

Chapter 1 : Part 1, Back to the Future: Autonomous Vehicles - internet of things blog.

Passing from a theoretical discussion of some simple reference cases (Part 1) to some examples of their application to the interpretation of experimental data (Part 2), this work intends to recommend a rationalisation and generalisation of the approach to the analysis of the diffusive resistances at the laboratory scale.

I have spent the past 4 years studying the power relations upon which the fossil fuel industry depends and the ways in which climate justice campaigners have sought to challenge that power and advance a just transition away from fossil fuels. My contribution, therefore, will be to synthesize, contextualize, analyse, and share this academic and movement knowledge across our campaigns to keep fossil fuels in the ground. For the most part I will do my best to write without resorting to academic jargon, but where I feel I must do so for the sake of precision I will always define these terms as clearly as I can. In part one of this four part series, I have outlined the theoretical approach I use to study the power of the fossil fuel industry and resistance to it. I present two theoretical contributions that I think might help focus our conversation about social movement strategy and power relations in the climate justice movement; these are Petro-hegemony and the Carbon Rebellion. While likely the most jargon-heavy of these four write ups, I think it is important that we begin with this theoretical framework and the theories of change it shines light upon because in parts two, three, and four, I will be illustrating how this theorizing of strategy and tactics works in practice. Part three explores what we might learn from the First Nations-led, for now successful, coalition of campaigns to stop the expansion of Trans Mountain tar sands pipeline in British Columbia. Consent, Coercion, and Compliance Gramsci stars on the front cover of Cosmarxpolitan Now for some jargon. From the construction of broad-based alliances and solidarity, to the ways that power exists within the cultural institutions that shape what we take for granted as common sense, to what happens when people challenge that common sense, hegemony helps us think through so many crucial questions that social movements raise about the nature of power and social struggle. Hegemony, as Gramsci understood it, combines two different relations of power: In these essays I will show that the fossil fuel industry is a hegemonic entity and, as campaigns grow to keep fossil fuels in the ground, what happens when its hegemony is challenged. Academics and activists alike have often interpreted hegemony solely in terms of how relations of consent are established and how they might be challenged. For those social movements that have been inspired by social change theory derived from Gramsci, this has meant that very often our campaigns focus most heavily on intervening in dominant cultural assumptions and institutions, and changing the stories or discourses that maintain the relations of consent upon which rulers or ruling ideas depend. Discourse, as I use the term here, refers to the way people talk about things, discourses are stories or narratives we use to attach meaning to the world, and they have immense, often unseen, cultural power. But, and this is where the conflation of hegemony and consent becomes dangerous, it is not the only component of social change strategy. The ideas or people who rule rely upon the consent of the people over whom they rule, but this does not mean they cannot use violence or coercion when that consent is challenged or lost. Our campaigns must challenge the stories and cultural discourses the industry depends upon but we must also be ready with strategies to reign in its ability to use coercion to maintain its hegemonic status. Moreover, we must recognize that our power consists not only in winning the battle of the story and challenging consent to the industry, or in forging a mass movement drawn together around consent to our ideas, but in being prepared to institutionalize and defend our cultural victories through policy, courts, legislation, direct action, blockades, and so on. Compliance is like a middle ground between consent and coercion, it blurs the line between them and ultimately rests upon a dynamic of dependency on those who rule. Communities may be perfectly aware of the damage a coalmine or refinery is doing to their health and to the climate, and they may well resent it, but they may also depend upon coal mining and refinery work not only for employment but to maintain a whole way of life. Scholar-activists Shannon Bell and John Gaventa have documented this dynamic quite compellingly in Appalachian coal country. Where coercion is primarily associated with political governance, and consent with culture, compliance is fundamentally an economic power relation. Petro-Hegemony Part of a mural in Richmond CA in the Water Writes series supported by the

Estria Foundation So now we have a concept of hegemony that encompasses the power relations of consent through cultural conditioning, coercion through political governance, and compliance through economic dependency. That means that when we talk about the fossil fuel industry in terms of hegemony, we are talking about its ability to intervene in and shape these three relations of power. Too often, academics and theorists of social change examine maybe one or two of these power relations in isolation, my argument is that we must look at how these three power relations exist together and should be intervened in and challenged simultaneously. As such, I understand Petro-hegemony as including three distinct but interrelated components: Petro-culture, Petro-capitalism, and the Petro-state. The industry advances coercive strategies through the Petro-state, gains consent through Petro-culture, and creates situations of compliance through Petro-capitalism. I will provide concrete examples of the exact mechanics by which the industry is able to maintain consent, deploy coercion, and structure compliance through Petro-hegemony in the following three write ups of this series, where I will situate this theoretical approach in context-specific cases. For now, though, I think it helps to think of Petro-capitalism, Petro-culture, and the Petro-state as the three support structures upon which the fossil fuel industry depends. Our campaigns must knock out each of its support structures if we are to defeat its influence, advance a just transition, and keep fossil fuels in the ground. It is important that we engage in fights that challenge each one of these power relations, because taking on Petro-culture alone means that many people may still remain dependent on the industry and that the industry may still deploy violence or coercive means to crush our campaigns. Finally, although certainly complicating matters, it should also be made clear that while its corresponding relation of power largely defines the tactics emerging out of each of these categories, these categories also influence each other. As such, Petro-culture can influence relations of coercion and compliance, just as the Petro-state might influence relations of consent and compliance, just as Petro-capitalism could inform relations of consent and coercion. Exactly how this happens will become clearer in the following articles in this series. In the same way that the fossil fuel industry depends on Petro-hegemony to organize strategies that shape relations of consent, compliance, and coercion through Petro-culture, Petro-capitalism, and the Petro-state, so too can the climate justice movement think of organizing its counter hegemonic strategies through the Carbon Rebellion. Countering hegemony means mass movement building, creating a large and diverse social movement that coheres around a different story. This requires us to fight the battle of the story, to change the narrative, so that dominant cultural assumptions no longer take fossil fuel power for granted and, instead, are inspired by a vision of climate justice which advances Indigenous sovereignty and decolonization, racial justice, energy democracy, economic justice, migrants rights, climate reparations, and so on. If it is to be counter hegemonic, our movement must be populist, inclusive, and intersectional. Wresting consent away from the industry and forging it instead around our alternative narratives, we use our PCOC to intervene in dominant culture and gain advantages on the same relation of power that Petro-culture seeks to influence. We are already seeing effective narratives growing PCOCs amongst communities fighting fossil fuel infrastructure and some of these appear in my next 3 write-ups. Strategies developed through the Regime of Resilience are oriented towards one of three objectives: From election organizing, to policy and legislation, to lawsuits, to physically obstructing state repression, to practicing deep democracy in our own movement decision-making, the tactics involved here are necessarily varied and wide ranging. We do not seek to replicate the relations of coercion that the industry depends upon but we do need to become more comfortable with coercive strategies which, by the way, do include lawsuits, policy change, and direct action and ensuring that where those strategies are deployed, that the practice of direct democracy holds us accountable for them. The strategies developed through the Just Transition Framework are intended to break the dynamic of dependency so many of us, including fossil fuel workers and their families, have upon the fossil fuel industry, and in so doing fundamentally change the relation of compliance into one of co-reliance. Strategies developed through the Just Transition Framework are focused on undermining the dependency communities may have upon fossil fuel extraction and replacing that with reliance on one another. Strategies might include community-controlled energy, renewable energy cooperatives, free retraining and retooling programs, or decommissioning fossil fuel infrastructure. But strategies developed to disrupt compliance are also intended to break the link between the fossil fuel industry

and the thing it depends upon most: Targeting banks and financial institutions that fund the fossil fuel industry on the one hand, while creating risk and uncertainty around new fossil fuel projects on the other, should be developed through the Just Transition Framework. Meanwhile campaigning to have the reinvestment of that capital directed towards frontline, community-led, transition programs is a small but fundamental component of reparations. Ultimately, the just transition is both a goal and a strategic orientation through which our dependency on fossil fuels is undone, and thus the relation of compliance along with it. *Terrains of Struggle and Points of Intervention* When we position Petro-Hegemony and the Carbon Rebellion against one another, we can see how each component in one has a corresponding component in the other. Between each exists a terrain of struggle primarily, though not exclusively, defined by one of the three relations of power outlined above. Relations of coercion primarily define the terrain between the Petro-state and the Regime of Resilience, the relation of consent defines the terrain between Petro-culture and our PCOC, and the relation of compliance defines the terrain existing between Petro-capitalism and the Just Transition Framework. Now, on each terrain of struggle there exist many different points of intervention. It is at these points of intervention that we see the actual process of struggle play out. We can map out points of intervention across all these terrains of struggle and I will do exactly this in the following posts in this series. In doing so we can visualize all the different points of intervention in play in a particular fight against the fossil fuel industry, and innovate specific tactics to bring new points of intervention into play. Different points of intervention may be more or less significant, depending on the local context but by mapping them out we can make strategic decisions about which are worth fighting over. Finally, understanding the relation of power that primarily defines a particular terrain of struggle, allows us to tailor specific tactics, strategies or narratives to make winning in the corresponding point of intervention more likely. *Petro-Hegemony and the Carbon Rebellion: Why It Matters* Understanding the relationship between Petro-hegemony and the Carbon Rebellion can provide us with the building blocks we need to construct a holistic yet adaptable theory of change that climate justice movement campaigns might use to keep fossil fuels in the ground in the US and Canada. First defining Petro-hegemony and the Carbon Rebellion, and then positioning them one against the other, highlights three important contributions to a theory of change. First of all, it provides us with a model of power and conflict, which in turn defines different terrains of struggle and allows us to think about specific points of intervention. Secondly, as we come to terms with characteristics of these terrains of struggle, we are able to innovate and experiment with new narratives, tactics, and strategies designed specifically for points of intervention on that terrain. Thirdly, and most importantly, the theoretical approach brings our key objectives into focus as we come to see how each relation of power operates and how they can be challenged, undone, and rebuilt. Recognizing that hegemony has not one but three characteristics allows us to organize strategies that correspond to the specific relation of power that defines a terrain of struggle, and to make informed strategic decisions about how best to engage with a specific point of intervention. And finally, recognizing that we, as a counter hegemonic movement, must be committed to intervening on all three of these relations of power focuses our attention on constructing narratives that will help us build the largest, most diverse and most resilient PCOC possible, on devising strategies that will ensure we are ready to respond to the violent and coercive measures the industry will undoubtedly deploy when we challenge its consent, and on innovating new economic models and relationships to each other that will transform extractive relations of compliance into regenerative relations of co-reliance. The next instalments will contextualize this theoretical approach in concrete examples of points of intervention and terrains of struggle across the climate justice movement in North America. Patrick Reinsborough and Doyle Canning. *Challenges to Micromobilization in Central Appalachia. A Roadmap for Radicals. Quiescence and Rebellion in an Appalachian Valley.* This irony is not lost on me and in the posts that follow I will draw primarily upon the vast reserves of movement knowledge that exist within the communities that lead this movement.

Chapter 2 : Petro-Hegemony and the Carbon Rebellion: Part 1 - Resilience

Part 1: Some theoretical considerations, with particular reference to propagation over land Abstract: The effect on radio wave propagation of departures from the normal variation with height of the refractive index of the lower atmosphere is considered with special reference to frequencies of 90 and 45 Mc/s.

Introduction During the last decade, distributed services platforms are drawing more and more attention. These platforms are revolutionizing the way we think about systems architecture, bringing multiple theoretical computer science concepts to the wider audience that previously were considered very specialized or unpractical. Notable examples include the distributed consensus and actor models. This tendency coincides with the rise of NoSQL databases showing that the way we were building systems might be suboptimal, rendering the very popular N-tier architecture obsolete, being eagerly replaced by the architects with Service Oriented designs and eventually Microservices approach. New concepts started emerging at the companies that were facing issues at the largest scale. Today, public cloud platforms are making those technologies available to the wide audience. I would like to share some of what I have learned when adopting Service Fabric and try to compare it with the currently most popular container orchestrator, Kubernetes, which runs numerous different distributed applications today. From the beginning, it was designed to be resilient, independent, self-healing and ran on site. In a great video Gopal Kakivaya, the founder of the Service Fabric team, mentions that the idea started with Microsoft e-Home an obviously uncontrolled, no-ops environment. It is no surprise that Service Fabric under the name Windows Fabric is responsible for running Microsoft products on-premises such as Lync Server. The bigger surprise is that the same system turned out to be a great fit to run hyper-scale cloud workloads in Azure. The entire Microsoft Azure Stack hybrid offering relies on Service Fabric to run all the platform core services. It is also a great example of a no-ops environment which is designed to run in disconnected environments like factory floors and cruise ships. Running an advanced relational database on a Cloud scale is huge challenge and it required solving a lot of problems. This project not only laid a strong foundation for resilient state replication and failure detection, but also has constituted a strong self-contained mindset. To achieve high availability SDS was supposed to minimize the external dependencies and avoid introducing additional single points of failures or circular dependencies. This also helped to significantly simplify the deployment. At that time SSDs were quite expensive and one of the project goals was to protect the investment in spinning drives. One of the little-known SF features is the shared log file facility Ktlogger designed to make the best use of spinning hard drives. First box product and general development platform Service Fabric team and product started in as a rewrite of SQL Data Services and first internal alpha was released in the fall of Lync Server released in October was the first box product using this technology named Windows Fabric at that time. However, it is conceptually based on and strongly influenced by Borg – the orchestrator responsible for managing the entire fleet of machines in Google data centers internally. Google has released a paper providing a lot of interesting details about Borg. It is important to note that Borg focuses on orchestration, and not on specific programming models or state management. The main differences between Kubernetes and Borg: Borg is focused on power-users Borg orchestrates plain old processes running huge, statically linked, resource-limited executables while Kubernetes orchestrates containers - what makes Kubernetes easier to use, but introduces some additional overhead and disables some advanced privileged scenarios Kubernetes API server is designed to be much more general and microservices based Community driven and heterogenous The microservices-oriented, container-centric and highly unopinionated approach to Kubernetes design has enabled a huge community around Kubernetes to create many microservices and plugins, and easily port their software to the platform. However, each of them is responsible for handling problems like data replication on their own, making the platform highly heterogenous. Architecture differences Such different backgrounds must have led to the conception of two completely different results. In this chapter, I will try to compare the most significant in my opinion differences. Centralized Kubernetes architecture - kubernetes. All Kubelets communicate with the API Server, which keeps the state of the cluster persisted in a centralized repository: The etcd cluster is a fairly simple

Raft-backed distributed KV-store. Most production configurations use between 3 and 7 nodes for etcd clusters. To maintain the cluster membership information, all the Kubelets are required to maintain a connection with the API Server and send heartbeats every period of time for example 10 seconds. Such an approach can have negative effects on the scalability. A good example of such an issue is presented here with some mitigation proposals – not as great as might seem, what I will explain later.

Decentralized - Ring and Failure Detection

The key to understanding the design of Service Fabric is the following quote: The Federation Subsystem is responsible for giving a consistent answer to the core question: In the centralized approach discussed earlier, this answer was given by the API Server based on the heartbeats received from all the nodes. In Service Fabric, the nodes are organized in a ring and heartbeats are only sent to a small subset of nodes called the neighborhood. The arbitration procedure, which involves more nodes beside the monitors, is only executed in case of problems like missed heartbeats. This significantly decreases the traffic and potential network congestion problems, as the traffic is evenly distributed across the cluster. During arbitration, a quorum of privileged nodes called arbitration group is established to help resolve the possible failure detection conflicts, isolate appropriate nodes, and maintain a consistent view of the ring. This is a simplified description of failure detection and arbitration – you can see the full algorithm in the following paper - Kakivaya et al. Example routing table for node 64 in Service Fabric ring - Kakivaya et al.

Service Fabric uses a different approach, where most system services are standard Service Fabric Reliable Services and are distributed among the entire cluster respecting the placement constraints. For example Azure-hosted Service Fabric clusters run system services on the primary node type only. Service Fabric high level architecture - docs. To achieve the best availability, failed nodes should be detected ASAP, but this is way more important for stateful workloads than stateless ones. In case of stateless workloads, one can have multiple instances of a service that will accept the traffic if a single instance is not available. Kubernetes addresses failure detection via liveness probes that allow it to determine whether a specific service instance is up or down. Alternatively, load balancer probes also help detect a malfunctioning service. False positives are not a big problem here – there is no singleton guarantee. By default, Kubernetes will need around five minutes to determine that a node is dead it much earlier marks that node as a suspected and it stops scheduling workloads for it. Split brain and other stateful disasters

On the other hand, for stateful workloads, a false positive can mean disaster. It leads to typical problems like split brain, lost writes and many others. There are many different approaches to dealing with this issue fencing, STONITH, distributed consensus, leases , but the most important point is that for a strong consistent workloads you cannot have two processes running at the same time where both are able to perform writes. This is the place where fast failure detection brings the most value. Its design allows sending heartbeats much more often in order to detect and correct failure. The default lease duration in Service Fabric is 30 seconds, though different types of failures can be detected sooner, and most network partitions are detected within 10 to 15 seconds. Eventually consistent databases like Riak especially with facilities like good CRDT-support are much better candidates to run on K8S clusters than the strong consistent databases. Where is the state persisted? The above helps explain why Kubernetes is good for stateless services but may not be the best pick for stateful workloads. However, a fair question is why should we even use stateful services, when are all used to persisting data in a centralized database? The first and most obvious answer is because the database must be managed as well, and unless you are using DBaaS, you must host it somewhere. The other answer is because local stateful services can be faster than remote data storage. If the database is on the local machine or in-process, it allows workloads to achieve sub-millisecond latencies, especially in conjunction with ephemeral SSD or NVME. A typical machine for a Service Fabric node should ideally have a large ephemeral SSD not use external volumes, allowing the services to make best use of the local hardware. External volumes pose also a huge risk to the cluster availability by introducing a single point of failure. Another scenario is to use non-persisted volatile stateful services for caching. In a traditional approach such services are implemented as stateless services, but a cheap leader election, failure detection and partitioning allows to use volatile stateful services for such a purpose. Fast failover allows to have a smaller number of instances and in consequence use much less RAM. How is the state replicated? Service Fabric provides a unified replication layer that helps to build replicated datastores using proven and well-tested infrastructure.

The Reliability Subsystem depends on the Federation Subsystem to detect failures and manage membership in the cluster, allowing the Reliability Subsystem to focus on replication. In the case of Kubernetes, each stateful workload is responsible for handling their own replication and leader election, without real access to the underlying infrastructure. There are 3 most common approaches to this problem: Use the shared etcd and leases for failure detection and leader election Use a private etcd or Apache Zookeeper instance for failure detection and leader election “ this helps to deal with some of the centralized etcd scalability issues Use a database that handles its own replication, like CockroachDB which uses raft internally for state replication, failure detection and leader election Persistent Volumes To be able to run a datastore on a distributed systems platform, you need a place to store the raw data. This not only introduces an additional point of failure and overhead, but also impacts availability, because especially block-device mounts usually implement additional leasing mechanisms that introduce additional delays and prevent fast failover. For example Azure Disk has a 5 minute-long lease by default, which prevents mounting it to another host node after dirty shutdown for at least 5 minutes. Service Fabric is making it easier to run lift-and-shift workloads on the platform by introducing Service Fabric HA Volumes, which are highly-efficient, replicated, SSD and memory-backed persistent block devices managed by the Service Fabric cluster benefiting from all the failure detection that can be mounted to a container. Those mounts are not introducing any new external single point of failure, because they are local to the cluster. Database in cluster When hosting a preexisting DBMS in a cluster, multiple approaches might be taken: Use Service Fabric native capabilities and integrate at the Replication layer level “ involves a significant amount of work, but also provides the deepest integration with the platform around ensuring high availability and reliability. This allows the existing storage engine and replication technology to be used more or less as is. Utilize the built in Service Fabric replicator to bring replication and HA at a byte[] level to an existing or new data store. This is significantly simpler than writing or modifying existing replication technology or a storage engine, and provides a good tradeoff between complexity, development time, and performance. Many Azure services have integrated with Service fabric at this level, including Intune. Utilize the service fabric reliable collections as the data store. This approach is a means to getting most of the benefits of 1 or 2, but without having to modify the RDBMS code at all or integrate with the Service Fabric platform. Run multiple container instances with the database, utilizing Local Persistent Volumes and use DBMS-specific replication and failure detection. Other examples of such approach this time using external etcd or zookeeper instance: This approach, requiring a lot of hacking and testing, will be probably typical for Kubernetes. There are many possible options here - different kinds of Persistent Volume can be used here - each one with its pros and cons and possible compatibility issues. Local Persistent Volumes are also an option, however it is worth remembering that at least today Kubernetes does not provide strong enough integration with most of cloud providers to mitigate most of the potential data-loss risks more details in the next section. Rook Solutions 1,2, and 3 are not available directly for Kubernetes, but Rook is a CNCF project which aims to make storage within the Kubernetes environment which uses Ceph under the hood. It is usually not backed by the high performance ephemeral SSDs but by the network Persistent Volumes. It allows to achieve something between 2 and 3. It is technically possible to use ephemeral SSDs Local Persistent Volumes for Rook, but in that case, special considerations are needed, especially in the area of graceful shutdown and scheduled maintenance handling.

Chapter 3 : GUIDELINES OF CARE FOR THE MANAGEMENT OF ATOPIC DERMATITIS

Lecture by K. F. Wallis on Monday 6th October , Australian National University Lecture 3 "Some Theoretical Aspects: Identification and Estimation" part 1.

The CRPD is the first global convention addressing disability. From the first meeting to draft the CRPD, members of the global disability rights movement insisted that people with disabilities be included in deciding what the convention should say. The disability community was able to exercise a greater level of participation and influence in the drafting of the CRPD than any other specific group has ever been able to achieve in a UN human rights treaty process. As a result, the CRPD covers the full spectrum of human rights of persons with disabilities and takes much stronger positions than it would have if governments alone had drafted it. In addition, disability organizations, individuals with disabilities, governments, and the United Nations forged important relationships during this drafting process. Now that the human rights of persons with disabilities have been recognized in international law through the CRPD, the next step is for persons with disabilities in all countries to continue to advocate and work with their governments to ensure that the Convention is ratified and implemented. Every person who advocates for their rights under the CRPD becomes an important member of the global disability rights movement! The drafters of the CRPD wanted the Convention to recognize a core set of concepts that underlie disability rights issues and are of particular importance in the disability context. They believed that it was crucial to identify these explicitly at the beginning of the text to ensure that all of the rights expressed in the Convention are interpreted through the lens of these particular principles. General Principles The principles of the present Convention shall be: Nearly all human rights conventions begin by recognizing respect for the human dignity and the inherent equality of all persons as the basis for human rights and fundamental freedoms. The CRPD General Principles include a number of other concepts that are particularly important to persons with disabilities, such as, non-discrimination, equality of opportunity, and respect for difference. Notably, the CRPD General Principles also stress the concepts of autonomy, independence, participation, and inclusion in society as essential to ensuring that the rights of persons with disabilities are respected, protected, and fulfilled. Although these concepts are certainly implicit in the substance of other core human rights conventions e. By including these terms and defining them as general principles, the CRPD makes a bold statement regarding their importance to the human rights of persons with disabilities. General Obligations in the CRPD Following the Article 3 on General Principles, Article 4 on General Obligations clearly defines the specific actions governments must take to ensure that the rights of persons with disabilities are respected, protected, and fulfilled. Many of the general obligations in the CRPD are common to other human rights conventions. However, the general obligations of States with respect to the rights of persons with disabilities include certain unique requirements that are not mentioned in other human rights instruments. These include such things as promoting universal design for goods and services and undertaking research on accessible technologies and assistive technologies. It is crucial to understand these principles as foundational, overarching obligations that are applicable to every other subject within the CRPD. One objective of this comprehensive Article 4 on General Obligations is to counteract the historic failure of States to truly understand their obligations to persons with disabilities as fundamental human rights obligations. States have tended to view these responsibilities as representing exceptional treatment or special social measures, not as essential requirements under human rights law. Clearly expressing them as general obligations in the Convention is an important step toward reversing this harmful way of thinking. However, certain articles are fundamentally cross-cutting and have a broad impact on all other articles. These articles, sometimes referred to as articles of general application, are therefore placed at the beginning of the Convention to reinforce their importance. Article 3 on General Principles and Article 4 on General Obligations, discussed above, clearly fall into this category. The other articles of general application in the CRPD are: Equality and Non-Discrimination Article 6: Women with Disabilities Article 7: Children with Disabilities Article 8: Awareness Raising Article 9: Accessibility As you become familiar with the rights included in the CRPD, you will develop a deeper understanding of how Articles 3 through 9 continually

intersect with the principles and obligations throughout the Convention. Specific Rights in the CRPD Articles address specific rights, such as the right to work, the right to political participation, and many others. A full list of the articles of the CRPD is included at the end of this chapter. In most cases, these topical articles correspond closely to articles found in other human rights conventions, except that they explain the particular right in the context of disability. A few articles, however, address subjects unique to the CRPD such as: Living independently and being included in the community Article Women with Disabilities Article Children with Disabilities They are areas of human rights in which persons with disabilities either have specific requirements that may not apply in other contexts, or in which persons with disabilities have traditionally experienced unique types of discrimination and human rights violations. While these articles do not create any new rights, they explain rights in the level of detail required for States to understand their responsibilities and in many cases do articulate new specific obligations or measures not previously included in international law. Regional Disability Rights Conventions As of , the only regional institution with a disability-specific convention is the Inter- American Commission on Human Rights, which developed the Inter-American Convention on the Elimination of all forms of Discrimination against Persons with Disabilities in In some cases, persons with disabilities are specifically mentioned in the general regional human rights instruments. The UN declared as the "International Year of Disabled Persons" IYDP with the theme of full equality and participation of persons with disabilities and a call for plans of action at the national, regional, and international levels. Many people believed that the World Programme of Action, although valuable, would not achieve the results needed to ensure that the rights of disabled persons were respected. In the UN convened a meeting to consider drafting a convention on disability rights; however, at that time there was not enough support to move ahead. In , the UN decided to develop another kind of instrument that would not be international law but rather a statement of principles signifying a political and moral commitment to equalizing opportunities for disabled people. The resulting Standard Rules on the Equalization of Opportunity for Persons with Disabilities Standard Rules , adopted in , was the first international instrument to recognize that the rights of disabled persons are greatly affected by the legal, political, social, and physical environment. Although superseded by the CRPD, the Standard Rules are still an important advocacy tool for the disability community, and many of its principles served as a basis for drafting that Convention. These principles were developed in to establish minimum standards for practice in the mental health field. The MI Principles have been used as a blueprint for the development of mental health legislation in many countries. They include some very important concepts, such as the right to live in the community. Many advocates in the field of psycho-social disability believe that this instrument establishes lower standards on some issues than is reflected in other human rights law and policy. In particular, there is concern about requirements for "informed consent" for treatment of people with psycho-social disabilities. Disability advocates should look carefully at the standards in this instrument and decide for themselves whether or not it should be used as an advocacy tool for the rights of persons with psycho-social disabilities. Tree of Rights To identify how a range of human rights applies to persons with disabilities Time:

Chapter 4 : Spinal Cord Injury | MedlinePlus

Part 1: Some theoretical considerations, with particular reference to propagation over land | The effect on radio wave propagation of departures from the normal variation with height of the.

Back to the Future, Part 1: Autonomous Vehicles May 31, Written by: Automotive Share this post: What does a future of autonomous vehicles look like? In Part 1, Back to the Future: Are you ready for the biggest one-time leap in human productivity â€” ever? The average American spends minutes a day driving. That means you will spend a total of 37, hours of your life watching road reflectors zip past. If there are Collectively we will spend a little over 8. The first level is best represented by cruise control, which allows you to set the speed of your car. It will sustain that speed automatically, without your foot on the gas pedal. Level three vehicles can be thought of as vehicles that offer lane departure warnings and adaptive cruise control. For limited periods of time, you can remove your hand from the steering wheel and the car will stay in its lane automatically. This capability is used in some high-end vehicles today. Level four autonomous vehicles can be preprogrammed to drive from one location to another, not necessarily requiring driver input but enabling it as a failsafe. If the vehicle were to encounter a road closure, it would know to pull over and wait for driver input. Level five autonomous vehicles will have no steering wheel and operate without the driver physically operating the vehicle. Welcome to the future. What happens in a world without steering wheels? It means quite a few things will be changing. For one, there will not be a need for so many roads. The reason we have so many roads today is we must keep a safe distance between ourselves and the vehicle in front of us, necessitating the space to do so. In a world where the vehicles are free from the influence of human error, they can be run bumper to bumper without any real concern of an accident. As any race driver will tell you, less distance between cars is the best way to save on fuel. And, certainly this is true in the trucking industry as well. Platooning is what happens when vehicles that are running bumper-to-bumper. These platoons will move something like an over-the-road train â€” all being controlled by one computer module â€” each of them saving on fuel. Speed limits can then be drastically increased, or done away with all together. They can be run at miles per hour now. That means that if you work in Munich you could go to Frankfurt for lunch; or if you live in New York, you could pop down to Washington DC for a date. More than theoreticalâ€”there is a smart road in Virginia that is currently being used to test autonomous vehicles running at miles an hour. The actual autonomous freeway system in Virginia. This road will be autonomous vehicles only, validating and solidifying that the issue with vehicles today is not their speed, capability or overall performance, but the fact they are operated by error-prone humans that present too many variables. Shopping will never be the same Obviously, this impacts your day-to-day life, commute and method of transportâ€”but the impact reaches far beyond that. Apply this same idea to delivering packages. Fifteen minutes later a vehicle that looks like the one in this photograph shows up at the end of your street. Rather than flying them across the city, which is fraught with all kinds of legal trouble, drones will be more likely used to ferry packages from the curb side to your door step. This is not a mock up, either; this is a real photograph of an autonomous vehicle drone system being piloted by UPS. You open the box and inside the box is the t- shirt. A drone comes over, picks up the old box and puts a new one on your doorstep with the right size shirt. Brick and mortar shops are just not able to meet the various and instantaneous demands of their customer base. Healthcare services will be door-to-door One of the main reasons we have hospitals is to grant access to equipment that is difficult to move, and provide people that know how to use it. When I get to the vehicle, I put a code on the door and the door pops open. On the right-hand screen comes another expert in interpreting MRI results. The vehicle drives away. The rise of the micro-hotel Now apply that same, mobile idea to recreational vehicles. What if my hotel room came and picked me up and that the check in process became simply packing a bag and walking from my front door to the curb? I check in, get comfy and my micro-hotel room drives me to Chicago. The examples in this article are just related to autonomous vehicles. If you apply the concept of automation to everything that you touch and see in your daily lives â€” from the appliances in your home, to the machines in every factory, to the buildings that you live and work in â€” you only begin to scratch the surface of some of

the amazing things in our connected world. Learn more In part 2 , John explores what happens when the internet of people ends, giving way to the rise of the new data-economy. Overcome the complexity of connecting requirements, design, development and deployment. Discover how you can speed product development in a data-driven world.

Chapter 5 : Limiting reagents and percent yield (article) | Khan Academy

Psychological self-awareness is as essential to the maturation of one's professional self as is the development of theoretical and clinical expertise in child placement.

Guidelines of care for the treatment of psoriasis with phototherapy and photochemotherapy, pages , Copyright , with permission from the American Academy of Dermatology. Phototherapy can be utilized as monotherapy or in combination with emollients and topical steroids. The use of phototherapy with topical calcineurin inhibitors is cautioned, as the manufacturers suggest limiting exposure to natural and artificial light sources while using these topical medications. Risks and benefits, as well as pragmatic concerns cost, availability, patient compliance, etc should be considered when formulating the optimal treatment course for the patient. Adverse Effects The true incidence of adverse events with provider-monitored phototherapy is unknown, but considered to be low. Available studies report minimal non-compliance rates secondary to side effects. How this relates to outcomes for patients with AD is unclear. Nonetheless, caution and due diligence are warranted as with any other medical therapy given to patients. Different forms of phototherapy have distinct risk profiles which the clinician must take into account. Less common consequences of light therapy include: Cataract formation is a recognized side effect unique to UVA therapy, while the addition of oral psoralen to UVA treatment frequently causes patients to have headaches, nausea, and vomiting, and rarely hepatotoxicity. There are no known studies that report the long-term consequences of phototherapy use in children with AD. An increased risk of non-melanoma skin cancer has been reported in children receiving PUVA treatment for psoriasis. Thus, phototherapy as a treatment for children with AD unresponsive to multimodal topical measures is appropriate. The wavelength selection and treatment course should be individualized. Home Phototherapy The greatest barrier to more widespread use of phototherapy is frequent travel to a provider of this therapeutic modality. Home phototherapy would, no doubt, make this an excellent alternative before systemic treatments. However, there are no studies to date which document the efficacy or safety of home light therapy for AD patients, or which contrast its use to in-office phototherapy. Home UVB treatment is not uncommonly used in the treatment of psoriasis. The PLUTO study by Koek and colleagues demonstrated that psoriasis patients treated with home NB-UVB phototherapy units experienced decreased burden of treatment and increased satisfaction versus in-office NB-UVB treatment, while PASI score reduction, cumulative doses, and incidence of short-term side effects up to 46 irradiations were not significantly different. Therefore, home phototherapy under the direction of a physician may be considered for patients who are unable to receive phototherapy in an office setting. Lasers and Extracorporeal Photochemotherapy The successful use of UV light for AD has led to the investigation of laser light technology as another possible treatment. Various laser modalities, including excimer, diode, and pulsed dye lasers, have been tested in AD patients, with some improvement in symptoms such as pruritus and quality of life QOL. Extracorporeal photochemotherapy ECP has been utilized in generalized and erythrodermic AD patients to attempt to control disease severity and symptomatology. Their use in dermatology is commonplace for blistering disorders, granulomatous diseases, and most frequently, psoriasis. There are few studies in the literature that compare different systemic therapies to one another in a randomized, controlled fashion. Prevailing literature suggests that cyclosporine, methotrexate, mycophenolate, and azathioprine are utilized the most and are more efficacious in treating AD, while other agents leukotriene inhibitors, oral calcineurin inhibitors have limited data. Biologic drugs are relatively new and the lack of available data prevents a recommendation for use in AD at this time. The management of AD with systemic corticosteroids, while used frequently and shown to temporarily suppress disease, should generally be avoided due to short and long-term adverse effects and an overall unfavorable risk-benefit profile. Short courses of oral corticosteroids may lead to atopic flares. Recommendations for the use of systemic immunomodulating agents in the management of AD are summarized in Table VI. Dosing and monitoring guidelines for the use of systemic agents are summarized in Table VII , while Table VIII summarizes the potential adverse effects, interactions and contraindications of the systemic immunomodulatory agents. All immunomodulatory agents should be adjusted to the minimal effective dose

once response is attained and sustained. Adjunctive therapies should be continued in order to use the lowest dose and duration of systemic agent possible. Insufficient data exists to firmly recommend optimal dosing, duration of therapy, and precise monitoring protocols for any systemic immunomodulating medication. Cyclosporine is effective and recommended as a treatment option for patients with AD refractory to conventional topical treatment. Azathioprine is recommended as a systemic agent for the treatment of refractory atopic dermatitis. Methotrexate is recommended as a systemic agent for the treatment of refractory atopic dermatitis. Folate supplementation is recommended during treatment with methotrexate. Mycophenolate mofetil may be considered as an alternative, variably effective therapy for refractory atopic dermatitis. Interferon gamma is moderately and variably effective and may be considered as an alternative therapy for refractory AD in adults and children who have not responded to, or have contraindications to the use of, other systemic therapies or phototherapy. Systemic steroids should be avoided if possible for the treatment of AD. Their use should be exclusively reserved for acute, severe exacerbations and as a short-term bridge therapy to other systemic, steroid-sparing therapy.

Chapter 6 : NCER - Some Theoretical Examples: Identification and Estimation - Part 1

Estimation. Lecture by K. F. Wallis on 6th October , Australian National University Lecture 3, Part 1.

Ancient uses[edit] The English word theory derives from a technical term in philosophy in Ancient Greek. In the book *From Religion to Philosophy*, Francis Cornford suggests that the Orphics used the word *theoria* to mean "passionate sympathetic contemplation". Pythagoras emphasized subduing emotions and bodily desires to help the intellect function at the higher plane of theory. Thus, it was Pythagoras who gave the word theory the specific meaning that led to the classical and modern concept of a distinction between theory as uninvolved, neutral thinking and practice. For Aristotle, both practice and theory involve thinking, but the aims are different. Theoretical contemplation considers things humans do not move or change, such as nature , so it has no human aim apart from itself and the knowledge it helps create. On the other hand, *praxis* involves thinking, but always with an aim to desired actions, whereby humans cause change or movement themselves for their own ends. Any human movement that involves no conscious choice and thinking could not be an example of *praxis* or doing. Theory mathematical logic Theories are analytical tools for understanding , explaining , and making predictions about a given subject matter. There are theories in many and varied fields of study, including the arts and sciences. A formal theory is syntactic in nature and is only meaningful when given a semantic component by applying it to some content e. Theories in various fields of study are expressed in natural language , but are always constructed in such a way that their general form is identical to a theory as it is expressed in the formal language of mathematical logic. Theories may be expressed mathematically, symbolically, or in common language, but are generally expected to follow principles of rational thought or logic. Theory is constructed of a set of sentences that are entirely true statements about the subject under consideration. However, the truth of any one of these statements is always relative to the whole theory. Therefore, the same statement may be true with respect to one theory, and not true with respect to another. This is, in ordinary language, where statements such as "He is a terrible person" cannot be judged as true or false without reference to some interpretation of who "He" is and for that matter what a "terrible person" is under the theory. A pair of such theories is called indistinguishable or observationally equivalent , and the choice between them reduces to convenience or philosophical preference. The form of theories is studied formally in mathematical logic, especially in model theory. When theories are studied in mathematics, they are usually expressed in some formal language and their statements are closed under application of certain procedures called rules of inference. A special case of this, an axiomatic theory, consists of axioms or axiom schemata and rules of inference. A theorem is a statement that can be derived from those axioms by application of these rules of inference. Theories used in applications are abstractions of observed phenomena and the resulting theorems provide solutions to real-world problems. Obvious examples include arithmetic abstracting concepts of number , geometry concepts of space , and probability concepts of randomness and likelihood. As a result, some domains of knowledge cannot be formalized, accurately and completely, as mathematical theories. Here, formalizing accurately and completely means that all true propositionsâ€”and only true propositionsâ€”are derivable within the mathematical system. This limitation, however, in no way precludes the construction of mathematical theories that formalize large bodies of scientific knowledge. Underdetermination A theory is underdetermined also called indeterminacy of data to theory if a rival, inconsistent theory is at least as consistent with the evidence. Underdetermination is an epistemological issue about the relation of evidence to conclusions. A theory that lacks supporting evidence is generally, more properly, referred to as a hypothesis. Intertheoretic reduction and elimination[edit] Main article: Intertheoretic reduction If a new theory better explains and predicts a phenomenon than an old theory i. This is called an intertheoretic reduction because the terms of the old theory can be reduced to the terms of the new one. For instance, our historical understanding about sound, "light" and heat have been reduced to wave compressions and rarefactions, electromagnetic waves, and molecular kinetic energy, respectively. These terms, which are identified with each other, are called intertheoretic identities. When an old and new theory are parallel in this way, we can conclude that the new one describes the same reality, only more completely.

When a new theory uses new terms that do not reduce to terms of an older theory, but rather replace them because they misrepresent reality, it is called an intertheoretic elimination. For instance, the obsolete scientific theory that put forward an understanding of heat transfer in terms of the movement of caloric fluid was eliminated when a theory of heat as energy replaced it. Also, the theory that phlogiston is a substance released from burning and rusting material was eliminated with the new understanding of the reactivity of oxygen. A theorem is derived deductively from axioms basic assumptions according to a formal system of rules, sometimes as an end in itself and sometimes as a first step toward being tested or applied in a concrete situation; theorems are said to be true in the sense that the conclusions of a theorem are logical consequences of the axioms. Theories are abstract and conceptual, and are supported or challenged by observations in the world. Sometimes theories are incorrect, meaning that an explicit set of observations contradicts some fundamental objection or application of the theory, but more often theories are corrected to conform to new observations, by restricting the class of phenomena the theory applies to or changing the assertions made. An example of the former is the restriction of classical mechanics to phenomena involving macroscopic length scales and particle speeds much lower than the speed of light. Scientific theory In science, the term "theory" refers to "a well-substantiated explanation of some aspect of the natural world, based on a body of facts that have been repeatedly confirmed through observation and experiment. The strength of a scientific theory is related to the diversity of phenomena it can explain, which is measured by its ability to make falsifiable predictions with respect to those phenomena. Theories are improved or replaced by better theories as more evidence is gathered, so that accuracy in prediction improves over time; this increased accuracy corresponds to an increase in scientific knowledge. Scientists use theories as a foundation to gain further scientific knowledge, as well as to accomplish goals such as inventing technology or curing disease. Definitions from scientific organizations[edit] The United States National Academy of Sciences defines scientific theories as follows: The formal scientific definition of "theory" is quite different from the everyday meaning of the word. It refers to a comprehensive explanation of some aspect of nature that is supported by a vast body of evidence. Many scientific theories are so well established that no new evidence is likely to alter them substantially. For example, no new evidence will demonstrate that the Earth does not orbit around the sun heliocentric theory , or that living things are not made of cells cell theory , that matter is not composed of atoms, or that the surface of the Earth is not divided into solid plates that have moved over geological timescales the theory of plate tectonics One of the most useful properties of scientific theories is that they can be used to make predictions about natural events or phenomena that have not yet been observed. A scientific theory is a well-substantiated explanation of some aspect of the natural world, based on a body of facts that have been repeatedly confirmed through observation and experiment. Such fact-supported theories are not "guesses" but reliable accounts of the real world. The theory of biological evolution is more than "just a theory. Our understanding of gravity is still a work in progress. But the phenomenon of gravity, like evolution, is an accepted fact. In a deductive theory, any sentence which is a logical consequence of one or more of the axioms is also a sentence of that theory. In the semantic view of theories , which has largely replaced the received view, [13] [14] theories are viewed as scientific models. A model is a logical framework intended to represent reality a "model of reality" , similar to the way that a map is a graphical model that represents the territory of a city or country. In this approach, theories are a specific category of models that fulfill the necessary criteria. See Theories as models for further discussion. In physics[edit] In physics the term theory is generally used for a mathematical frameworkâ€”derived from a small set of basic postulates usually symmetries, like equality of locations in space or in time, or identity of electrons, etc. The specific mathematical aspects of classical electromagnetic theory are termed "laws of electromagnetism", reflecting the level of consistent and reproducible evidence that supports them. Within electromagnetic theory generally, there are numerous hypotheses about how electromagnetism applies to specific situations. Many of these hypotheses are already considered adequately tested, with new ones always in the making and perhaps untested. Regarding the term theoretical[edit] Acceptance of a theory does not require that all of its major predictions be tested[citation needed], if it is already supported by sufficiently strong evidence. For example, certain tests may be infeasible or technically difficult. As a result, theories may make predictions that have not yet been confirmed or proven incorrect; in

this case, the predicted results may be described informally using the term "theoretical. Philosophical theory A theory can be either descriptive as in science, or prescriptive normative as in philosophy. At least some of the elementary theorems of a philosophical theory are statements whose truth cannot necessarily be scientifically tested through empirical observation. These assumptions are the elementary theorems of the particular theory, and can be thought of as the axioms of that field. Some commonly known examples include set theory and number theory ; however literary theory , critical theory , and music theory are also of the same form. Metatheory One form of philosophical theory is a metatheory or meta-theory. A metatheory is a theory whose subject matter is some other theory or set of theories. In other words, it is a theory about theories. Statements made in the metatheory about the theory are called metatheorems. Political theory A political theory is an ethical theory about the law and government. Often the term "political theory" refers to a general view, or specific ethic, political belief or attitude, about politics. Jurisprudence and Law In social science, jurisprudence is the philosophical theory of law. Contemporary philosophy of law addresses problems internal to law and legal systems, and problems of law as a particular social institution. List of notable theories[edit] Most of the following are scientific theories; some are not, but rather encompass a body of knowledge or art, such as Music theory and Visual Arts Theories.

Chapter 7 : Theory - Wikipedia

through the literature review, the theoretical framework, the research question, the methodology section, the data analysis, and the findings (Ryan-Wenger,).

By Mediha Din Sociologists focus on our world today. Today we have seen tragic news of shootings at a mall in Nairobi , a park in Chicago , and a Navy Yard in Washington D. As sociologists, we use three theoretical perspectives think of them as three pairs of glasses with different lenses to analyze society. One method that can be used for analyzing mass shootings such as the heartbreaking Navy Yard shooting in Washington D. In this post, Mediha Din describes structural functionalism and how this sociological perspective can be used. How can we analyze society from the point of view of structural functionalism? Think of the morning cup of joe. Do you drink coffee? Does it help you wake up? Give you an energy boost? These are some functions purposes of caffeine. Or do you avoid it because of the energy crash, acidity, or jitteriness it causes you? These are some dysfunctions of caffeine. Looking at society from a functionalist point of view includes examining how something is functional useful and dysfunctional not useful. The structural functionalist point of view sees society as a complex system whose parts work together to promote stability. The human body is often used as an analogy for structural functionalism. Many different parts heart, liver, brain, lungs work together in order for the body to work. Functionalism is also focused on maintaining harmony in society, just as your body works to maintain harmony if you are cold, your body shivers to warm you up, if you are hot, your body produces sweat to cool you down. When we look at terrible occurrences such as the mass shooting in D. Families have lost a loved one, provider, and support mechanism. Our Navy has lost valuable members of their workforce, and many surviving members may suffer from depression or post-traumatic stress disorder. The members of society as a whole feel disheartened, fearful, and confused by these horrific acts of violence. Looking at the negative consequences of a behavior is part of structural functionalism. Functionalism also analyzes how criminal acts can provide some functions in society. This does not mean justifying atrocious acts of violence against innocent people in any way. Crime can have a role in society, and some positive outcomes can be seen coming out of extremely negative circumstances. How can crime be functional for society? It can strengthen group cohesion. People often unite to express outrage over a crime. As we come together to share our pain and anger, we can also feel more connected to our fellow community members. The members of the Navy have always described themselves as a family, and this tragedy connects them even more deeply to one another. Many of us felt this connection as Americans after the terrible attacks on our nation in We also carry out collective tributes of respect and honor for the people lost in a tragedy through events such as shared moments of silence. As you drive around your community you are sure to see many business and institutions with the American Flag lowered to half mass in honor of the lost Navy Yard workers. Punishment reiterates boundaries of what is considered right or wrong. When we see someone punished for breaking the law it reminds us of what we consider acceptable as a society and what is not. Attacking innocent civilians is something we want to see punished. We also see that the killing of the shooter by police officers in such situations is something accepted as permissible by members of society, because of their attack on innocent civilians. Crime may inspire social change. Criminal acts can also inspire people to make a difference in the world. People have become inspired to propose changes such as universal background checks for gun ownership, changes in availability of weapons, and increases in education about mental illness over the past few months, as news of mass shootings around the nation and globe seem to increase. How else might a sociologist analyze the Navy Yard tragedy or other mass shootings? We might use other lenses such as Conflict Theory, and Symbolic Interactionism. Stay tuned for these posts from my colleagues. The article describes functions of mass shootings for Law Enforcement Agencies. What are other outcomes of these events that may produce some function for police departments? Read the proposals for changes in Mental Health Care in the United States that have received increased attention after the numerous mass shootings in headlines this year. Research and describe other ideas that have been proposed to support improved access to care and education for people with mental health concerns. Use structural functionalism as a lens to analyze

any current issue in your community or in the nation. Describe functions as well as dysfunctions of the issue. After a tragedy like a mass shooting, how do these institutions work together to return society to a stable and secure order?

Chapter 8 : Back Strong and Beltless - Part 3 | Article | PTontheNet

Part 1: An introduction to a theory of change for the climate justice movement. The following post is the first in a four part series that I am hoping will help translate what I've learned throughout my PhD dissertation research into accessible and useful tools that can be shared and applied across the climate justice movement in North America.

Chapter 9 : BIOMECHATRONICS

Tutorial T Massive MIMO for 5G: From Theory to Practice Presenters: Fredrik Tufvesson (Lund University, Sweden), Andre Bourdoux (IMEC, Belgium) Tutorial Overview Over the last the couple of years, massive MIMO has gone from being a theoretical concept to.