AUTISM, HYPERCONNECTIVITY, AND DOCUMENTATION

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Abstract

People with Autism Spectrum Symptoms would probably have a unique understanding and appreciation of a work of art or an artifact, due to their potential mental capabilities and extraordinary brain functions.
Meanwhile, metaphorically speaking, museum works can also suffer a spectrum of autism symptoms in their encounter with their audience! From this point of view, we can say that these works have poor social skills, including eye contact, initiating acts of communication, using nonverbal communication, gestures, and facial expressions.

With regard to ICOM's theme for 2018 International Museum Day – Hyperconnected museums: New approaches, new publics – using new sciences, such as cognitive sciences and different rehabilitation branches, including that for Autism Spectrum Disorders, and utilizing multimedia methods, from the viewpoint of museology, documentation may be able to bridge between museum works and audiences, particularly those with especial needs, in order to expand social interaction between them.

Hyperconnectivity could be generalized to include concepts of sciences, technologies, and any other means of communication in society. Neurofeedback systems can represent the connection between humans and museum objects. It can also be considered a tool for museum therapy. There is this promise, however, that these new areas in the arena of museum, not only help the audience, but also pave the way for documentation of a vast spectrum of feedbacks, reactions, or actions that could be potentially considered part of the data. From this perspective, a hyperconnected museum is a context that, further to museum concepts, includes other sciences as well.

Keywords: Autism, Hyperconnectivity, Documentation, Neurofeedback, Museum Therapy

Introdudtion

1 Autism

As a kind of developmental disorder affecting social relationship, Autismis identified with unusual interpersonal and verbal behavior. It is also known as a spectrum disorder ranging from people with high-functionality to people with a low functional ability. Autism usually goes hand in hand with other disorders, such as ADHD. Autistic people are apt to have a very high or very low IQs, and they maybe talkative or quiet. As a result of this disorder the autistic person find it hard to communicate with other people and the outside world, so much so that sometimes it leads to masochistic or aggressive behavior. People with this condition display a high degree of sensitivity of the five senses, but the central core of autism is the lack of sufficient skill to connect with others.

Today autism spectrum

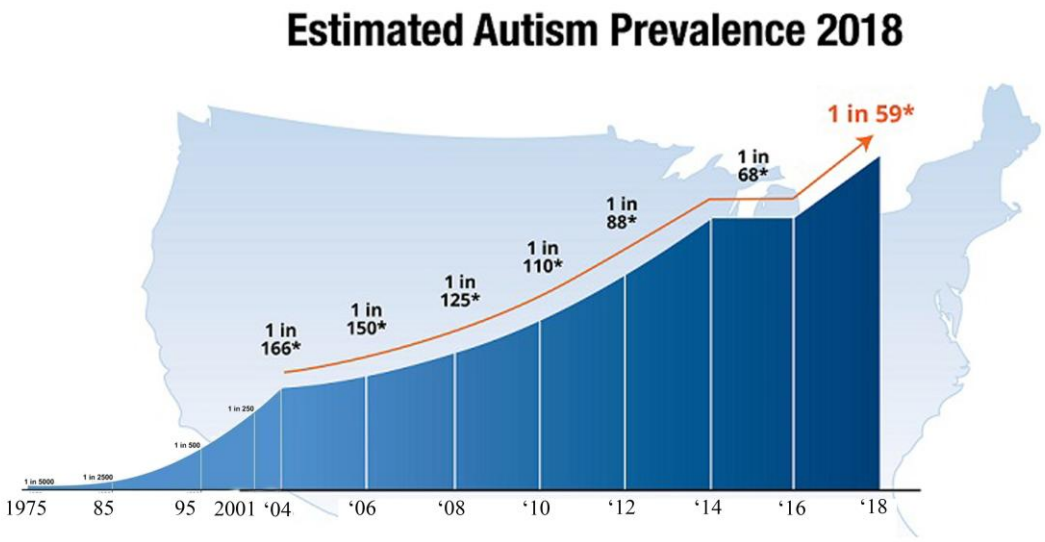
(http://www.autisminthemuseum.org/p/training.html) Autism Spectrum after May 2013

Symptoms of autism are divided into three groups: difficulty in social relationships, verbal problems, and symbolic and imaginary activity. An autistic person has many repetitive motions – looking around from the corner of the eyes, walking on tip toes, flapping the hands, and repeating oneself when speaking.

Autism as a word comes from the Greek root *autos*, meaning self, implying being confined to oneself and separated from the world outside.

According to World Health Organization "1 in 160 children has an autism spectrum disorder (ASD)." These numbers, though, vary according to organizations in different countries. In the USA, The Centers for Disease Control and Prevention (CDC) today released its biennial update of autism's estimated prevalence among the nation's children, based on an analysis of 2014 medical records and, where available, educational records of 8-year-old children from 11 monitoring sites across the United States.

The new estimate represents a 15 percent increase in prevalence nationally: to 1 in 59 children, from 1 in 68 two years previous.



https://www.autismspeaks.org/science/science-news/cdc-increases-estimate-autism%E2%80%99s-prevalence-15-percent-1-59-children

This number is estimated to be 1 in 100 in the whole population in Iran. Meanwhile, as reported by Golestan Province Welfare Organization there are only 88 known cases of autism (almost 0.004 percent) in the whole population (1,868,819 as per census of 2014) of this province of Iran. It should be noted that 80 percent of those diagnosed with autism belong to the lower end of the spectrum.

1.1 Autism in Iran

The discrepancies among statistics onautism indicate that there may be a difference in diagnosis in developing and developed countries. It may be caused by the fact that those in the upper end of the autism spectrum are not equally diagnosed as autistic in different regions of the world. Some of these people are consequently treated as normal people by their families, acquaintances, and people in educational or other environments. This is what leads to misjudgment and labeling. In Iran, probably like many other developing countries, this wrong social opinion on autistic people is added to the problem of lack of access to healthcare and empowering services. A study comparing the needs of families with autistic children in Iran and Canada found that the Iranian parents, had more needs than the Canadian parents, the most essential of which was being provided by asustainable healthcare service, more understanding and empathy on the side of specialists and the society, a functional educational cycle, and having more leisure time at their disposal (Ahmadi*et al* 2011).

For this kind of view in the society, many parents hide the problems of their children, of course not because they have a kid with special needs, but because they cannot share the special needs of their child openly in the society, and they prefer to conceal the truth.

According to a study, in Iran, most children with autism spectrum disorders are kept at home, so their socialization problem exacerbates their condition in the future. One of the reasons for keeping these children at home is their functional dependence on parents, and their severe maladaptive behavior."

Eslami Shahr babaki M, Iranpoor M. The Problems of Accessibility of Autistic Children and their Parents to Treatment and Rehabilitation Services in Iran . IJPCP. 2015; 21 (1) :79-81

URL: http://ijpcp.iums.ac.ir/article-1-2375-fa.html

A different study states that "another reason for this is the financial concerns. Expenses sustained by the family of these children is three times the expenses for children their age, and much more than the expenses imposed on the family by mentally retarded or physically disabled children."

Kheir MN, Ghoneim MO, Sandridge LA, Hyder AS, Ismail M, AL-Rawi F. Concerns and considerations among caregivers of a child with autism in Qatar. BMC Res Notes.2012; 5:290.

The sum total of these reasons even results in "the parents of autistic children experiencing significantly greater amounts of tension and guilt and suffering more from depression compared with parents of children with intellectual disabilities, cerebral palsy, or genetic disorders."

Mak WS, Kwok YT. Internalization of stigma for parents of children with autism spectrum disorder in Hong Kong. Soc Sci Med. 2010; 70(12):2045-51.

Autistic children often have many problems learning self-care skills. Self-care skills or activities mean actions the child should be able to take in order to meet his or her personal needs, e.g. wear clothes, shoes, and socks, wash hands and face, brush teeth, take a shower (personal hygiene), button up, tie shoelace, go to toilet, etc. – activities pertaining to self in general. Learning self-care skills is one of the most important aspects of teaching autistic and non-autistic children, because they are essential and necessary for entering the social life, for the social life and personal independence of each person, for entering school, and for other social activities.

Some of the children may require more exercise and effort for learning these activities even after they acquire the fundamentals and essentials of learning (attention, focus, imitation, adjustment …). For children with special needs, self-care training is of utmost importance.

In autism training centers autistic people are assessed in terms of their abilities and disabilities and different training programs are planned for them. These programs include cognitive, motor, and verbal skills through which the individual is prepared to enter school, and is transferred to normal schools with the trainer after passing these stages.

The common practice in the active autism centers in Iran, including the Esfahan Autism Center (affiliated with Hazrat Zeinab Charity) and the Autism Association of Iran (in Tehran) is the ABA behavior therapy where the individual goes through separate trainings. These programs are held completely separated and compulsorily for each autistic person under supervision of a coach, where the autistic person achieves acceptable social skills, being able to have a healthy and effective communication with the community.

In Esfahan Autism Center (affiliated with Hazrat Zeinab Charity) several coaches are employed for a better training of these children so that the child is not habituated with one trainer, so to begin going to school and study along with other students.

As reported in *Children and Youth Services Review*, "In Asian countries, the healthcare and maintenance expenses of these children amounts to almost seventy percent of a government employee's salary; many of the healthcare services are given a long way from where the family lives, so the family has to move to other places so to be able to receive these services."

Dababnah S, Parish LS. At a moment, you could collapse: Raising children with autism in the West Bank. Child Youth Serv Rev. 2013; 35(10):1670-8.(

In developing countries, like Iran, insufficient financial and healthcare services are provided, and healthcare and enabling services are not planned to be provided all along a person's lifetime. In other words, both for treatment and comprehensive rehabilitation of children with autism spectrum disorders, there is a serious need for short-term, mid-term, and long-term planning, and a special attention to families of these children is evidently required.

Eslami Shahr babaki M, Iranpoor M. The Problems of Accessibility of Autistic Children and their Parents to Treatment and Rehabilitation Services in Iran . IJPCP. 2015; 21 (1) :79-81

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2 Museum Therapy

As museums progress toward socialization, they are attempting to approach the society, and the challenges and needs thereof. With the concept of health being expanded in different arenas of society, the presence of social institutions in health is expanding and, as a social institution, the museum is also communicating with the expanded concept of health in society.

2.1 Museum as an Accessible Social Institution

Different definitions may be provided for the concept of health, "depending on the type of society and its economic and social standing," but, as an international point of reference, the Constitution of the World Health Organization states that, "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." Furthermore, hygiene is defined as the provision, maintaining, and raising the level of health. It should be noted that the mental, physical, and social aspects affect, and are affected, by one another, so much so that one can expect that the undesirable social relationship to have an undesirable effect on the physical and psychological health of an individual. Doctor Abbott and Doctor Jones of Wisconsin University compiled and presented the seven features of health, also available in the World Health Organization webpage as an external source. These features include:

- Physical or bodily health
- Occupational health
- Spiritual health
- Environmental health
- Social health
- Emotional health
- Mental health

Similar to the definition above, and with an eye on the museum, in his book, *Health Ecology*, Morteza Honary, ties human life in the context of culture and environment with a third aspect. This third aspect is health that shares many aspects with culture and environment. The healthy person in these contexts has a collection of the following features:
(Health Ecology, Morteza Honari, Rutledge, 1999, London and New York)

- Physical balance
- Mental balance
- Psychological happiness
- Social activity
- Economic productiveness
- Political awareness
- Cultural responsibility

The presence of these seven features, in proportion with the culture and environment, is a sign of individual's health, and any shortcoming in each is a sign of lack of health. Obviously, features like happiness, social activity, awareness, and cultural responsibility can also be found in the functionality of the museum.

2.2 Museum and health

With the understanding of museum as a place metamorphosed, now the museum "is turned into a concept and a social phenomenon that is able to assume different subjects and aspects, like an institute."
Different functions of a museum such as collecting, preserving, researching, introducing, making available, educating, connecting, and entertaining provide innumerable chances of social interaction and communication for the museum.
As Reza Dabirinezhad points out, "one of the most important characteristics of the museum being emphasized is public access. This public access provides a common benefit and service – for everyone and with no discrimination.
The other characteristic of the museum is the variety in or the span of its subject matter, as different scientific, cultural, artistic, literary, natural-historical, and industrial subjects fall in some way within the theme of the museum. Here, when going back to the classification of health features by Morteza Honari, the museum can ensure the individual and social health by increasing cultural, social, and political awareness.
Apart from the affinity between the subject matters of the museum with health, the museum is also related to health in terms of function. As a social and cultural institution, attending the museum and participating in its programs is considered a social and cultural act during which the individual is placed in a collective context (both materially and mentally). "Like participating in a ritual, the act of visiting [a museum] itself is considered the basis for activity."

All this prepares a foundation for the museum to play a supplementing or facilitating role beside the health system of the society in a concept called museum therapy. Having this in mind, "museum therapy is not a method, but a goal achieved with experience and detailed study of its different aspects, including an understanding of the dimentions of health and society, and it is developed and completed with these experiences."
To do this, as Dabirinezhad points out in his paper on museum therapy, some goals are specified to isolate the measures within the functions and goals of the museum, defined in addition to the goals of the museum itself:

1. Museum therapy wants to use the potentials of the museum to meet the needs of the audience.
   This goal puts first the experience of the audience in the museum. Therefore the planning of the museum will be not based on the works and artifacts, but based on the need of the audience. To this end, achieving the seven features of health will set forth the model for activities.
2. Human heritage can have different dimentions
   Human heritage across material, intangible, and natural spheres is a basis for encounter from different aspects of each. This variety in encountering the heritage provides the groundwork for a museum therapy approach because, from the viewpoint of Honari, health is the foundation for the relation between culture and nature.
3. Museum therapy is distinct from museum functions.
   Although museum therapy matches functions like education and entertainment, it is, in fact, a distinct act that should be executed with a specific scenario.
4. Museum therapy is a process.
   Museum therapy is not limited to a single event, but it is a long-term process beginning with cognition, and goes on until it achieves a result, and this route ends in assessment and evaluation.
5. Pathology the first step in the process of Museum therapy
   Knowing the deficiency and understanding the lack of health are the first steps in museum therapy. That this deficiency occurred in which feature of health will drive later activities after detection – by the museum or other social institutions.
6. Etiology; the second step

The deficiency detected in the pathology is the effect the cause of which should be found. Finding the cause may take the problem to a different sphere with different dimensions. To do this, and to find the cause, the museum would require involvement with other fields of knowledge.

7. Museum therapy is a group and multidisciplinary act
   The aspects involved in museum therapy, from the museum object to the field of pathology, etiology, and the definition of the process of improvement would place different fields alongside the museum sciences, and would open the door to the activity of a multidisciplinary and interdisciplinary group activity.
8. Museum therapy continues after the museum
   Museum therapy is not limited to the museum. Whether it begins in the museum or outside, it is not limited to place, and one cannot expect that the result is only achieved within the confines of the museum. Even, sometimes a secondary activity is necessary beside museum therapy.
9. Museum therapy situates the museum beside other social institutions.
   Parameters of museum therapy necessitate expertise, connections, and other different facilities. On the other hand, for the audiences, different social institutions provide a chance for the detection and more effective tracking.

All this, in the procedure of museum therapy, highlight the importance of the activities of social institutions alongside the museum.

Finally, we could say that museum therapy is a goal that can fulfill part of the goals of the museum, and even, give more integration to the activity of the museum, a program generalizable to all museums with different subjects and forms.

All this considered, the museum is a refuge for parts of the society that, because of the social and cultural limitations and incapability, have lost proper access to the official authorities providing services, and this again highlights the index of accessibility in ICOM's definition of the museum, and the museum assumes the status of a social institution accountable to all social classes.

2.3 Autism and museums

Because of scarcity of resources and the novelty of this topic in Iran, this part is based on the experiences of developed countries, and data available online, especially in autisminthemuseum.org and autismspeaks.org.

A recent study by researchers at Stanford University finds that youngsters with autism and average intelligence score higher on certain math tests than do typically developing youngsters withOUT autism. While it's always great to see autism strengths confirmed, it is a little concerning to see so much focus on math and STEM. After all, as the Stanford researcher behind the project notes: "not all children with autism have superior math abilities."

In fact, despite the cliche of the autistic math or computer savant, children (and teens and adults) with autism may have a very wide range of strengths and interests. There are many people with autism who are outstanding musicians, visual artists, public speakers, and writers. There are even more people with autism who have no more than average skills, but who are passionate about a particular area of interest.

When museum professionals s target typical visitors with educational programs and experiences, they rarely worry about whether those visitors are likely to be outstanding practitioners in their field. No one creates an art exhibit solely for the purpose of engaging outstanding artists -- nor do they build a math exhibit with the hope of interesting top young mathematicians. Rather, they create exhibits to interest, engage, teach, and reach the broadest range of PEOPLE, and to provide as many opportunities as possible for interested people to learn more and get involved as they are able. Individuals with autism fit neatly into that category of "interested people."

> What makes museums such an ideal place for people with autism? It's not the mesh between rare savant skills such as math genius and exhibits that relate to those skills. Rather, it's the fact that, in a museum, learning can be verbal or non-verbal; hands-on or hands-off; fast or slow; social or solitary; loud or quiet; directed or inquiry-based. In a museum, lack of verbal skills need not stand in the way of discovery, learning, or passion. Lack of social skills need not stand in the way of achievement. And great strengths in a particular area can be the ticket

for a lifelong connection to the community, to exploration, to involvement, and to inclusion.

Perhaps more importantly, in a museum one's intensive knowledge of and passion about a particular topic, activity, or idea leads not to hostile glances or social scorn, but rather to ... respect. (Lisa Jo Rudy, http://www.autisminthemuseum.org/)

a. Autistic audience and museums

Challenges of Autism in the Museum

Chances are, you have autistic people in your museum every day. If someone outside of your staff (a teacher, parent, therapist, or friend) is overseeing their behavior and learning experience, you may either be unaware of their existence or unconcerned about their inclusion.

But when the inclusion experience is up to the museum staff, things are very different. There are challenges to face and overcome -- all of which are legitimate and real.

Inclusion requires a willingness to engage with people who are different; a desire to be creative and flexible in approaches to exhibit development, education, and program management; and, most importantly, funding for training, web materials, preview videos, and other accessibility tools. These are not "no brainers," and few museums are willing to go beyond special, one-time events or low-cost accessibility tools to achieve authentic inclusion of people on the autism spectrum.

What stands between museums and full inclusion? Here's a very short, incomplete list of the barriers you may face:

- Competing priorities for funding
- Staff turnover
- Concerns about general visitor experience when autistic people are present
- Lack of staff/volunteer training
- Anxiety among staff members about autism and autistic behaviors
- Lack of flexibility and imagination around presentations, exhibits, and programs

All of these issues can be addressed and/or overcome, whether at the most basic level or at truly inclusive level. But until there is an individual or group willing to champion inclusion as a real museum priority, it won't happen.

- Museums meet the needs of people with passionate, focused interests
- Museum-based education meets the needs of non-verbal learners
- People with autism can become dedicated, engaged, active members, volunteers, and employees
- With 1:88 people now diagnosed with autism, there is a significant audience to reach
- Many funding agencies are interested in making grants to support autism inclusion

The reality is that most people with higher functioning forms of autism have a tough time in school. Even if they are successful academically, they are more likely than most people to be bullied or, at the very least, marginalized socially. Meanwhile, many people with autism have difficulty with academics, because so much of school-based learning revolves around the ability to learn and respond verbally -- and verbal communication is a challenge for most people with autism.

Museums, for decades, have created multisensory, interactive educational tools that are far more appropriate for

autistic learners than typical book/test methods. These methods are used in few public schools -- and in almost no public schools after grade 3, due to the need to prepare students for standardized tests. Museums, therefore, have an almost ideal opportunity to reach, teach and engage people with autism.

Museums are a natural haven for kids with learning differences. Unbound by the testing and restrictions of the public schools, museums have the freedom to engage learners where they are – and not where others would like them to be. Sometimes, children with learning differences gravitate naturally to museums' informal learning opportunities. In other cases, museums take the initiative to reach out with specially designed programs that make the most of children's interests and abilities.

Making it work is surprisingly easy. And the rewards are significant—not only to the children themselves, but to their families, and to the museums. Multi-sensory approaches to teaching work well not only for those with "differences," but also for a wide range of children and adults. Those families who take advantage of specialized programs often become frequent visitors and members. Grants are available to museums interested in inclusion. Corporations are interested in funding events and programs that are labeled as "autism friendly."

Another plus to consider: design for people with autism is essentially identical to design for people with a wide range of "learning differences" ranging from ADD to dyslexia. Previews, small group programs, multisensory teaching tools, fewer gratuitous sights and sounds, clear structure, and predictable schedules work for a huge range of children, teens, and adults. And, with 1:88 children diagnosed with autism and over 13% of all school children now officially part of the "special needs" population (according to the US Department of Education), museums will need to tap into this audience to keep their visitor base growing.

Simple tools can make a big difference for families and groups with autistic members
As you can see from the graphic above, basic accessibility is at the bottom of a pyramid of approaches that support inclusion of people with autism and related disorders. It's the least expensive, requires the least time or energy, and can make a real difference to some people.

Basic accessibility is to autism and other developmental/cognitive/sensory differences as ramps are to wheelchair users: they get you in the door, but don't necessarily make programs, events, or exhibits fully available. Still, accessibility tools are well worth creating, as they can be extremely helpful to a certain segment of your audience with autism and related disabilities.

Accessible Museums

Most museums that offer access tools also offer autism-only programs and events, and some also provide autism-related training to their staff. You'll notice that most of the museums listed are children's museums, presumably because there is a bias toward supporting children as opposed to teens or adults on the autism spectrum. Of course, people with autism are not all children, and extremely few children with autism "outgrow" their symptoms as they age. Some of these museums include:

- The Metropolitan Museum of Art (STELLAR programs and online tools!)
- The DuPage Children's Museum
- The Pittsburgh Children's Museum (online social stories)
- The Chicago Children's Museum (online social stories)
- The New Hampshire Children's Museum
- The Smithsonian Institution (online resources connected to a research project)
- The West Hartford Children's Museum (online preview videos)

The Children's Discovery Museum of San Jose (online social stories and map

b. Autistic museums

From another perspective, a spectrum of autism can be imagined for the museums. A museum isolated from its environment – in all imaginable environmental and social spheres – and made self-sufficient through the macro- and micro-policies of its patrons may also be considered an autistic museum.
This terminological affinity does not end here. Just as an individual of autism spectrum disorder, a museum, too, can exhibit the difficulty in communicating with others and the world outside, masochistic and aggressive behavior – in the cultural-social sense of a museum –, repetitive motions, unusual responses to people, longing for objects, and resistance to change.
These similarities, though originating in the lexicon, provide a similar function in practice. Besides, these shared factors in the terminology and history of autism and museum are not limited to these, and, maybe, the most instrumental term shared between the two topics is "hyperconnectivity," a complicated field in neuroscience, and a novel area in the museum.

Hyperconnectivity

Since the Canadian social science scholars, Barry Wellman and Anabel Quan-Haase, proposed hyperconnectivity, human-human and human-machine relationships in network-based societies and organizations have undergone many transformations. "hyperconnectivity in computer science is a state where communication is only possible in a network which is itself connected to other networks, and, obviously, making such connection requires things like a high band-width, powerful hardware, and advanced application. In US Army, hyperconnectivity refers to a state where all military elements in the front line are connected through digital apparatuses, and in medicine this term is used to describe how billions of billions of neurons form a complicated network in brain.

The term refers to the use of multiple means of communication, such as email, instant messaging, telephone, face-to-face contact and Web 2.0 information services (Anabel Quan-Haase and Barry Wellman, "Networks of Distance and Media: A Case Study of a High Tech Firm." Trust and Communities conference, Bielefeld, Germany, July, 2003; Anabel Quan-Haase and Barry Wellman. 2004. "Local Virtuality in a High-Tech Networked Organization." *Anaylse & Kritik* 26 (special issue 1): 241–57 SEQ CHAPTER \h \r 1; Anabel Quan-Haase and Barry Wellman, "How Computer-Mediated Hyperconnectivity and Local Virtuality Foster Social Networks of Information and Coordination in a Community of Practice." International Sunbelt Social Network Conference, Redondo Beach, California, February 2005.; Anabel Quan-Haase and Barry Wellman. "Hyperconnected Net Work: Computer-Mediated Community in a High-Tech Organization." Pp. 281–333 in *The Firm as a Collaborative Community: Reconstructing Trust in the Knowledge Economy*, edited by Charles Heckscher and Paul Adler. New York: Oxford University Press, 2006)

> Hyperconnectivity is also a trend in computer networking in which all things that can or should communicate through the network will communicate through the network. This encompasses person-to-person, person-to-machine and machine-to-machine communication. The trend is fueling large increases in bandwidth demand and changes in communications because of the complexity, diversity and integration of new applications and devices using the network.

> Hyperconnectivityin Autism

Kaustubh Supekar, and et al in their issue " Brain hyper-connectivity in children with autism and its links to social deficits

> " mention that :

"we use neuroimaging to show there are more instances of greater functional connectivity in the brains of children with ASD compared with typically developing children. Hyper-connectivity in ASD was observed at the whole-brain and subsystems level, across long- and short-range connections, and was associated with higher

levels of fluctuations in regional brain signals. Brain hyper-connectivity predicted symptom severity in ASD such that children with greater functional connectivity exhibited more severe social deficits. We replicated these findings in two additional independent cohorts, demonstrating again that at earlier ages, the brain in ASD is largely functionally hyper-connected in ways that contribute to social dysfunction." (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3894787/#FN3)

(Brain hyper-connectivity in children with autism and its links to social deficits

Kaustubh Supekar,1 Lucina Q. Uddin,1 Amirah Khouzam,1 Jennifer Phillips,1 William D. Gaillard,2Lauren E. Kenworthy,2 Benjamin E. Yerys,2,3 Chandan J. Vaidya,2,4 and Vinod Menon

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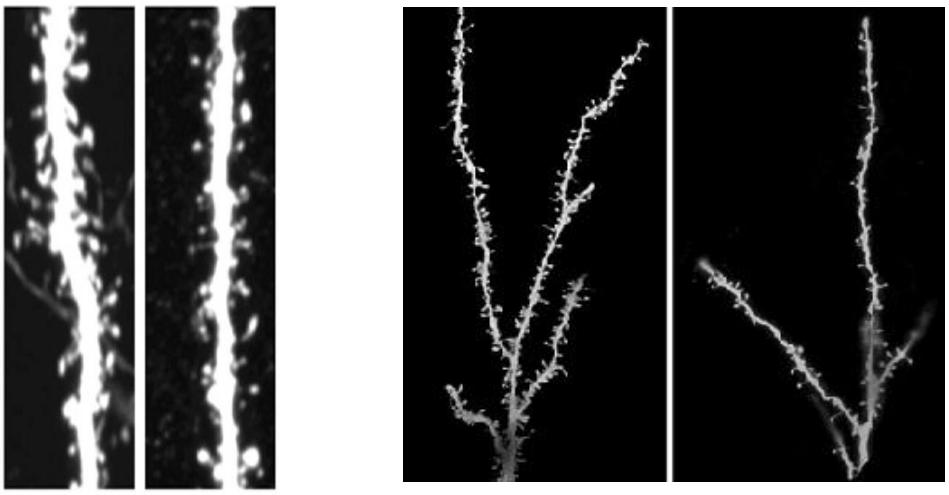

Neuronal disorders in autistic people; hyperconnectivity, in the picture on the left in each pair, compared to normal conditions, in the picture on the right in each pair.

Hyperconnectivity in Museum

A number of spheres can be conceived in connectivity for museums: firstly, connection with what? With other museums? With the audience? With organizations, or with the whole world? Secondly, one could ask what will be the effect of this connectivity on the approaches? This approach will also necessitate a redefinition of the audience; what are the qualities of this new audience? An audience with modern thoughts and needs? Or a new class that has not been among museum audience before? Or creating new audience from within the potential audience via creating a new mentality for them?

The next topic in connectivity includes the communicational tools and platforms of the museum on the inside and the outside.

The connectivity between the museum and the first sphere is the initial form the complicated concept of hyperconnectivity assumes. This connectivity at least prevents the audience from getting confused and disconnected in his or her searches. From this very initial step did the first museum databases and the most fundamental platform for museum connectivity originated.

On the other hand, in the issue of knowing the audience, connectivity causes a fundamental challenge for the museums. If museums were satisfied with a specific acquaintance with their own system and offering this system to the audience before, now they have to know what the audience wants, and what his or her approach is towards the collections of the museum. Now the collections should be viewed with the eyes of a novice, a minor, or a person with special needs, and the possible attractions should be discovered and displayed on that basis. In this case, the audience may engage the subject matter (narrative, object, atmosphere, etc.), and he or she may keep this connection with the museum even when he or she leaves, via reliving the experience. Further these conceptualizations, in practice one can observe that in recent years museums are emerging from seclusion, thinking of expanding themselves to non-museum spaces. In other words, the museum experience can be observed in a space outside the museum, as well. The other important thing is the possibility of personalization of the museum narratives. This personalization also facilitates entertainment and happiness. This enjoyment and living such experiences paves the way for learning and education which are among the fundamental objectives of the museum.

Challenges of Autism: Overview

Sensory issues – hyper or hypo sensitivity to light, sound, crowds, and so forth, may be a problem – but while some people over react to sensory input, others under-react.

A significant percentage of people with autism have intellectual challenges or deficits – though some are intellectually outstanding. Most people with autism have a tough time, though, learning entirely through spoken and written words.

Splinter and Savant skills are the "Rainman" abilities you've seen in the media – an amazing ability to do something very specific such as mental mathematics. Only about 10% of people with autism have savant skills, so it's not particularly common even within the autism community. Splinter skills are real skills, but in general they exist on their own, and are not part of an area of general interest or ability. So, for example, a mathematical savant may have amazing abilities to calculate, but no understanding of basic time-telling or money skills.

Perseveration is an overfocus on a specific area of fasination that may or may not be functional; for example, an intense focus on football stats or astronomy. Sometimes, perseverative interests can become true passions; sometimes, though, the interest is simply in collecting information or objects, and not in the idea behind the collection.

Behavior challenges can be significant, and may include anything from bolting from the room or hitting to self-stimulation in the form of flapping or making noise to an inability to quiet down, sit still, and so forth.

Neurofeedback

Neurofeedback is a type of biofeedback that uses real-time displays of brain activity—most commonly electroencephalography (EEG), to teach self-regulation of brain function. Typically, sensors are placed on the scalp to measure activity, with measurements displayed using video displays or sound.

The applications of neurofeedback to enhance performance extend to the arts in fields such as music, dance, and acting. A study with conservatoire musicians found that alpha-theta training benefitted the three music domains of musicality, communication, and technique.[28] Historically, alpha-theta training, a form of neurofeedback, was created to assist creativity by inducing hypnagogia, a "borderline waking state associated with creative insights", through facilitation of neural connectivity.[29] Alpha-theta training has also been shown to improve novice singing in children. Alpha-theta neurofeedback, in conjunction with heart rate variability training, a form of biofeedback, has also produced benefits in dance by enhancing performance in competitive ballroom dancing and increasing cognitive creativity in contemporary dancers. Additionally, neurofeedback has also been shown to instil a superior flow state in actors, possibly due to greater immersion while performing.

Research shows neurofeedback may be a potentially useful intervention for a range of brain-related conditions, such as autism.

1. Possibility of Use in museum

Neurofeedback, despite all its uses and benefits, is expensive. On the other hand, occupational therapists and trainers in autism centers do not have a positive reaction to this method because the autistic person is separated from the group during neurofeedback activity. The main issue thought is the expenses associated with neurofeedback that is usually out of reach for the autistic people or their families.
Here, as a social institution, the museum can facilitate this therapeutic procedure for its potential audience. On the other hand, the possibility of watching museum content during neurofeedback may facilitate a creative feedback from the hyperconnected mind of an autistic person. Of course, it should be noted that to achieve this goal and to reach a reciprocal interaction where the museum is also an addressee, more complicated systems, and, no doubt, a greater expense like LoRETA neurofeedback is needed. LoRETA neurofeedback is the latest and the most advanced generation of neurofeedback therapies. The most prominent feature of LoRETA is the possibility to affect and modify the activity of the deep regions of the brain, something not possible with the common neurofeedback.

2. Museum content outside museum

If one of the imaginable aspects of hyperconnectivity is the connection between the museum and institutions outside the museum, centers offering neurofeedback can potentially become a field for expanding museum connectivity.