

Report 1

Review of literature relating to PTSD

In view of the design of a Military rehabilitation centre

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The Healthy Environment – Fall semester 2014
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Section 1: Post traumatic stress disorder – Causes and Definition

The initial goal of my literature search was to gain a full understanding of what Post Traumatic Stress Disorder (PTSD) is in terms of both clinical definitions and the effect the diagnosis, or lack of one, can have on a person. In particular due to the nature of my proposed target group, recovering military personnel, I was interested in any research done into the specific hardships suffered by persons returning from active military service. The most informative data found was from general literature on the topic of PTSD, most undoubtedly aimed at aspiring psychiatric students, which at times was too complex. However these documents also presented the best range of information allowing me to draw conclusions for use in my brief and patient profile.

Diagnosis of PTSD is currently based on seven criteria¹ as set out by the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders. These criteria cover both the symptoms that result from PTSD as well as covering the cause and effect of the condition. Next I shall summarise the meaning of each of these criteria step by step.

Criterion A: Exposure to a stressor

A stressor is defined as a traumatic event in which a person has been exposed to death, possible death or an invasive bodily threat of either themselves or another person. This is the triggering event for the patient, but not necessarily the cause, and must be coupled with them having reacted with intense fear, helplessness or horror.

Criterion B: Experiencing intrusive recollections

This is the most common symptom of PTSD that is represented in media and is the re-experiencing of the traumatic event in one of the following ways; uncontrollable distressing recollections of the event, distressing dreams, feeling as if the event were reoccurring whilst awake and intense psychological or physiological distressed reactions to cues that resemble the original stressor.

Criterion C: Avoidance and numbing

This symptom is characterised by the avoidance of negative stimuli and general a subduing of the personality. In particular the patient will consciously avoid thoughts, feeling or conversation associated with the trauma as well as any activities, places or people that remind them of it. The patient may be unable to recall the trauma.

¹ The APA's seven criteria for PTSD diagnosis from Ford 2009 p13-14

Finally the patient withdraws; having reduced interest in activities, detaching themselves from others, having a reduced emotional response and ultimately having no sense of future prospects such as career or family.

Criterion D: Hyper-arousal

Quite in contrast to C, in this state patients will show signs of increased and uncontrollable activity. They may be having difficulty falling or staying asleep, they may be prone to angry outbursts and may have difficulty concentrating. Other manifestations are of hyper-vigilance which prevents them from being at ease and may be seen by an exaggerated startle response.

Criterion E: Extended duration

This is not a symptom in itself but makes it a prerequisite that the symptoms B, C and D must recur over a period of a month or longer. Before this it can be seen as a normal response by the body and mind to the traumatic event, most people experience some of these symptoms for a short period.

Criterion F: Functional significance

This criterion notes the effect of the condition on the patient's life and the functional impairment it can cause. It will be characterised by distress in social, occupational or other important settings.

These seven criteria give the medical community a set method to diagnose a condition which can present itself in many different ways and is still not fully understood. It is thought that there "*is no single or definite cause of PTSD*"², but it is thought that there are certain factors that increase risk of developing the condition. Because of the complex nature of PTSD and the effect of various factors on how it presents, flexibility is needed in the treatment procedures used. In addition to factors that maybe predispose someone to developing the condition other factors may be linked with a person's ability to cope. These include "*(1) their belief system, (2) prior experience(s) of trauma, (3) chronic stressful experiences, (4) level of support, (5) perception of their ability to cope with the event, (6) internal resources (coping mechanisms etc.), (7) genetic predisposition, and (8) other stressors in their life at the time of the event.*"³ The result of these factors, both positive and negative, is that development of PTSD is hard to predict when people are exposed to a traumatic event. Whilst more than half of adults and two thirds of children experience a traumatic stressor⁴ most of these will only develop acute stress

² Ford 2009 p25

³ Johnson 2009 p4

⁴ Ford 2009 p25-26

reactions (ACR). In the specific context of military personnel the development of PTSD is equally as hard to predict and have added difficulty in treatment. For many the military is an escape from previous trauma or family difficulties and leaving the military can be like losing a family. For military personnel the specific variables for PTSD development were "*spending longer in a forward area, perceiving one's work to be above one's trade and experience, perceiving that one might be killed, witnessing trauma to others, experiencing low morale on deployment, and having more adverse experiences in childhood.*"⁵

Section 2: Comorbidity

In addition to a PTSD diagnosis many of the potential patients of this proposed clinic will be afflicted by other conditions. Obviously in the context of combat trauma many people may have suffered physical trauma as well and may have reduced movement in or even complete loss of limbs, partial brain damage or other conditions. From this research however I have found that with PTSD there are a number of common comorbid psychiatric diagnoses. The most common of these are depression, generalised anxiety disorder (GAD), panic disorder and obsessive compulsive disorder (OCD).⁶ With these conditions, and the range of others possible, it is seen that symptoms overlap with PTSD and are sometimes magnified by each other. For example numbing, insomnia, irritability and lack of concentration are all common symptoms among these diagnoses. Another comorbidity frequently associated with PTSD is alcohol and substance dependence such that "*crime victims with PTSD were 3.2 times more likely than victims without PTSD to have a serious alcohol problem and 3.4 times more likely to have a serious drug problem.*"⁷ And with this condition research suggests that the type of drug may affect the way in which PTSD presents itself and that substance abuse may increase PTSD prevalence. Specific to military personnel the most common problems are depression, alcohol dependency and PTSD. For these patients with PTSD it is common for alcohol and substance abuse to be used as self-medication for symptoms such as blocking out traumatic memories. When combined with highly trained combat personnel and hyper-arousal, these dependencies can often lead to violent outbursts, sometimes with a criminal outcome.⁸

⁵ Ormerod 2009 p326

⁶ Johnson 2009 p13-14

⁷ Saladin, Brady, Dansky and Kilpatrick 1995 p643

⁸ Ormerod 2009 p325-326

Section 3: Treatment of PTSD

One of the most important factors to learn about for my clinic is the possibilities for treating PTSD and the different paths the prognosis can take. The method presented, in a number of texts, as the best approach for treatment of PTSD is to use a three phased approach. The first of these is *Stabilisation* followed by *Remembrance and Mourning* and finally *Reintegration and Rehabilitation*.⁹ It has been noted by Ormerod, in her paper on working with military veterans, that this sequential structure of therapy is of specific benefit to this category of patient. The key to the first phase, stabilising the patient, is to create an environment, both physically and mentally in which the patient is safe, healthy and psychologically prepared. This may include recovering from illness, removing drug dependencies and ensuring a support network is in place. Once achieved then the second phase can begin in which the patient is enabled to process the traumatic event in a controlled therapeutic setting and to begin to remove the stress reactions or symptoms they experience. This phase is the traditional therapy portion of the treatment, although it may include any number of different treatment types. The final phase is about preparing and empowering the patient so that they are ready to reintegrate into society with family and friends they may have alienated before. This final phase is of particular importance for veterans as they may have to adjust to a civilian life that they may not have been a part of for many years.

In terms of therapy, PTSD can be successfully treated and this is done through two possible approaches, or a mixture of both. These treatment routes are psychotherapy, involving removal of traumatic reactions through sense stimulation, or pharmacotherapy where symptoms are treated through medication. There are a wide range of pharmaceuticals that have proven effective in treating PTSD and many of these are drugs design to combat other psychotic conditions such as depression, hypertension or anxiety.¹⁰ One of the obvious downsides of medication is the side effects that can occur such as "*weight gain, dyslipidemia, elevated blood glucose and the metabolic syndrome*"¹¹

Aside from medication a variety of psychological therapy techniques are effective. The most obvious of these are the traditional notion of a therapist who talks through problems; this is known as cognitive behavioural therapies (CBT)¹². The choice of treatment is heavily dependent on the patient though and possible therapies include;

⁹ Ormerod 2009 p326

¹⁰ Ford 2009 p28

¹¹ Shiromani, Keane, LeDoux 2009 p343

¹² Ford 2009 p27

grounding or meditation, group therapy, family therapy, hypnosis, spiritual or religious counselling, body work such as yoga, martial arts training, art therapy, dance therapy, music therapy, creative writing, acupuncture, massage therapy, Qi Gong (tai chi), Reiki (Japanese healing) and Somatic experiencing¹³. A unique and promising treatment specifically for veterans is virtual reality (VR) treatment. Examples such as Virtual Iraq or Virtual Vietnam¹⁴ scenario have been developed in the US; the newer generations of which are based on commercially available gaming software. The main advantage of this therapy is that it can immerse patients in a realistic environment that is customised to their own stressor without the stress of memory retrieval that can be experienced during traditional cognitive therapy¹⁵. Additionally the therapist has absolute control over the re-experiences of the patient allowing them to set the pace of recovery to a safe level. For veterans engaging in therapy, especially traditional talking based therapy, is seen as asking for help and a sign of weakness¹⁶, with VR treatment this can be overcome and maybe especially appealing to the modern generation.

Finally when researching treatment it is important to understand the prognoses that are likely to be encountered. This is not easy to define for PTSD as recovery can last from just six months to a chronic condition¹⁷. However it is agreed that the quicker treatment is commenced the better the outlook is. Another factor is late presenting PTSD which can lay dormant until triggered by another, often unrelated event.¹⁸ However with the correct course of treatment and proper supervision it is often the case that the condition can be treated in an outpatient capacity, as long as support is available.

¹³ Johnson 2009

¹⁴ Shiromani, Keane, LeDoux 2009 p381-382

¹⁵ Shiromani, Keane, LeDoux 2009 p380

¹⁶ Ormerod 2009 p325

¹⁷ Johnson 2009 p48

¹⁸ 'Case of Marian M' Ford 2009 p5

Section 4: Designing healthy buildings

It has been proven that veterans receive greater quality of mental health care when in a specialised PTSD service¹⁹ and as such the design of this facility is paramount. My final area of research was into the current thinking about positive health care design. According to Huisman "*a healing environment can be defined as a place where the interaction between patient and staff produces positive health outcomes within the environment.*"²⁰ The general design advice for a healing environment is split into seven basic areas; reducing errors, safety and security, enhancing control, privacy, comfort, family support and staff.²¹ Whilst many of these are very technical design concerns there some that are useful for this project. For privacy the key decision is the use of single rooms, which can also reduce infection rates²² and also creating quieter waiting rooms to give privacy. For comfort key design decisions include; the materials used, views given (specifically to nature), daylighting, acoustic comfort and the ability to orientate in the building (for staff and patients).²³ To ease treatment identical rooms are suggested in a number of publications, removing the chance of nurse error in an emergency.

Section 5: Conclusions

From this research I have gained a thorough understanding of the basics behind a diagnosis of PTSD and the conditions that I can expect from the proposed patients for the clinic. More importantly from a design point of view I understand the range of treatments that are available to sufferers and more specifically to veterans. In my design I will include a wide variety of treatment spaces, allowing for customisable treatment, and will make sure options are available for physically engaging treatments with an emphasis on life skills to allow for easier reintroduction into civilian life at the reintegration phase of therapy. Also it is apparent that an important link with nature is helpful to reduce stress and aid recovery.

¹⁹ Spoont, Murdoch, Hodges and Nugent 2010

²⁰ Huisman, Morales, van Hoof and Kort 2012 p70

²¹ Huisman, Morales, van Hoof and Kort 2012 p72-73

²² Ananth 2008 p392

²³ Huisman, Morales, van Hoof and Kort 2012 p75

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Report 2

Evaluation of the site in Volewijk

In view of the design of a Military rehabilitation centre

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Section 1: The Centre and its patients

The importance of this kind of facility, a rehabilitation centre for returning soldiers, is growing in prominence throughout the world. With the increasing violence in the Middle East and elsewhere in the world, it is sadly probable that countries such as the Netherlands will choose to engage their military forces in foreign conflicts. For those on the front lines daily life is a struggle for survival, but their wars do not always end when they return. Also the centre will care for those that served in the decades of UN peace keeping missions.

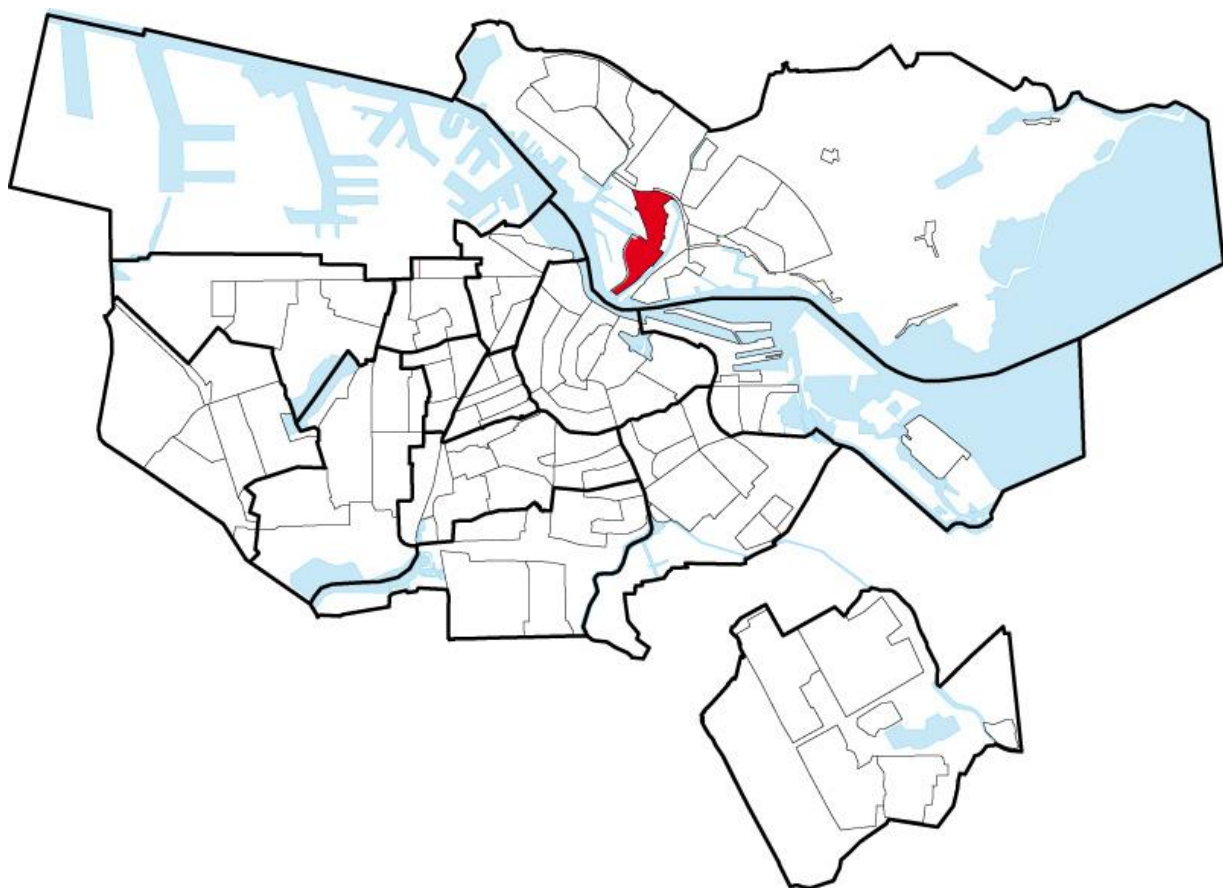
For this kind of centre one of the most common conditions will be Post Traumatic Stress Disorder (PTSD), gained from traumatic events witnessed or experienced whilst on deployment. Due to the potentials of military trauma it is also likely that a number of the potential patients for the centre will also have suffered physical trauma and may be limited in their movement or may need to adjust to life with a reduced number of limbs. However from my previous research I found that there are also a number of comorbidities commonly experienced by PTSD sufferers. These include depression, substance abuse and anxiety problems.

With this research in mind the typical patient for this clinic will be hard to predict and it will be a requirement to provide flexibility in the treatment facilities. To consider just a few problems; it needs to be taken into account that some patients will have wheelchairs, some will be highly active, suicides may be likely, some veterans may be treated as outpatients and it also must be allowed for that there may be an increasing female presence in returning military personnel.

The goal of this facility is to allow the soldiers to return to active service with a clean bill of health or alternatively to successfully integrate back into society and their families with a new lifestyle. From my research I have concluded that the design for this building needs to facilitate the three stage rehabilitation of veterans, creating at first a protective environment but later giving opportunities to interact with the public.

Section 2: The site

The site selected for this centre is within the Noord district of Amsterdam in a neighbourhood known as Volewijk. The Noord district was originally inhabited as an industrial area away from the city centre of Amsterdam, with much ship building being carried. To complement this, a number of 'garden city' developments were built in the area as better quality worker housing, taking people away from the "unhealthy" city centre. Now however, with the naval industry gone, Noord is experiencing a revolution with many creative industries relocating here due to the low rent and empty industrial areas. Noord is currently characterised by lower education and wages and a higher proportion of multi ethnic residents. However the area is going through a period of gentrification brought by the new industry.



Map of Amsterdam with Volewijk highlighted¹

¹ www.nul20.nl

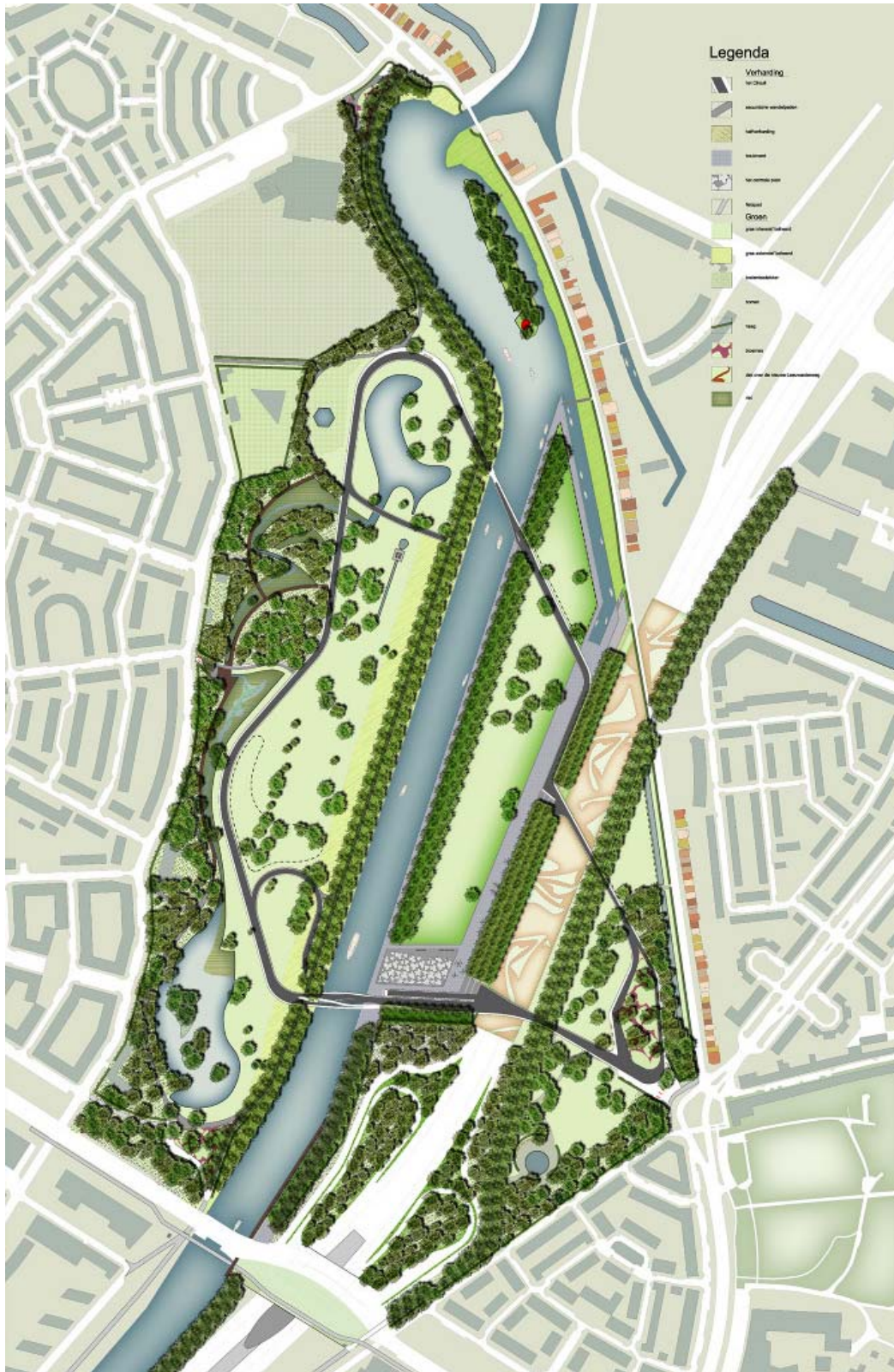
The neighbourhood of Volewijck is largely residential with one of its most defining features being the large Florapark located along its eastern edge, adjacent to the Noordhollandsch canal. To the west of the neighbourhood is an industrial/business/shopping hub in the old docklands.



Map of Volewijck, with existing building highlighted²

It is in the Florapark that my proposed centre is to be located, possibly occupying an existing kindergarten on the park's west side. The existing building that houses this kindergarten was built in 1932 and was the first such institute in Amsterdam Noord. An important note for the park is that it is part of a large redevelopment plan by the Amsterdam municipality aiming to create a large metropolitan park. This means that the current nature of the site's fabric will be altered and this needs to be accounted for. For this project I will presume that the alterations have been completed, given that they are already underway. However I will also allow for a small amount of flexibility in altering the simpler elements of the proposals given that this would likely be possible through negotiation.

² O+S



Master plan for Noorderpark development³

³ www.noorderpark.amsterdam.nl

Section 3: Advantages

For my particular brief I believe that this site has many advantages. Firstly the ease of access and availability to nature is key to recovering from trauma and is an important design aspect to consider. Also the site has a good amount of water throughout the park and this will be increased with the proposed development. Water can have a huge influence on the psyche of people and is important in the healing process. This space and diversity of nature will also give people the opportunity to investigate by themselves and gain independence.



Secondly, due to the green of the site it is frequently visited by people from the neighbouring areas that use the area to walk dogs or other activities. Whilst the site is not very popular now this will increase with the new development and my design can capitalise on this.



Another important aspect of the site is the ease of access to the site. The nearest bus stop is only a four minute walk away and this allows visitors to reach Amsterdam Central Station in only 10 minutes. It is necessary for my centre to be easy to reach without a car or bike as it is possible that people may not be able use these.



In addition to the bus stop being close by the facility, this street also contains a number of small shops and businesses. This will provide the patients the chance to visit small local shops by themselves without being overwhelmed by a huge urban environment.

Section 4: Challenges

Whilst the site is in many ways a perfect place for locating this centre it also provides some challenges to its design. The delicate nature of the sites greenery means it may be hard to build a sizeable structure without compromising its beauty and overpowering the site. The existing building is quite hemmed in by trees, some of which are reasonably old and therefore should be kept.

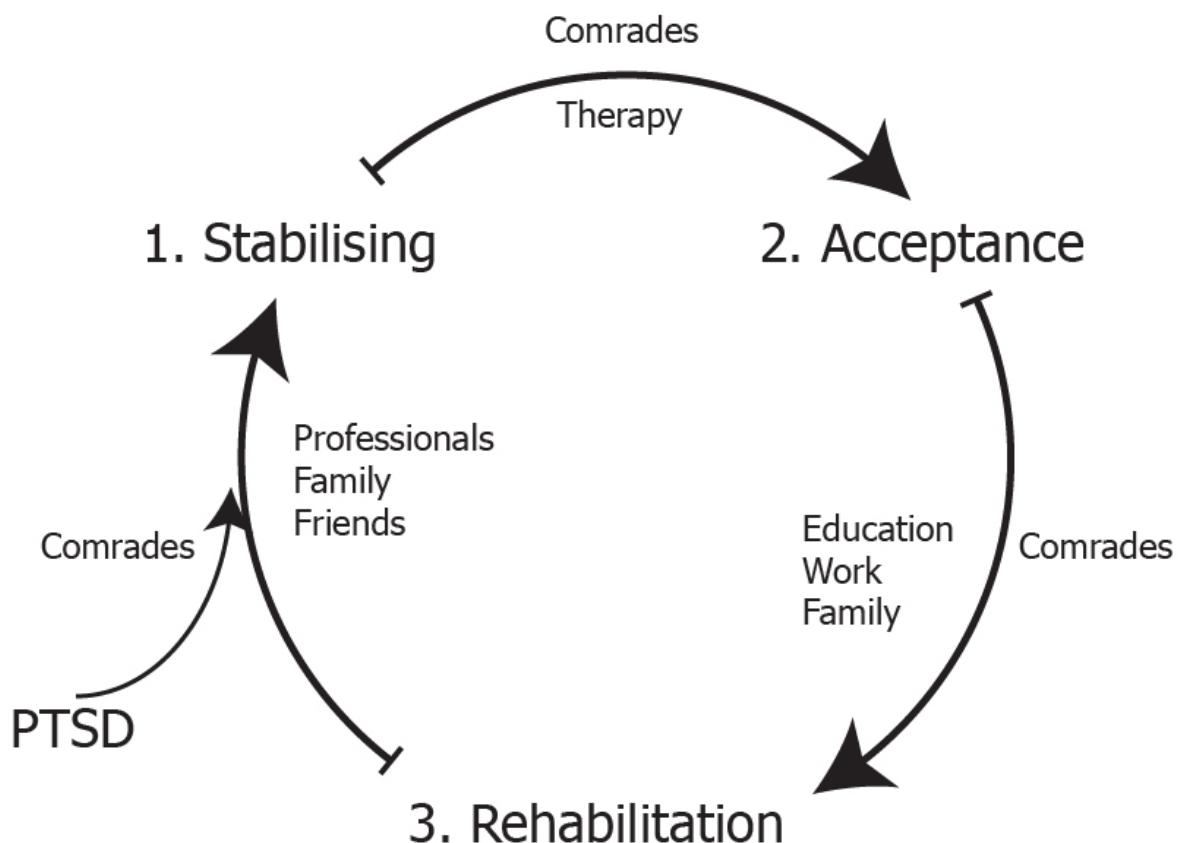


A more practical problem is parking for the facility. The neighbouring streets are used by the residents and any parking that can be found is normally filled. Providing parking on the site would be a controversial use of parkland so this not an option.



Section 5: Conclusion

Given all these factors and taking into account the requirements of the rehabilitation centre I believe this site is a prime location for locating this facility. The possibilities given by the varied nature will only be increased with the development of the Noorderpark and this provides a perfect social setting for my design. However it will be hard to breach the public boundary without dominating the park. This will require careful planning of both the external boundaries of the project, the way the building interacts with the waterscape in particular and the internal planning of the centre. The internal layout of the centre will need to provide a protective environment for the patients in the early stages of treatment but will also need to provide routes for people to engage with the public realm and also allow the public to gain an insight into the work of the clinic. I propose to include a number of public functions for the centre which may provide services to the neighbourhood and also give the patients a chance to interact with people in a controlled environment. As my patients will all be voluntarily residents there is no risk of run-aways and these public zones will also provide a forum for the patients to learn new skills. By adopting the below treatment plan I believe these factors can all be dealt with.



Report 3

Investigation into the use and design of therapeutic space

In view of the design of a Military rehabilitation centre

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Introduction

This report is the culmination of the past semester's research into a proposed centre for the rehabilitation of military personnel. The common denominator between all the patients is that they have experienced a traumatic event during their service and this has led to the development of some form of psychological condition. So far my research has been involved with understanding the mental conditions that result from this trauma and how these various illnesses can be treated using both traditional and modern methods. From this research I now understand, at a basic level what the typical patient of this centre will have experienced and what the course of treatment will be. However what I believe is lacking at the moment is how this knowledge will manifest in an architectural project. Finding out what kind of environment these treatments need to be most effective is one part of this. However I find it more important to understand how we can create an environment in which the patients feel safe and in which the chances of re-experiencing trauma is minimal. From preliminary searches it is suggested that by creating certain types of spaces and using some design tools a building can actively reduce the chances of traumatic reactions being triggered.



Section 1: Research approach

Definitions

Leading on from my initial research into the treatment of PTSD, as discussed in the first report, I think it is necessary and interesting to make some definitions before starting my more focused investigations:

Traumatic Stressor

An event in which a person has been exposed to death, possible death or an invasive bodily threat of either themselves or another person.

PTSD

Persistent problematic biological and psychological adaptations following exposure to a traumatic stressor, including intrusive memories, avoidance/emotional numbing and hyper-arousal/hyper-vigilance.

Intrusive Recollections

Uncontrollable distressing recollections of the event, distressing dreams, feeling as if the event were reoccurring whilst awake and intense psychological or physiological distressed reactions to cues **that resemble the original stressor**.

By defining these three terms it helps to focus the aims of my further research. The essence of designing a calming, stress reducing environment is to eliminate the chances of intrusive recollections, or flashbacks as they are more commonly known occurring during the patients time at the facility. Therefore this research is about the ability of architecture to reduce the stress on patients whilst in care. This leads to the following research question:

What design decisions or architectural elements can be used in a building to create an environment which reduces recurring traumatic experiences?

Method 1 - Online questionnaire

Outline

With the aim of learning how the architecture of a facility can influence, either positively or negatively, the treatment and general well being of military rehabilitation patients, my initial idea was to interview veterans about their experiences of care. To do this I designed an online questionnaire aimed at veterans in the Netherlands, the UK and in the USA. A hard copy of the questionnaire is attached in the appendix. The questionnaire consisted of ten questions the first five of which were aimed at gaining an understanding of the patients condition both as a reference and also to collect some idea of individual experiences prior to, during and following on from treatment. The next five questions were aimed more towards recording the patients course of treatment during their stay in a facility. These questions were written in a more open fashion with plenty of opportunity for the respondents to elaborate on their personal experiences and also to give their opinion on the design of such a facility.

Seeking respondents

The following websites and organisations were contacted:

Veterans Benefits Network (www.vets.yuku.com) USA

www.military.com USA

www.militaryforums.co.uk/ UK

Veteranen Loket (www.veteranenloket.nl) NL

De Bond van Nederlandse Militaire Oorlogs (www.bnmo.nl) NL

Results

Sadly the response to this questionnaire was severely limited with no usable results being gained. This was mainly due to organisations having a nonparticipation policy regarding any research outside of its own network. Also it makes clear that when dealing with this kind of medical issue, the handling of privacy is taken extremely seriously. However many of the administrators or caregivers that dealt with me showed a very positive attitude towards investigations into more careful design of facilities.

“Some might think design of treatment facilities isn’t an important factor, but as a 100% PTSD rated vet, I couldn’t disagree more. I think we notice and are affected by the environment far more than the average person.”

Quote from Legion: Administrator @ VBN (vets.yuku.com)

Method 2 - Case Studies

Outline

The second approach to researching the design of calming space was to use case studies as a way of evaluating architecture's healing effects. In order to do this I looked for projects that dealt either with similar situations; involving the rehabilitation of potentially traumatised individuals or I looked at examples of architecture that deal with traumatic events. To be able to then assess these projects I found it necessary to use my previous research, as well as new material, to define the research criteria that be used.

Criteria

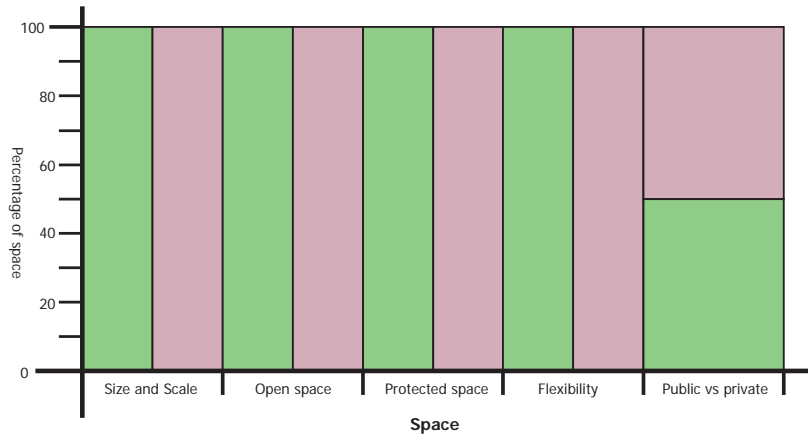
Using Professor Roger S. Ulrich's work about "Evidence Based Design" and a New York Times article also written by him as the starting point for my research I developed the following set of criteria:

Open vs closed spaces	Size of spaces
Protected/private space	Varying level of access
Public space	Scale of shared space
Visual access vs privacy	Way finding and identification
Flexibility vs purposefulness of space	Daylight
Access to nature vs urban	Colours
Materials	Acoustics

I then categorised these criteria into three groups in order to simplify the analysis:

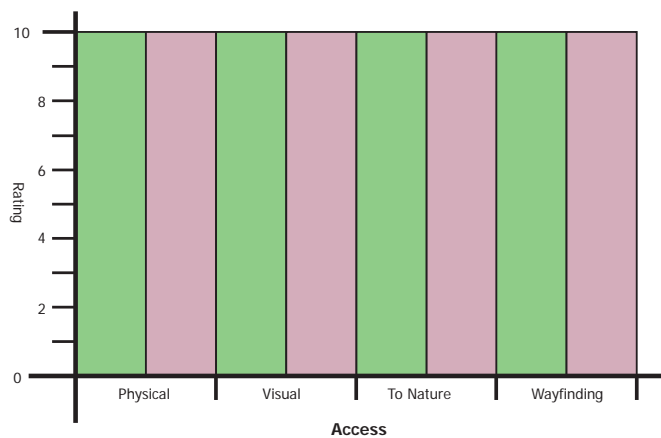
- Space
- Access
- Ambience

Space - Scale, Openness, Protected space, Flexibility, Balance of public/private
 The spacial qualities of the projects will be measured in an empirical way, looking at the amount of each type of space that is provided in each case.



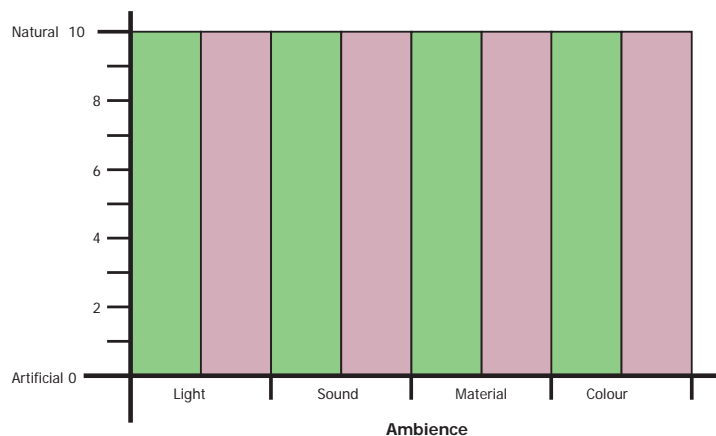
Access - Physical, Visual, Nature, Way finding

The accessibility of the projects will be judged on a absolute scale. 10 indicates very accessible where as 0 indicates no access in that criteria.



Ambience - Lighting, Acoustics, Material, Colour

This category will be graded on a scale from natural to artificial or high-tech. This scale is somewhat subjective but aims to show the tactility of each project.



Proposed case studies

The following projects were identified as being useful to study due to the subjects they each deal with. A range of different functions was purposefully for comparison.

- National Intrepid Centre of Excellence, Bethesda, Maryland, USA



- Centre for the Intrepid, San Antonio, Texas, USA



- The Bridge Homeless Assistance Centre, Dallas, Texas, USA



- Utøya Island Memorial and redevelopment, Utøya, Norway

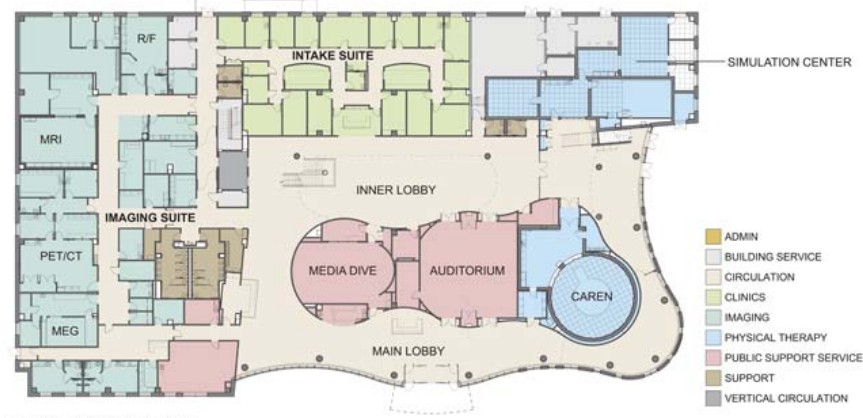


- Yad Vashem Holocaust Memorial, Jerusalem, Israel

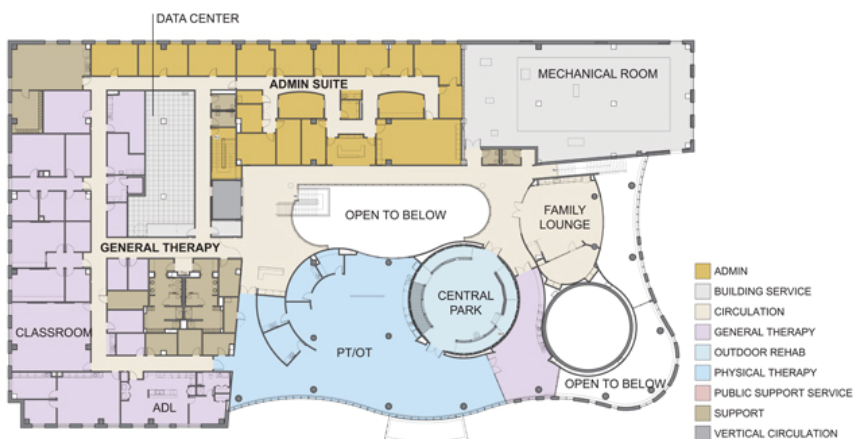
Following the initial research it was decided to omit the results of this project.

National Intrepid Centre of Excellence, Bethesda, Maryland, USA

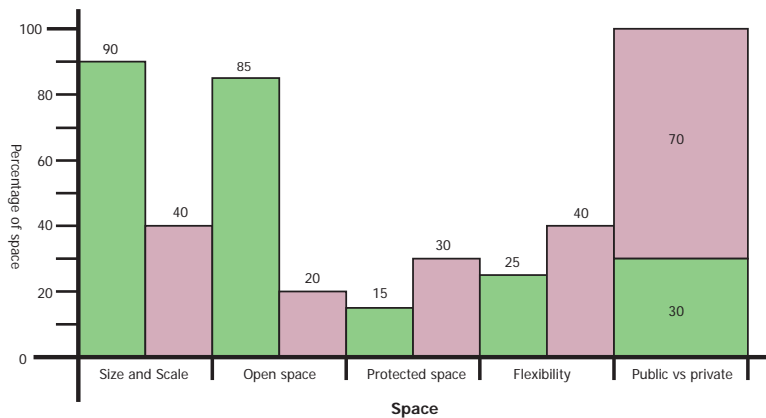
Completed in 2010 the NICoE was built using \$65 million of private donations as a symbol of the support of the US citizens for their service men and women. The 7000 m² facility is used by the American DoD to treat personnel suffering from traumatic brain injury, TBI and psychological health issues. The centre contains advanced technology to aid in the treatment, rehabilitation and education of military personnel but also helps in the centre's research work.



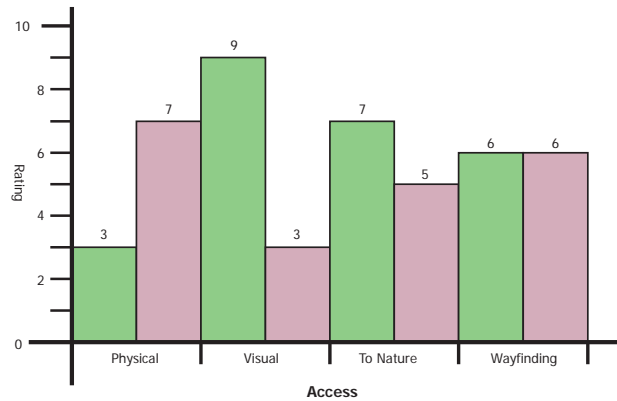
FIRST FLOOR PLAN



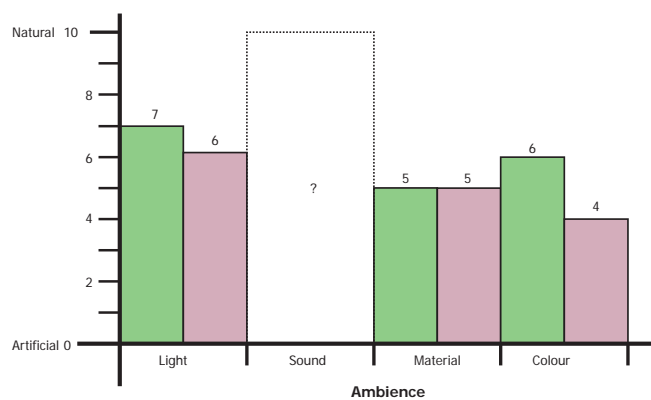
SECOND FLOOR PLAN



Space - The majority of the space at NICoE is small rooms used for treatment and consultation. The public space is mainly a single large volume with plenty of open space countered by some smaller, more protected spaces.



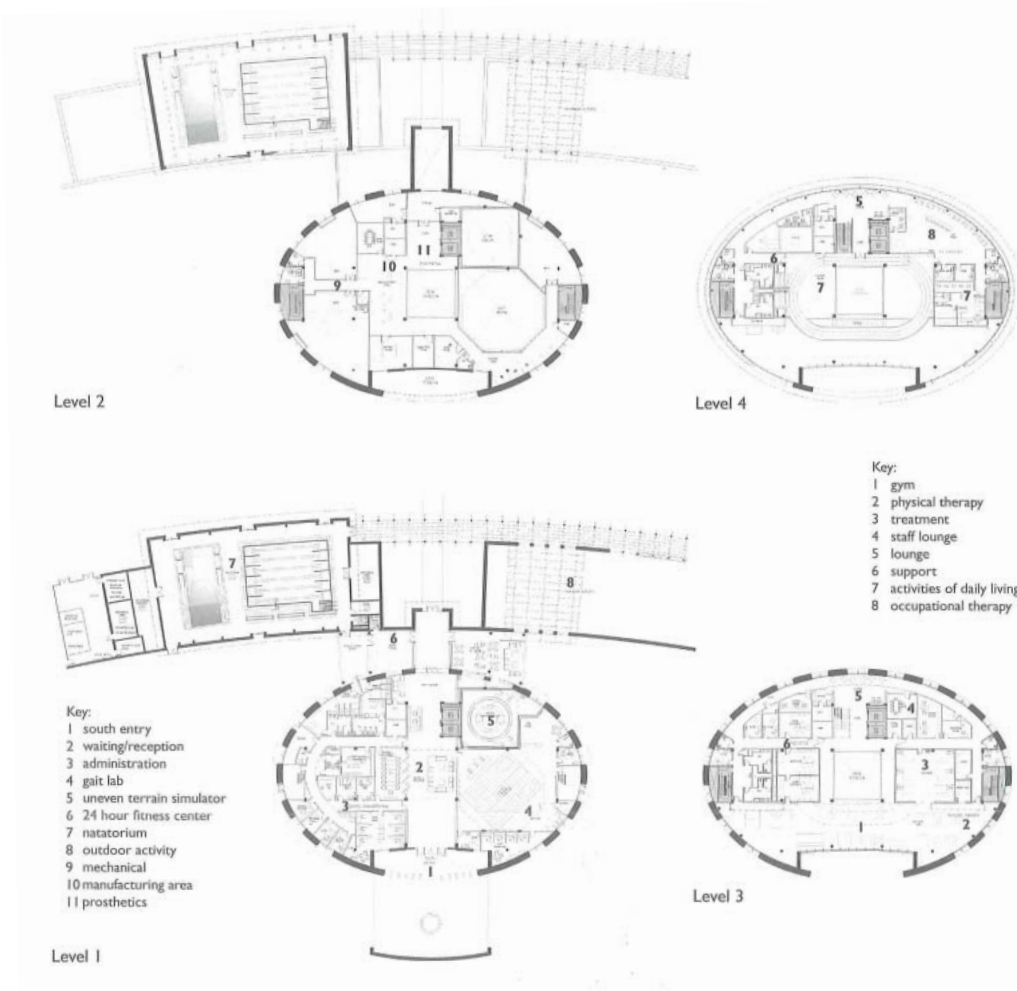
Access - Whilst the physical connections are limited the design places much more emphasis on visual access to the public spaces and gives a strong connection with nature. The building is easy to navigate with a simple layout and distinct departments.

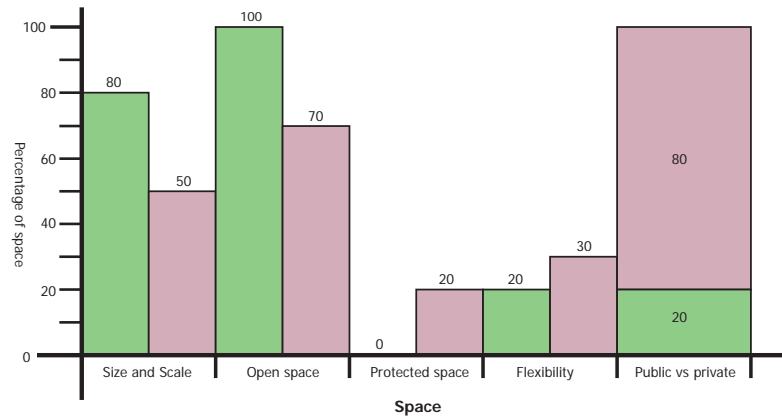


Ambience - The facility leans towards creating a more natural ambience with the use of materials and natural even lighting. Spaces such as "Central Park" (above) are used to give a relaxing atmosphere that allows patients space to escape to.

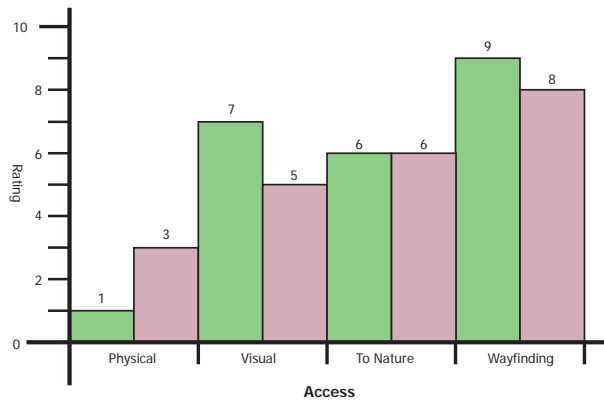
Centre for the Intrepid, San Antonio, Texas, USA

The sister organisation to NICoE this facility is also run in conjunction with the DoD but focuses on the physical rehabilitation of injured service-persons. Completed in 2007, the 6000 m² facility houses extensive examination technology used to identify injury and enable rehabilitation. Main features include a terrain simulator, extensive military ergotherapy suite, prosthetics manufacturing, nadatorium and indoor running track.

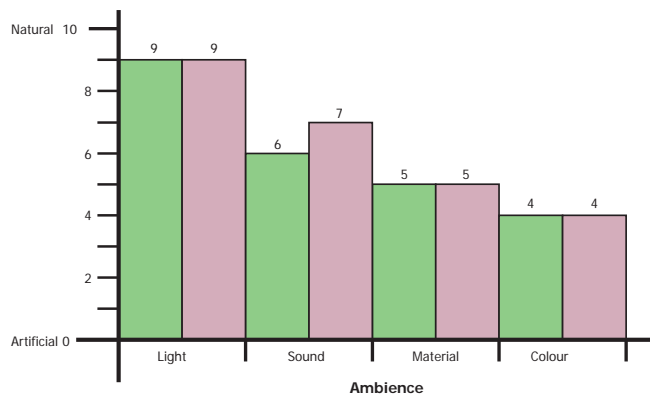




Space - Public space in this building is limited to the reception area with its large atrium. The private areas here tend to be more open therapy spaces such as shared the gym/physiotherapy area and the hydrotherapy suite.



Access - The building is very limited in terms of access giving a lot of control to the users. Visually however it is very open with most spaces having a good view to outside.



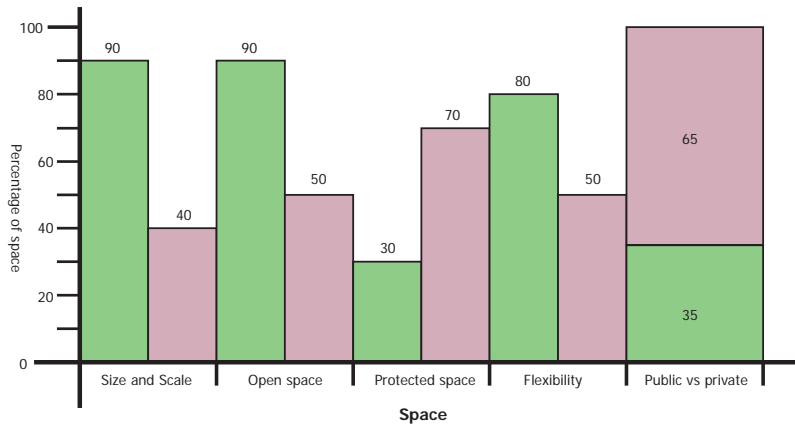
Ambience - The building uses daylight in a very effective way through large windows and clerestory windows. The materiality and colouring of the project leans more towards a high tech feel, emphasising its modern intentions.

The Bridge Homeless Assistance Centre, Dallas, Texas, USA

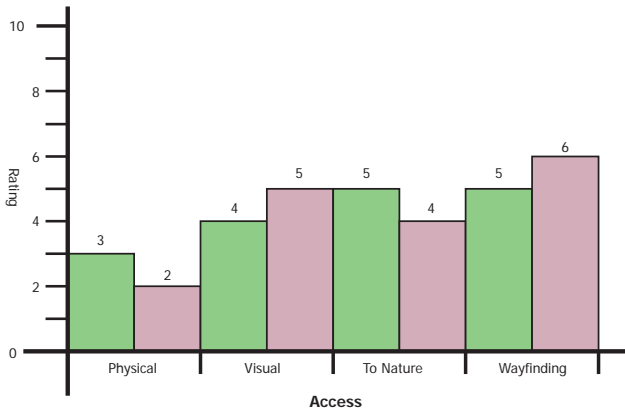
In response to a large rise in homelessness in the city of Dallas this facility was built in 2010 to give shelter, food and education to around 1,400 people per day. It contains separate male and female dormitories, an serious care zone, mental and general health facilities as well as day care functions such as a restaurant. The major role of the centre is to provide education and advice to the homeless population of Dallas with offices for legal aid, social care and help with finding employment.



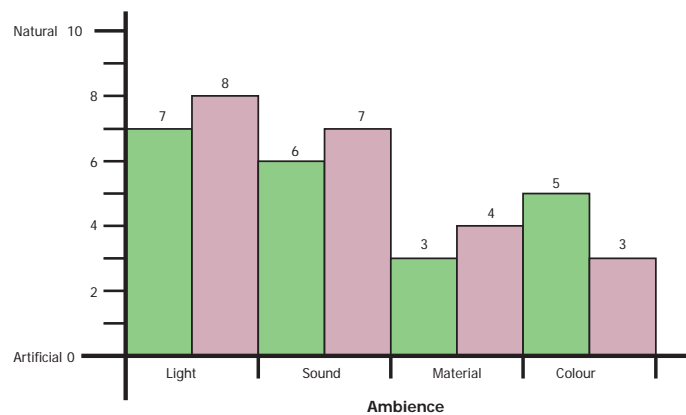
First Floor Plan



Space - The balance of public and private space is even more uneven here with more open public space. The private space is also generally slightly larger but has much more opportunity to escape into protected spaces.



Access - Physical access to and through the facility is not easy with barriers in order to give the users protection. Visually it also offers protection to the public spaces whilst the private areas are more accessible. Given the urban surroundings access to nature is achieved where possible but the private spaces are more introverted.

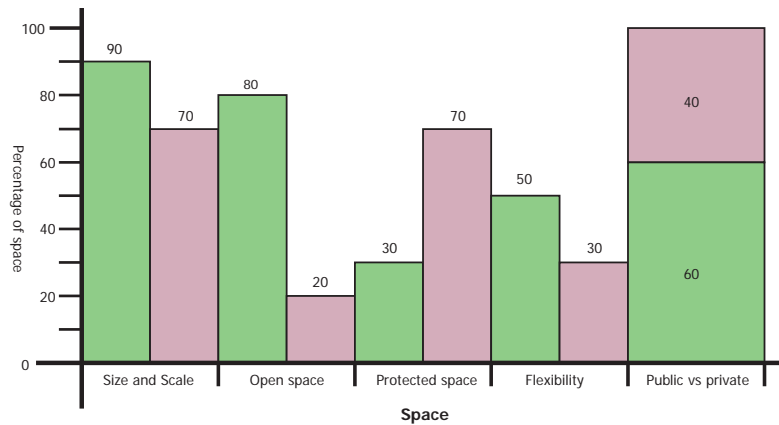


Ambience - The facility aims at a modern, high-tech ambience with a hint of natural materials and colour in the use of wooden trimmings. The materiality externally is a modern semi-translucent facade that provides maximum daylight whilst giving cover.

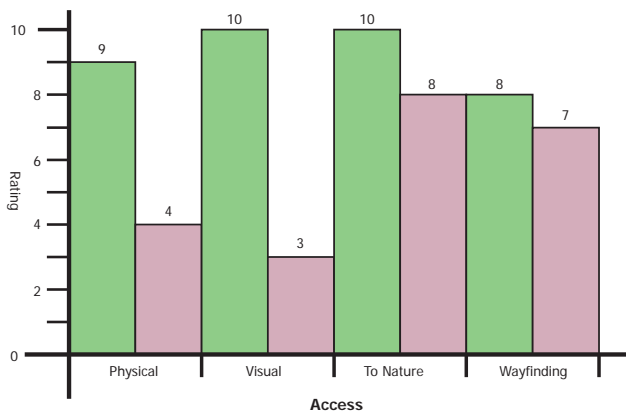
Utøya Island Memorial and redevelopment, Utøya, Norway

The only case study not yet realised, this planned redevelopment of Utøya in Norway is in response to the horrific massacre of 2011. Along with the central grouping of buildings such as a canteen, kitchen and living space it is intended to create a number of pavilions throughout the island each with a different atmosphere. Specifically this project looks at dealing with a number of different user types; those that were at the attack, those that are new to Utøya and that come to commemorate the victims. Dealing with different users is part of my project and is therefore important to research.





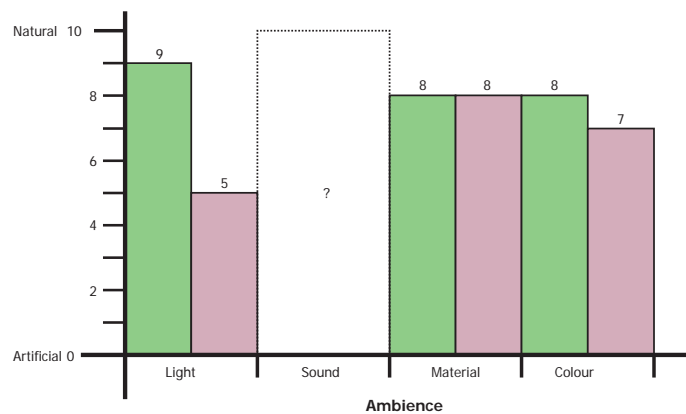
Space - At the islands center is a "community centre" which provides sheltered private space and a semi-protected courtyard. Flexible structures in the public realm provide the users with an environment they can personalise and that provides protection.



Access - The public aspects of the site are very accessible and provide a great link to nature whilst the private areas are very controlled in contrast. However access to nature is still given a high importance. Way-finding is aided by a network of paths.



ILLUSTRATIONER AV DE ULIKE OVERFLATENE PÅ BAKKEN I LYONINGEN



Ambience - As with access, the natural aspects of the site are enhanced by materiality and the use of light. Emphasis is given to the healing properties of a natural environment.

Section 2 : Conclusions

From this exercise I can begin to draw some useful conclusions in relation to the creation of calming space. I will do this by using the three categories with some design conclusions listed:

Space - To give a calming environment it is necessary to have a significant amount of open public space balanced by a more closed private area that provides protected spaces. However it is still necessary to provide smaller protected spaces in the public realm such as those seen in Utøya. Providing flexibility in both public and private spaces is important for the users to take some control of their surroundings which can reduce stress and benefit the experience of the environment.

- Appropriate scale/ratio of public and private
- Provide flexible and protected spaces
- Variety in spaces

Access - Providing limited physical access to the public areas is important to reassure the patients/users of their security but this should be combined with easy entrance to private areas as this promotes positive movement through a facility and avoids an institutional environment. Views into the public realm and to nature provide calming distractions and reduce any chances alienation of the user or of outsiders. The private areas should be more visually protected though to give relief from stimulation when needed. Way finding is important to give orientation and a feeling of familiarity to the user. This can provide them with a feeling of safety.

- Control physical access and visual access separately
- Organisation as way finding with additional signage

Ambience - A predisposition to natural materials, light and colours make a calming environment particularly with warming colours. However this should be balanced by a certain amount of plainer more "artificial" materials that provide a relief from stimulation. It is also beneficial to give a high-tech feel to some medical environments as it gives reassurance. Plainness can also provide a background for customisation.

- Use warm natural materials with plainer materials to balance
- Even lighting in public areas to give a calming environment

It is also particularly important to note that in a military context it is apparent that a different approach to PTSD treatment can be taken as the patients are more likely to adopt a group mentality and support structure due to their training. This is reflected in the architecture and in particular the openness of the public and private spaces.

Section 3: Implementation and further research

To further this research I felt the need to implement what I have so far learned into a controlled design exercise. By doing this I would be able to evaluate the criteria and results that I have reached. To do this I will use the story of three soldiers who have returned from active service with PTSD and, using their individual stories, envision the space that would respond to them the most. For this report these stories and the design responses form a more representative conclusion of the knowledge gained from this report.

Cpl. Lindsay Mitchell, Canada

Source:

Fought & Forgotten - A short film

[www.youtube.com/
watch?v=US5e0QbyGr8](http://www.youtube.com/watch?v=US5e0QbyGr8)



Sgt. Gustavo Blanco, USA

Source:

Soldier talks about his struggle with depression and PTSD

[www.youtube.com/
watch?v=4DF5caucKjI](http://www.youtube.com/watch?v=4DF5caucKjI)



Ssg. Billy Caviness, USA

Source:

Level Black - The War at Home

[www.youtube.com/
watch?v=xTf8aunCpq8](http://www.youtube.com/watch?v=xTf8aunCpq8)



Cpl. Lindsay Mitchell, Canada

- Since his return from Afghanistan he has experienced PTSD symptoms such as anxiety, feelings of helplessness, painful recollections and uncontrollable rage.
 - He talk about the accumulative effect of PTSD. This is particularly relevant to vets.
 - In particular he notes two days as being traumatic for him since his return:
 - January 5th when he had to give a friend medical aid and was covered in his blood for a number of days.
 - May 3rd, the last day of his tour when his unit suffered an IED attack and a comrade died. He has survivors guilt and feelings of responsibility.
-

Sgt. Gustavo Blanco, USA

- As a unit leader he lost many troops in his command. The “good guys” as he says
 - Upon return he developed severe survivors guilt which he coped with through excessive drinking, angry outburst and by seeking fights.
 - When he married he realised the extent of the problem; sleep disorder, mood swings, detachment from others.
 - Culmination of his PTSD was self harming himself whilst intoxicated and suffering uncontrollable anxiety. He slashed his chest with a broken bottle to try to remove the feelings of guilt.
 - He still avoided receiving treatment due to a feeling of shame. It took a fellow soldier to convince him, someone he saw as comparable. He “didn’t want to be singled out”.
-

Ssg. Billy Caviness, USA

- After suffering serious injuries in a mortar attack whilst in Afghanistan he received serious medial care. However he now suffers from severe PTSD.
- In addition to anxiety, serious paranoia and hallucinations he can no longer differentiate between home and the combat zone.
- He has what is known as “Level Black” PTSD, the most severe.
- At times he is unable to sleep for up to 4 days in a row.
- It took 5 months before he started to receive PTSD therapy, but symptoms still persist after this, family support aided with his recovery.
- For him it was the group therapy that helped the most - “Being around those guys who have been through similar situations, it’s one of the best things ever”.

Response

With an emphasis on two particular days that induce trauma it can be imagined that on these days the user will be extra sensitive. To help this a flexible environment could be useful but there should also be ample fixed protective spaces to help reduce anxiety. These protective spaces should have natural, warm materials and a good view to nature.



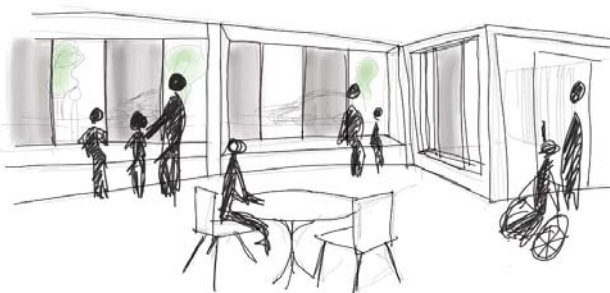
Response

Social spaces would be key in treatment of this patient as many of his problems spout from feelings of guilt and a desire not to be cast out. Spaces that allow easy movement and visual transparency will aid informal group therapy and provide support. The use of a more high-tech feel ambience could improve his willingness to receive treatment. To counter possible suicidal tendencies smaller shared spaces will allow close bond to form.



Response

Again there is an importance of group spaces and providing social interaction. However family support was a large part of his recovery so spaces for this should be incorporated. A mixture of family and group space could provide a family atmosphere. Creating a protective environment is particularly important for this patient to reduce paranoia stress. Visual openness might help to reintegrate him.



Appendix I:

Online questionnaire

Designing for trauma

Exit this survey

Welcome to my survey

Hello, my name is Ian Dainton and I am a master student in architecture at the TU Delft in the Netherlands, but originally I am from England. For my graduation project I am researching into how to design a rehabilitation centre for treating veterans and returning troops with the hope of creating the best environment for the successful recovery from conditions such as PTSD. I am looking for any military personnel who have any experience with receiving health care after military service to fill out the following questionnaire. I am very interested in what you have to say about the place you received treatment whether it was good or bad. My specific interest is how a building can be designed to create a safe and positive environment for recovering from trauma induced mental health problems. Any information you can tell me about the buildings and spaces where you received rehabilitation will be very useful. I would like to thank you in advance for all your help as the information you provide will be extremely useful. All information will be treated in strict privacy. Please feel free to replay to the longer questions in your native language if it is easier. For any questions please feel free to contact me at I.Dainton@student.tudelft.nl

1. What is your gender, age and country of residence?

2. How would you define your physical condition

- Full functioning
- Partial loss of limb function
- Complete loss of limb function
- Spinal Cord injury
- Head/brain injury
- Blindness
- Other (please specify)

* 3. How has your mental health been diagnosed?

- Post traumatic stress disorder (PTSD)
- Depression
- Anxiety disorder
- Panic disorder
- Obsessive compulsive disorder (OCD)
- Alcohol/substance addiction
- Long term mental illness (such as bipolar disorder, schizophrenia, etc) - Please specify below

Other (please specify)

* 4. How soon after the traumatic event did you first receive treatment?

* 5. How did you receive treatment?

- At home
- As an outpatient at a local centre
- As an outpatient at a national centre
- As an outpatient at a specialised military health facility
- As an inpatient
- As an inpatient at a specialised military health facility

Please describe the clinic/ centre you visited. What was the most important space/place you remember? If you can please provide the name of the centre.

*** 6. What types of therapy have you received? Which was the most useful?**

- Pharmacological treatment e.g. medication
- Individual psychotherapy eg. CBT, desensitization training, counseling..
- Somatic treatment
- Group therapy
- Family therapy
- Hypnosis
- Body work eg. yoga, tai chi,
- Art/dance therapy
- Music therapy
- Massage/ acupuncture/ etc
- Educational therapy eg. learning about PTSD
- Skills therapy eg. job skills, cooking, gardening
- Virtual reality (VR) therapy

What others? Which was most useful/enjoyable treatment? Why?

7. What was the best part of the therapy? At what point in your treatment did you feel safest? What provided this feeling?

8. What was the worst part of the therapy? Is there a specific place you remember negatively?

9. Looking back what would you change about the place you were treated in? Would you spend more/less time as an inpatient? Would you choose a different treatment facility?

10. If you have any additional comments about the design of the treatment facilities you have experienced leave them here. Please be as critical as possible. Your views are very important.

Screen-shots from surveymonkey.com - accessed 11/12/14