the photograph and hearing the sentence (when) you recall any event or any experience, (you) recall any face or any place, go on speaking memories associated with them. Whatever events, experiences, situations, faces or places (that) comes to your mind, go on speaking words related to them. You have not to narrate long story, only speak words associated with the main events of childhood and young age."

First, the participant was asked to see the photograph. The investigator presents the photograph of neutral cue or relevant cue. After the participant has thoroughly seen the photograph, investigator proceeds further. Now, listen to the sentence with attention:

'Recall the events of your young age, when you were unhappy, speak out one-by-one.'

At this juncture, the participant began verbally recalling memories as quickly as possible. The memories recalled by the participant were noted down by the investigator (N. C.) on a response sheet, which also included other biographical information about him/her. The total time for recall was 10 min (based on earlier studies and trials during present study).

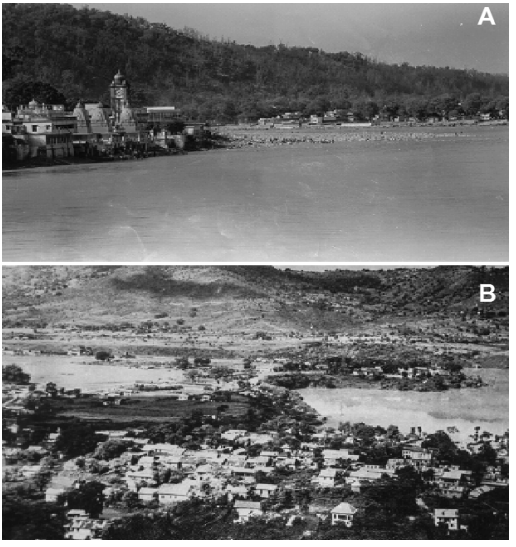

Figure 1. Retrieval cues: A. neutral cue; B. relevant cue.

The scores obtained on each of the four measures (e.g. latency, category, past memory and total recall) were analyzed by applying four separate 2 (displacement) X 2 (retrieval cue) analysis of variances (ANOVAs). Our main findings on the four measures of latency, category, past memory and total recall, are

shown in Table 1. We do not consider measures of latency and categories as adequate, latency requires more control condition and categories due to lower score. However, our focus will be on the analysis of past memory, events about loss of home recalled by the subject. Two investigators (Raghubir Singh Pirta and Chhaya Pirta) independently read the response sheet on which memories recalled by a participant were recorded and classified them into categories (see Davis, 1999; Fosse et al. 2003). Total number of memories under the 6 categories of lost home (excluding the 7th category, other) constituted the score for past memory. Total recall includes score on past memory, and in addition all other memories recalled by the subject. Since the number of memories in the latter category (other memories) is low, in fact total recall contains only the past memory; therefore the past memory is the focus of discussion. Thus the score on past memory is the number of events about lost home recalled by the participant, and ranged from zero to as many memories as one can recall during a session of 10 minutes.

Results

The scores obtained on each of the four measures (e.g., latency, categories, past memories and total recall) were analyzed by applying four separate 2 (displacement) X 2 (retrieval cue) analysis of variances (ANOVAs). Our main findings on the four measures latency, categories, past memories and total recall, are shown in Table 1. However, our focus will be on the analysis of past memories. The two way analysis of variance on the past memory scores, with displacement (displaced and non-displaced) and retrieval cue (relevant and neutral) as independent factors, is shown in Table 2. Our first hypothesis states that the recall of past memory will be significantly greater for the displaced group in comparison to the non-displaced group. The results show that the average score of past memory for the displaced (M=4.92± 3.68) is not significantly different from the non-displaced peasants (M= 4.64 ± 6.37), and thus the preceding hypothesis is rejected. The second hypothesis states that the recall score on past memory will be significantly greater for the relevant cue in comparison to the neutral cue. We find that the average score for past memory recalled under the relevant cue (M= 6.68 ± 6.29) is significantly greater [F (1, 96) = 15.22; p< .01] from the neutral cue (M = 2.88 ± 2.69) (see Table 2), and confirms our hypothesis. The interaction between displacement and retrieval cue is not significant.

Table 1. A summary of ANOVAs performed on the four measures of memory.

Measures	Displacement (Factor A)		Retrieval cue (Factor A)		Significance levels (Factor B)		
	Displaced	Non-displaced	Neutral	Relevant	A	B	AXB
Latency	4.72	5.16	5.04	4.84	ns	ns	ns
Categories	2.62	2.22	2.2	2.64	ns	ns	ns
Past memory	4.92	4.64	2.88	6.68	ns	.01	ns
Total recall	5.46	5.8	4.04	7.22	ns	.01	ns

Table 2. A summary of 2 (displaced and non-displaced) X 2 (neutral and relevant) ANOVA on the past memory scores.

Source	SS	df	ms	F	p
Total	2653.16	99	__	__	__
A (Displacement)	1.96	1	1.96	0.08	__
B (Retrieval cue)	361.00	1	361.00	15.22	<.01
A x B	14.44	1	14.44	0.60	__
Error	2275.76	96	23.705	__	__

Discussion

From the results of the present study, we find that the retrieval cue has a significant effect. In other words the photograph of the old town of Bilaspur, a relevant cue, elicited greater number of memories related to lost home than the neutral cue, a photograph of Rishikesh. Interestingly, the relevant cue evoked cognitive schemas of past memory among the displaced or resettlers (M = 6.44 ± 3.81) as well as non-displaced (M = 6.92 ± 8.13) peasants, though the variability in the scores of normal peasants is very high and ranges from 0 to 25 events in a session of 10 min. On the other hand, the neutral cue, a picture of Rishikesh elicited fewer number of memories from displaced (M = 3.40 ± 2.89) and non-displaced (M = 2.36 ± 2.43) peasants. These findings are expected according to Bowlby's attachment theory, since the displaced as well as non-displaced peasants are all from Bilaspur and traditionally known as Kahlurians (Anonymous, 1910/1995). The old name of Bilaspur State in pre-Independence times (i.e. before 1947) was Kahlur, and the State capital was at Bilaspur, which drowned in Govind Sagar after construction of Bhakra Dam in 1963. All these participants, displaced and non-displaced had attachments with the old Bilaspur town, as people everywhere form (Bonnes & Secchiaroli, 1995; Fried, 2000; Giuliani, 2003). This seems the reason why the photograph of the old Bilaspur town evoked greater number of attachment schemas among displaced as well as non-displaced peasants.

Our second hypothesis was that the recall score on past memory will be significantly greater for the displaced than the non-displaced peasants. We find that the scores of displaced (M= 4.92 ± 3.68) and non-displaced (M = 4.64 ± 6.37) are almost equal. We expected a greater score for displaced from the non-displaced according to Bowlby's attachment theory, as they have undergone unwilling separation from their native area, and lost their home.

We can think of two alternative explanations of this lack of difference between displaced and non-displaced peasants, first, some sort of psychological defense mechanism may have repressed the elicitation of attachment schemas among resettlers, as they have more of such traumatic (negative) experiences than the normal peasants. A number of studies implicate such defense mechanisms for the lower recall of negative events (Blaney, 1968; Buchanan, 2007; Christianson, 1992; Sara, 2000), and even Bowlby (Ainsworth & Bowlby, 1991) has described the role of such defense mechanisms. Therefore, any such defense mechanism does not refute the role of attachment hypothesis. Secondly, we propose an explanation which is cognitively less complex than the defense mechanism. Let us focus on the elicitation of greater number of memories by a relevant cue (M=6.92 ± 8.13) among the non-displaced peasants in comparison to those evoked by a neutral cue (M = 2.36 ± 2.43). Had the relevant retrieval cue not affected past memory of the non-displaced peasants, their score would have been lower, and the effect of displacement would have been significant. It suggests effectiveness of the photograph of old Bilaspur town, which is no more in existence since last 50 years, in eliciting past memory. On the other hand, when we focus on resettlers, the photograph of old town of Bilaspur evoked greater past memory (M= 6.44 ± 3.81) than the photograph of Rishikesh (a neutral cue; M = 3.40 ± 2.89). Here we suggest that had there been a photograph showing the drowned villages of the resettlers, the effectiveness of retrieval cue would have been perhaps greater in eliciting past memory in this group, and probably led to a significant effect of displacement.

Therefore, we implicate effectiveness of 'retrieval cue' as a factor in eliciting past memory. When we compare the recall scores obtained in the present study (with relevant and neutral photographs as cues) with those obtained from Pirta et al., 2014b (where the retrieval cues were scripts of low and high anger), it is clear that the anger scripts as retrieval cue were much more effective in eliciting past memory (Figure 2). In this study, the high anger retrieval cue evoked a far greater number of memories from

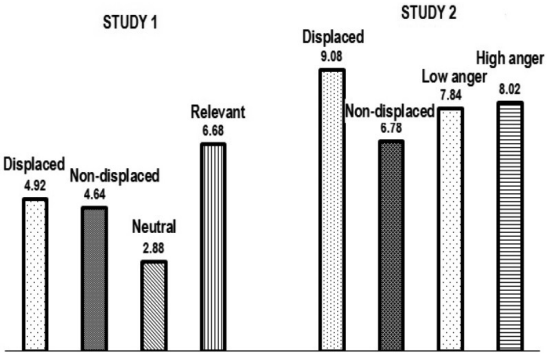

Figure 2. A comparison of average past memory scores of the present study (Study 1) with another study (Study 2; Pirta et al., 2014b) using a different retrieval strategy.

displaced peasants than the non-displaced. These findings further support our hypothesis of 'cue effectiveness' as a cognitively simple and direct explanation than the implicit defense mechanisms, but this is not to deny the role of such mental processes in memory. Neither is 'cue effectiveness' an alternative to attachment hypothesis, rather cued recall (relevant versus neutral cue) and emotional recall (high versus low anger) strategies of retrieving the memories of loss of home further support the Bowlby's theory that people (displaced as well as non-displaced) form attachment to place.

Transcending the nostalgia

Attachment to a place enlivens the nostalgia, which is a feature of literary work. Nostalgia refers to longing for a home and also a sentiment of loss and displacement (Boym, 2007). It is different from homesickness; for a person who is homesick, the home still exists (Van Tilburg, Vingerhoets, & Van Heck, 1996), but in case of nostalgia the home no longer exists or it is imaginary (Boym, 2007). Nostalgia is distinct from mental travel to past (or episodic memory) and habitual worrying (see Verplanken, 2012). Moreover, contrary to general intuition, nostalgia brings around biology, attachment to place and its survival value for the organism. Neither has nostalgia a root in Greek nor in literature, a medical scientist first conceived the concept, and his another term for nostalgia was philopatridomania which never caught the imagination of scholars.

Philopatry is an important concept in biology and refers to attachment of groups to places as an adaptation and it has function for the group. Rituals of cooperation and competition occur on a daily basis among groups of animals and the most dominant group occupies the best territory or home range in a habitat (Wynne-Edwards, 1986). All along the history of theory of evolution (by Charles Darwin), there is a controversial but consistent extrapolation of a 'territorial instinct' to explain human warfare. Darwin also provided evidence to suggest that the fine qualities like cooperation, help and altruism originate within the "in-group" to intensify social bonds and to keep "other groups" away from the territory. There is an interesting observation that occurred during the tsunami in 2004 that devastated Andaman and Nicobar Islands of India. A team of psychiatrists that visited these islands found, non-displaced populations had lower psychiatric morbidity after the disaster than the displaced populations (Math et al., 2008), the reason being, cohesiveness among group members and altruistic behavior of community leaders.

Bowlby's concepts of secure base and safe haven echoes, respectively, in reflective and restorative nostalgia (a typology suggested by Boym, 2007). Secure base is expressive of movement away from attachment object (or place) as conveyed by reflective imagery yet keeping the ties intact (algia or longing). Safe haven, on the other hand, is expressive of movement toward home (the nostos) when there is some external threat, which characterizes restorative imagery. This dynamic of outward and inward movement around a place of attachment is finely tuned to person's survival (Bowlby, 1969/1997), nostalgia is perhaps a proximate cognitive mechanism in this process. If this is the case, the concept has significance in explaining memories of displacees. It may evoke social pain (MacDonald & Leary, 2005), a reminder to person that the wounds of separation are yet to recover. Besides these antecedents, experimental psychologists suggest that nostalgia involves memory mechanisms that make people to experience their past as more positive (Leboe & Ansons, 2006). Secondly, they propose that perceived social connectedness is

deposited in the form of nostalgic memories and is vital for optimal psychological functioning and mental health (Wildschut, Sedikides, Routledge, Arndt, & Cordaro, 2010). Modern society has forgotten to ritualize (Stroebe, Gergen, Gergen, & Stroebe, 1992), a way of sharing the grief.

Conclusions

Many environmental conflicts, including the large scale interventions for greater common good such as the big dams, involve social, moral and psychological issues (Hardin, 1968). They are also referred "wicked problems" (Kazdin, 2009). These issues have a long history in India. They involve common man's problems, as India's vast rural population thrives upon commons, such as, pastures of transhumant, village forests, community ponds, irrigation canals and so on (Joshi & Gadgil, 1991; Pirta, 2009). Some recent reports bring convincing data from the Himalayas (Baland, Bardhan, Das, & Mookherjee, 2008; Somanathan, Prabhakar, & Mehta, 2009) where tragedy of commons seems to have been averted through social institutions. The findings have important insights for a policy change, however, the investigators omit a lot from their reports which has been crucial in avoiding the tragedy of the commons of the forests in the western Himalayas. The negative factors include an all-out effort of the forest departments in the Himalayan states to clear fell the forests (Gadgil & Guha, 1992), a live example of 'scienticism' (see Hayek, 1989). The positive factors are related to protection of forests through a peasant movement, Chipko, which led to ban on felling of trees all over the Himalayas in 1983, which was reviewed in 1993 and 2003, and the ban still continues (Pirta, 2011).

In the present study, our focus was very specific. The retrieval of memories of dam-displaced persons was conducted by using different methods. While the holistic approach provided information that was heuristic and crucial in articulating the native vision of development, by incorporating current research in psychology and medical sciences, we were able to raise concrete questions as to how memory (Pirta et al., 2014a) and affect (Pirta et al., 2014b) operate to modulate responses of people. Furthermore, the specific enquiry like the present one, not only complement these questions, but shows that the findings are replicable. If, as hypothesized, we find that the displaced population (the resettlers) recalls greater memories of native areas, in comparison to the non-displaced population, we may suggest that the pain of separation is not yet over. However, one may well argue that such traumatic experiences increased resilience among displacees, but it is difficult to make such prescriptions. Moreover, why do people protest when there is an attempt to usurp them from their native habitats, perhaps because, biologically and culturally the attachment to native areas helps in their survival.

To compensate for ecosystem services while developing hydropower is an essential step, but the list of costs and benefits do not include social and psychological costs. Our objective was even more elementary, to apprise public with credible information on the aftereffects of displacement that may have long-term psychological and social repercussions.

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